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Abstract: This study aimed to examine how internalised stigma relates to outcomes for people with psychosis, in terms of subjective recovery and symptomatic recovery, both concurrently and longitudinally. It further aimed to investigate what psychological mechanisms might mediate the effects of internalised stigma on recovery. 80 service-users with experience of psychosis were assessed at two time-points (baseline and 6-month follow up). Measures used focused on internalised stigma, subjective recovery, symptoms, self-esteem and hopelessness. Statistical analyses included multiple regression and multiple mediation analysis. The results indicate that internalised stigma is predictive of symptomatic and subjective recovery, and the effects of such stigma on recovery judgements and symptoms are mediated by hopelessness and self-esteem at baseline. Long-term, internalised stigma continues to predict recovery judgements and symptoms. However, after 6-months there was only evidence of mediation through self-esteem for the effect of stigma on passive social withdrawal. Self-esteem and hopelessness should be considered in treatment in order to reduce the effects of internalised stigma. Interventions which address the current and long-term effects of internalised stigma could positively effect outcome for people being treated for psychosis.

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1. Cover Letter

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Dear Sirs and Madams,

Please accept this paper "How stigma impacts on people with psychosis: The mediating effect of self-esteem and hopelessness on subjective recovery and psychotic experiences" for consideration for publication in Psychiatry Research.

This piece of research is aimed at adding to the existing body of knowledge regarding mental health stigma, internalisation of stigma, and severe mental illness. This secondary data analysis aimed to examine how internalised mental health stigma relates to outcomes for people with psychosis; in terms of subjective recovery and symptomatic recovery, both concurrently and longitudinally. It further aimed to investigate what psychological mechanisms might mediate the effects of internalised stigma on recovery. 80 service-users with experience of psychosis were assessed at two time-points (baseline and 6-month follow up). Statistical analyses included multiple regression and multiple mediation analysis.

The results of the analysis suggest that both self-esteem and hopelessness should be considered in treatment in order to reduce the effects of internalised stigma. Moreover, interventions which address the current and long-term effects of internalised stigma could positively effect outcome for people being treated for psychosis. As such, we hope that you will find this paper suitable for your publication and thank you for your consideration.

Yours faithfully,

Victoria Vass (Corresponding Author)

***3. Title Page showing full Author and Address Details**

How stigma impacts on people with psychosis: The mediating effect of self-esteem and hopelessness on subjective recovery and psychotic experiences.

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***Highlights**

Highlights

- 80 service-users with experience of psychosis were assessed at two time-points (baseline and 6-month follow up) with measures which focused on internalised stigma, subjective recovery, symptoms, self-esteem and hopelessness.
- Results indicate that internalised stigma is predictive of symptomatic and subjective recovery, and the effects of such stigma on recovery judgements and symptoms are mediated by hopelessness and self-esteem at baseline.
- Long-term, internalised stigma continues to predict recovery judgements and symptoms.
- Self-esteem and hopelessness should be considered in treatment in order to reduce the effects of internalised stigma.
- Interventions which address the current and long-term effects of internalised stigma could positively effect outcome for people being treated for psychosis.

Abstract

This study aimed to examine how internalised stigma relates to outcomes for people with psychosis, in terms of subjective recovery and symptomatic recovery, both concurrently and longitudinally. It further aimed to investigate what psychological mechanisms might mediate the effects of internalised stigma on recovery. 80 service-users with experience of psychosis were assessed at two time-points (baseline and 6-month follow up). Measures used focused on internalised stigma, subjective recovery, symptoms, self-esteem and hopelessness. Statistical analyses included multiple regression and multiple mediation analysis. The results indicate that internalised stigma is predictive of symptomatic and subjective recovery, and the effects of such stigma on recovery judgements and symptoms are mediated by hopelessness and self-esteem at baseline. Long-term, internalised stigma continues to predict recovery judgements and symptoms. However, after 6-months there was only evidence of mediation through self-esteem for the effect of stigma on passive social withdrawal. Self-esteem and hopelessness should be considered in treatment in order to reduce the effects of internalised stigma. Interventions which address the current and long-term effects of internalised stigma could positively effect outcome for people being treated for psychosis.

Keywords: Social Stigmas; Psychosis; Social Discrimination; Mental Disorders; Stereotyping/Stigmatization; Indirect Effects

1. Introduction

Stigma is a widely researched concept, with public stigma and self-stigma frequently cited as problems by those experiencing mental health issues (Corrigan et al., 2005). Goffman (1986) described stigma as a negative evaluation of an individual as 'tainted' because of attributes such as mental disorder, disability, or ethnicity. Public stigma is typically described as a process of prejudice, stereotypes and discrimination towards the stigmatised group or individual, and self-stigma is the internalisation of these negative attitudes, beliefs and behaviour. Internalised stigma has recently been defined as "becoming aware of the label and identifying with the stereotypes" (Link et al., 2004) or "the internalisation of shame, blame, hopelessness, guilt and fear of discrimination associated with mental illness" (Corrigan and Watson, 2002). People with psychosis report internalising public stigma and experience shame and fear as a consequence, and recent research high levels of patients with schizophrenia report moderate to high levels of internalised stigma (Brohan et al., 2010).

Early studies found that people with mental health problems expect to experience discrimination and receive ill-treatment from others, have less life satisfaction because of stigma, and feel demoralised and rejected by others (Link, 1987; Link et al., 1989; Mansouri and Dowell, 1989; Herman, 1993), and suggest that self-stigma results in reduced self-esteem, increases depression and anxiety and hinders recovery (Schulze and Angermeyer, 2003). Recent research has found a strong negative relationship between internalised stigma and a range of outcomes including hope, self-esteem and empowerment, and a strong positive relationship with psychiatric symptoms (Livingston and Boyd, 2010). Internalised stigma has also been shown to increase symptoms of schizophrenia and reduce insight, further impeding recovery from psychosis (Lysaker et al., 2007b). Additionally, such stigma discourages people from seeking help, which may delay treatment, leads to social isolation, and acts as a mechanism of social exclusion, which hampers recovery (Link et al., 1997a, 2001). A recent Delphi study which examined consensus in a large sample of service users with psychosis about factors that promote or inhibit recovery found that they highlighted stigma as a potential barrier to recovery, including discrimination such as not being able to gain employment (Law and Morrison, 2014).

It has been suggested that people who experience psychosis are one of the most stigmatised minority groups in society (Wood et al., 2014a, 2014b) with the Schizophrenia Commission (2012) recently reporting that 87% of individuals with a schizophrenia diagnosis had experienced stigma and discrimination. Research has repeatedly shown that the majority of the general public hold negative beliefs about people experiencing psychosis; and particularly those diagnosed with

schizophrenia. For example, in a survey of a thousand French citizens on their attitudes towards people with mental illness, it was found that 69% of individuals would engage in social-distancing from individuals with schizophrenia, compared to 29% for bipolar disorder and 7% with autism ($p < 0.001$)(Durand-Zaleski et al., 2012). The primary reason given for this discrepancy was a belief that individuals with schizophrenia are highly dangerous. Other studies not only support this observation that people diagnosed with schizophrenia are considered dangerous, but also that they are considered unpredictable (Crisp et al., 2000; Walker and Read, 2002; Stuart et al., 2012), incompetent, to blame for their illness (Corrigan and Kleinlein, 2005) and unlikely to ever recover (Crisp et al., 2000).

These kinds of stigmatising attitudes create a vicious circle of disability and disadvantage through diminishing quality of life (Stolzman, 1994), preventing help-seeking and engagement with mental health services and treatment (Thornicroft et al., 2007), inhibiting social roles, increasing social exclusion and hindering social integration (Link et al., 1997b, 2001; Thornicroft et al., 2007). Individuals also experience reduced life, work and education opportunities (Thornicroft et al., 2009) leaving people feeling ashamed and unwilling to disclose their illness for fear of the repercussions, and questioning their value as a member of society (Jenkins and Carpenter-Song, 2009). This all has a potential impact on recovery in terms of regaining a sense of quality of life and wellbeing, so that individuals report feeling pessimistic about recovery and lacking hope for the future (González-Torres et al., 2007).

It is evident that the impact of stigma and self-stigma are far-reaching. It is possible that the effects of internalising stigma could be ameliorated by therapeutic interventions if the processes by which stigma impacts on recovery were better understood. Two likely mechanisms, to be investigated in the current study, are self-esteem and hopelessness. Indeed, low self-esteem and hopelessness are often important elements of psychotic patients' pessimism about their own illness (Pitt et al., 2007) and both have previously been identified as responses to stigma (Link et al., 2001; González-Torres et al., 2007). Modern cognitive accounts of positive symptoms, particularly paranoid delusions, emphasize the important role of self-esteem in driving symptoms (Bentall et al., 2001; Freeman et al., 2002). Moreover, the role of hopelessness in driving suicidal thinking is well documented (Heilä et al., 1997; King et al., 2001; Nordentoft et al., 2002).

Hence, the aim of the present study is to investigate how stigma relates to outcome, whether these effects are short term (immediate) or long-term (6-months), and whether relationships between stigma and outcome are mediated by self-esteem or hopelessness.

2. Methods

2.1. Participants and design

Eighty service-users (49 male, 31 female, mean age = 39.15, SD = 11.56) with experiences of psychosis were recruited from 5 NHS trusts in the North-West UK. All participants had a sufficient level of English literacy to complete the measures and capacity to provide informed consent. The majority were White British (75%). Participants were recruited from early intervention services (n=12), community mental health teams (n=61), assertive outreach teams (n=3) and other mental health services (n=4). Data for all measures were collected at baseline, and the outcome measures were administered a second time six months later. All data was collected as part of the wider Recovery Programme.

2.2. Measures

For the present analyses we focused on data pertaining to the key concepts of stigma and recovery, with the influence of hopelessness and self-esteem considered as mediators. Other measures which will be reported in later papers are not discussed here.

2.2.1. Independent variables

Stigma

The King et al. Stigma Scale (KSS; 2007) is a 28-item self-report questionnaire with items rated on a scale of 0 (strongly disagree) to 4 (strongly agree). There are three sub-scales: Discrimination (12 items), Disclosure (11 items), and Potential Positive Aspects of mental illness (5 items). King et al. (2007) found all items to have a test-retest reliability kappa coefficient of 0.4 or greater. Cronbach's α for Discrimination was reported to be 0.87, for Disclosure 0.85, and for Positive Aspects 0.64. Alpha coefficients for all scales in the current sample are given in Table 1. It can be seen that, whereas the coefficients for Discrimination and Disclosure in this study were acceptable, that for Positive Aspects was not; therefore this subscale (which was short and, in any case, of less theoretical interest than the others) was not employed in subsequent analyses.

2.2.2. Mediator variables

Hopelessness

The Beck Hopelessness Scale (BHS; Beck et al., 1974) is a 20 item self-report measure which measures three aspects of hopelessness: feelings about the future, loss of motivation, and negative expectations. Participants rate each statement as true or false for their attitudes over the last week. The psychometric properties of the BHS have been examined in a number of studies and it has demonstrated good validity and reliability (Young et al., 1993; Dyce, 1996; Nunn et al., 1996).

Self-esteem

The Self Esteem Rating Scale—short form (SERS; Lecomte et al., 2006) is a 20-item self-report measure assessing positive and negative beliefs about the self. Items are rated on a 7 point Likert scale ranging from "never" to "always". The scale has demonstrated good reliability and adequate validity. As the positive and negative totals for the self-esteem rating scale are so highly correlated (r=-.65, p=<.01) for the purpose of the regression and mediation analyses we extracted the principle component of the two subscales to yield a single scale score.

2.2.3. Outcome variables

Subjective recovery

The Questionnaire about the Process of Recovery (QPR; Neil et al., 2009) is a 22-item self-report measure developed in collaboration with service-users and clinicians. Items are rated on a five point Likert scale ranging from "strongly disagree" to "strongly agree". Higher scores on the measure are indicative of greater sense of recovery. The QPR has two subscales: intrapersonal (17 items) and interpersonal (5 items). Good internal consistency was reported for these subscales by the authors (intrapersonal α = 0.94; interpersonal α = 0.77) as well as good construct validity and test-retest reliability.

Symptomatic recovery

The Positive and Negative Syndrome Scale (PANSS; Kay et al., 1987, 1989) is a 30 item semi-structured clinical interview and rating scale which includes 7 items to evaluate positive symptoms (e.g. delusions), 7 items to evaluate negative symptoms (e.g. blunted affect) and 16 items to assess global psychopathology (e.g. anxiety). Symptoms are rated by the interviewer from 1 (not present) to 7 (severe). The PANSS has been used in many studies and has been shown to have good reliability and validity.

We tested whether the stigma variables predicted PANSS subscale (positive, negative and general) at baseline and follow-up. However, we also hypothesized that stigma would relate to particular PANSS items. Items 1 (delusions) and 6 (suspiciousness/persecution), from the PANSS positive subscale were expected to relate to stigma as experiences of discrimination and prejudice, as past research has found that experiences of discrimination predicted the later development of paranoid symptoms (Janssen et al., 2003). As guilt and shame are often cited in the process of experiencing and internalising stigma (Link et al., 2004; Scheff, 2013), item 3 (guilt feelings) from the PANSS general subscale was considered individually in relation to stigma. Similarly, as stigma is often linked to a withdrawal from social interaction (Yanos et al., 2008) item 16 (active social avoidance) from the general PANSS subscale, and item 4 (social withdrawal) from the negative PANSS subscale were examined.

2.3. Procedure

The study was approved by an NHS Research Ethics Committee, and was designed with the advice of a service-user reference group. Participants were recruited through posters, advertisements and referrals from health professionals. Mental health services and voluntary sector agencies across the North West were approached for suitable referrals to ensure diversity in experience of psychosis and service provision. All participants gave informed consent. To reduce participant burden, participants were given the option to complete some or all of the measures.

2.4. Statistical analyses

We hypothesised that stigma would negatively affect recovery beliefs. That is, the more stigma experienced, the less recovered a person would feel. We also hypothesised that the variables self-esteem and hopelessness would mediate this relationship. In terms of symptoms, we hypothesised that the individual symptoms of interest from the PANSS would be predicted by stigma at baseline and longitudinally at six months.

All analyses were conducted using SPSS (version 21). We examine bivariate relationships between the variables (including the KSS subscales) and Cronbach's alpha coefficient was used to estimate the reliability of the measures. In subsequent linear regression models, only KSS total scores were considered in the light of the high correlations between total scores and subscale scores, and also in order to reduce the risk of type-1 error proliferation.

If it was found that the potential mediators appeared to have an effect in the multiple regressions, mediational models were tested with the KSS discrimination and disclosure subscales using the PROCESS macro on SPSS 21 (Hayes, 2013). For this purpose, the direct effects (*c* paths)

between stigma and the dependent variables (QPR or PANSS scores at baseline and at six months) were firstly estimated. The mediating variables (self-esteem and hopelessness) were then introduced, generating models with direct effects between the independent variables and the mediators (*a* paths), direct effects between the mediators and dependent variables (*b* paths), and direct effects between the independent and dependent variables whilst controlling for the mediators (*c'* paths). The six-month follow-up models controlled for the baseline recovery beliefs or PANSS data as appropriate. Similarly, each stigma sub-scale mediation model controlled for the other sub-scale to account for its influence. This allowed us to look at the influence of each sub-scale individually whilst acknowledging them as part of the overall experience of stigma. The models were estimated using maximum likelihood (ML) estimators. As mediation models are sensitive to parametric assumptions and we had a relatively modest sample size, the statistical significance of mediating and indirect effects was examined with bootstrapped bias-corrected percentile-based confidence intervals of 1,000 bootstrap draws. In cases where zero did not fall within the 95 per cent intervals of the bootstrapped samples, the mediating effect was considered to be significant (MacKinnon et al., 2004, 2007; Preacher and Hayes, 2008).

3. Results

3.1. Correlation analysis

Table 1 show the correlation matrix between stigma, self-esteem, hopelessness and the recovery measures (QPR and PANSS) for the sample. As expected both total stigma and the remaining sub-scales, discrimination and disclosure, highly correlate with the QPR at baseline and at six months. Similarly, hopelessness and self-esteem correlate with QPR at both time-points.

INSERT TABLE 1

Perhaps unsurprisingly, significant relationships were evident between the subjective sense of recovery measure (QPR) and the symptom-based recovery measure (PANSS). Total stigma correlated with PANSS positive and general subscales scores at baseline, but only with the PANSS general subscale score at follow-up. The discrimination sub-scale correlated with PANSS general at both time points but only PANSS positive at 6 months follow-up. The disclosure subscale correlated only with the PANSS baseline scores.

Positive, negative and general PANSS all display significant associations with self-esteem and hopelessness at baseline. At six months these relationships remain for positive and general PANSS scores, and become non-significant for negative PANSS scores.

3.2. Linear regression analyses

3.2.2 Subjective recovery

The upper portion of Table 2 show the results for regression models calculated with total stigma as a predictor of baseline recovery. The stigma variable was entered first and then the self-esteem and hopelessness measures were entered afterwards. Stigma predicted subjective recovery at baseline, $F[1,70] = 14.31$, $p < .001$, adjusted $R^2 = .16$, but, when self-esteem and hopelessness were entered into the model, the model improved, $F[2,68]_{change} = 18.98$, $p < .001$, leading to a final significant model, $F[3,68] = 19.88$, $p < .001$, adjusted $R^2 = .44$, in which both self-esteem and hopelessness became significant predictors and the effect for stigma was no longer significant. The lower portion of Table 2 shows similar models calculated for subjective recovery scores at the six-month follow-up. In the case of these data, predictors were entered in three stages: first, the baseline recovery scores, then stigma, and finally the hypothesised mediators. The second stage in these models therefore indicates whether stigma predicts subjective recovery at six months even when baseline subjective recovery is controlled for. The addition of KSS total scores led to a significantly better model than the baseline scores alone, $F[1,48]_{change} = 4.41$, $p < .04$, leading to a significant model, $F[2,48] = 21.41$, $p < .001$, adjusted $R^2 = .45$, in which stigma was a significant predictor. However, adding self-esteem and hopelessness did not lead to a further improvement in the model.

INSERT TABLE 2

Overall, these findings indicate that current experiences of stigma strongly predict current recovery judgements, with self-esteem and hopelessness as potential mediators of this association. However, the evidence that stigma affects future recovery judgements is less clear; in the case of KSS total scores there is some evidence that this may be the case but there was no evidence of mediation by self-esteem and hopelessness.

3.2.3 PANSS symptoms

Table 3 shows the results of the multiple regressions for PANSS subscales and items at baseline. As with the subjective recovery analyses, the stigma variable was entered first and then the self-esteem and hopelessness measures were entered afterwards. Stigma predicted PANSS Positive subscale scores, $F[1,71] = 4.36$, $p < .05$, adjusted $R^2 = .05$, but, when self-esteem and hopelessness were entered into the model, the model improved, $F[2,69]_{change} = 8.37$, $p < .01$, leading to a final significant model, $F[3,69] = 7.33$, $p < .001$, adjusted $R^2 = .24$, whereby self-esteem and hopelessness both became significant predictors and effect of stigma was no longer significant.

INSERT TABLE 3

Stigma further predicted PANSS item P6 (suspiciousness/persecution), $F[1,71]=10.96$, $p < .01$, adjusted $R^2 = .12$, however, when self-esteem and hopelessness were added to the model, the model improved, $F[2,69]_{change} = 9.36$, $p < .001$, leading to a final significant model, $F[3,69]= 10.76$, $p < .001$, adjusted $R^2 = .29$, where self-esteem and hopelessness both became significant predictors of PANSS item P6, and stigma no longer had a significant effect.

Similarly, stigma predicted PANSS item G16 (active social avoidance), $F[1,71]=7.75$, $p < .01$, adjusted $R^2 = .10$. When self-esteem and hopelessness were entered into the model, the model improved, $F[2,69]_{change}=12.99$, $p < .001$. This led to a final significant model, $F[3,69]=12.11$, $p < .001$, adjusted $R^2 = .32$, with self-esteem and hopelessness significantly predicting G16, and the effect of stigma becoming non-significant. However, stigma did not predict PANSS item N4 (passive social withdrawal) or G3 (guilt feelings).

Overall, these findings suggest that current experiences of stigma strongly predict positive symptoms, particularly suspiciousness and persecution; and active social avoidance. Moreover self-esteem and hopelessness may potentially mediate this relationship.

For symptomatic recovery at 6 months follow-up we included baseline symptomatic recovery scores in the first stage in order to control for their effect. Stigma was added in the second stage, and self-esteem and hopelessness were added in at the third stage. Stigma did not predict PANSS positive subscale scores or P6 (suspiciousness) at 6 months but it did predict three of the individual PANSS items in ways that were consistent with our predictions.

Despite the lack of association between stigma and passive social withdrawal (N4) at baseline, N4 at 6 months was unexpectedly predicted by total stigma, $F [1,51] = 9.20$, $p < .005$, adjusted $R^2=.18$, when baseline PANSS N4 data was controlled for. When self-esteem and hopelessness were added into the model, the model improved, $F [2,49]_{change} = 3.95$, $p < .05$, leading

to a final model, $F[4,49]=5.73$, $p<.01$, adjusted $R^2=.26$, where self-esteem (but not hopelessness) became significant and stigma was no longer significant.

Active social avoidance (G16) was also significantly predicted by total stigma $F[1,51] = 4.03$, $p \leq .05$, adjusted $R^2=.41$ after controlling for baseline scores. The addition of self-esteem and hopelessness did not improve the model. Similarly, guilt feelings (G3) was predicted by total stigma, $F[1,51] = 7.49$, $p<.01$, adjusted $R^2=.33$, but the addition of self-esteem and hopelessness in the third stage had no significant effect and the model did not improve.

In summary, there was evidence that stigma at baseline predicted passive social withdrawal, active social avoidance and guilt feelings at six month follow-up. The effect of stigma on passive social withdrawal may be mediated by self-esteem and hopelessness.

3.3. Multiple mediation analysis

Multiple mediation analyses were carried out to further interrogate the data where the regression analyses indicated that they might be appropriate. In these analyses, we looked at the effects of the individual KSS subscales (discrimination and disclosure), in each case controlling for the remaining subscale and, in the case of 6-month follow-up data, baseline scores on the QPR or appropriate PANSS measure; see Figure 1. Detailed statistical results are available in online supplementary tables S1 (for baseline data) and S2 (6 month follow-up data).

INSERT FIG 1

At baseline, the effect of total KSS scores on subjective recovery was fully mediated by both low self-esteem (specific indirect effect $B = -.16$, 95% CI = -.28 – -.05) and hopelessness ($B = -.12$, 95% CI = -.25 – -.04). The effect on PANSS positive scores was fully mediated by hopelessness ($B = .05$, 95% CI = .00 – .10) and not self-esteem. When individual PANSS items were examined, the effect on suspiciousness (P6) was fully mediated through self-esteem ($B = .02$, 95% CI = .01 – .03) as was active G16 social avoidance ($B = .02$, 95% CI = .00 – .04). The effect of total stigma on N4 passive social withdrawal was fully mediated through hopelessness ($B = .01$, 95% CI = .00 – .03). When the KSS subscales discrimination and disclosure were entered together as predictors, substantially similar results were obtained with the exception of the analysis for QPR, the effect of disclosure was only mediated through hopelessness, and the effect of discrimination was only partially mediated through both self-esteem and hopelessness (there was a residual direct effect of discrimination on QPR scores).

For the 6-month follow-up data, only N4 passive social withdrawal showed evidence of mediation in our regression models. In the case of total KSS scores, the association between stigma and outcome was fully mediated by self-esteem (*B* = .01, 95% CI = .00 – .04). When the individual KSS subscales were considered, the effect of discrimination was fully mediated by self-esteem (*B* = .03, 95% CI = .01 – .07) but there was no effect for disclosure.

4. Discussion

The primary aim of the study was to examine whether internalised stigma had a negative impact on subjective and symptomatic recovery. Previous research has suggested that this may be the case through a number of pathways, for example reduced help-seeking (Thornicroft et al., 2007), reduced social functioning and engagement (Link et al., 1997b, 2001; Thornicroft et al., 2007) and reduced life opportunities (Thornicroft et al., 2009). However, whilst it is clear that internalised stigma affects a number of aspects of recovery, the underlying processes and the nature of these relationships requires further clarification.

The results of this study suggest that both subjective recovery judgments and symptoms may be affected. At baseline, experiences of internalised stigma strongly predicted poor recovery judgements. Similarly, internalised stigma appeared to predict positive symptoms, particularly suspiciousness and persecution, and active social avoidance. At 6 month follow up, active social avoidance, guilt feelings and self-blame were predicted by internalised stigma. Passive social withdrawal was also longitudinally predicted by internalised stigma, and by discrimination. The effect of stigma and discrimination on passive social withdrawal at six months appeared to be mediated by self-esteem. The effect of internalised stigma on baseline recovery judgements appeared to be mediated through low self-esteem and hopelessness. However, neither self-esteem nor hopelessness appeared to explain the persisting association between internalised stigma and long-term recovery judgements (as discussed below, this might be because there was a long gap between the measurement of these mediators and the six-month outcome).

Previous research has highlighted one aspect of the relationship between positive symptoms and internalised stigma, suggesting that more positive symptoms result in more experiences of internalised stigma (Lysaker et al., 2007a). Our results found evidence that the relationship also works in the opposite direction, with internalised stigma experiences affecting positive symptoms. Our results were consistent with previous work which has described feelings of guilt and shame as integral to the internalisation of stigma (Corrigan and Watson, 2002) as we found that guilt feelings

and self-blame were predicted by stigma at 6 month follow-up in our regression analyses. However, it is difficult to determine to what extent the guilt feelings are related to the causes or the consequences of mental illness without examining the content of the feelings expressed. For example, research suggests that service users with psychosis are 2.72 times more likely to have been exposed to childhood adversity than the general population (Varese et al., 2012) and self-blame is well-documented in victims of trauma (Coffey et al., 1996). Therefore, whilst we cannot assume that internalised stigma is the sole predictor of guilt and self-blame, it clearly has a significant effect on this experience in people with psychosis.

The negative effects of stigma on social interaction have often been observed (Link et al., 1997b, 2001; Thornicroft et al., 2007), but it was interesting to find in our data that the effects of internalised stigma at baseline were still significant six months later. Active social avoidance is characterised by diminished social involvement consequent on unwarranted fear, hostility, or distrust. The long-term effects apparent in the data suggests that patients may be self-stigmatising and pre-emptively withdrawing from social interaction in the anticipation of experiencing negative reactions from others. This finding is consistent with previous findings from Yanos et al. (2008), who, in a cross-sectional study, found that internalised stigma increases avoidant coping and active social avoidance. Yanos et al. further found hope and self-esteem to be influential in this relationship; however we only found self-esteem to have a mediating effect between experienced stigma and active social avoidance at baseline, whereas hopelessness mediated the effect on passive avoidance. Contrastingly, at 6 months the effect of stigma on passive (but not active) social withdrawal was mediated by low self-esteem. These discrepancies between the role of self-esteem and hopelessness at the different time points may be less important than they at first appear; the two variables were measured at the same time point at the beginning of the study and were moderately correlated; hence, it may have been difficult for our design to discriminate between these different facets of a pessimistic cognitive style.

Neither self-esteem nor hopelessness were able to explain the persisting association between internalised stigma and long-term recovery judgements. It is possible that this finding reflects a study limitation, as only the recovery measures and not the mediators were repeated at the six month follow up. Perhaps mediation would have been detected had self-esteem and hopelessness been assessed closer to the 6-month follow-up point. Previous research has shown that perceived discrimination and stigma strongly predict future self-esteem at 6 months and 24 months (Link et al., 2001, 2004), although no comparable data is available for hopelessness. It is also possible that the effects of perceived stigma are cumulative as an individual may have more

discriminatory experiences over time; in which case the association between internalised stigma, self-esteem and hopelessness may have an even greater impact on recovery judgements long-term if six-month data were available for all measures.

Nevertheless, for both subjective recovery and symptoms at baseline, and for symptoms at six month follow-up, it is evident that hopelessness and low self-esteem play a key role in facilitating the effects of stigma. Overall, the findings are consistent with existing research which suggests that stigma causes loss of self-esteem (Link et al., 2001) and hope (González-Torres et al., 2007), and can impede recovery. There are several limitations of the present study that might be addressed in future research. First, as noted, the mediating psychological mechanisms were measured only at baseline and it would have been preferable to repeat them at follow-up, which might include several time points. Secondly, we deliberately invited a broad range of patients to take part in the hope of sampling a range of symptom profiles and recovery judgments. An alternative approach might have been to select patients experiencing their first episode (or even during the prodromal period before first onset) to understand how stigma evolves across the course of illness, and the extent to which stigma impedes recovery. Third, stigma is clearly a multi-faceted construct and there are aspects that we have not measured; for example there has recently been interest in implicit measures of stigma (Teachman et al., 2006; Rüsch et al., 2010). Finally, the KSS is time-nonspecific (items do not specify whether stigma is experienced in the present or the past); future studies which address the question of whether stigma fluctuates over time may be better able to address associations with self-esteem, hopelessness and symptoms which, undoubtedly, also fluctuate.

Nonetheless, our findings have some important clinical implications. Whilst there are numerous anti-stigma campaigns which target stigma on a societal level (Wood et al., 2014b) they have had varying success with some campaigns resulting in increased desire for social distance from individuals with mental health problems (Read et al., 2006, 2013). It is important in light of our existing knowledge about self-stigma to target stigma not only on the population level, but also on an individual level in order to equip individuals so that they can deal with stigma in a way that is less injurious to their self-perception and sense of recovery. Our results suggest that the mediators of self-esteem and hopelessness are crucial targets for interventions at a personal level. Moreover, a focus on how internalised stigma is handled, encouraging social participation and preventing isolation is important for wellbeing and symptomatic recovery in the long-run (Garety et al., 2000, 2001; Pyle and Morrison, 2013; Wood et al., 2014a).

NICE (National Institute for Health and Care Excellence, 2009) recommends Cognitive Behavioural Therapy (CBT) as the first line of psychological intervention for psychosis. Research has

shown that CBT shows promise in terms of improving self-esteem in clients with psychosis (Hall and Tarrier, 2003) and it has been suggested that it would be the most appropriate approach to addressing issues such as feelings of hopelessness regarding recovery (Yanos et al., 2008; Wood et al., 2014b) Moreover, when CBT is utilised as a group therapy there is preliminary evidence from uncontrolled studies to suggest it may be successful at reducing internalised stigma, improving self-esteem, and advancing recovery (Knight et al., 2003; MacInnes and Lewis, 2008; Lucksted et al., 2011), and a recent randomised controlled trial found that a cognitive behavioural self-stigma reduction programme had significant benefits on self-esteem(Fung et al., 2011). Other interventions that aim to promote optimism and improve self-esteem, such as peer support, may also be worth evaluating in terms of effects on internalised stigma (Pyle and Morrison, 2013).

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Conflict of Interest

None.

Appendix A. Supplementary material

Supplementary data associated with this article can be found in the online version.

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5. Table(s)

Table 1

Mean, reliabilities and Pearson's inter-correlations for all variables in the multiple mediation models of the effects of stigma on recovery.

	Measure	*n*	*α*	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.	Total Stigma	73	.86	-													
2.	Discrimination	73	.79	.80**	-												
3.	Disclosure	73	.84	.86**	.40**	-											
4.	Positive Aspects	73	.34	.58**	.26*	.48**	-										
5.	Hopelessness	74	.92	.54**	.47**	.40**	.40**	-									
6.	Negative Self Esteem	74	.91	.53**	.49**	.37**	.40**	.70**	-								
7.	Positive Self Esteem	74	.89	-.45**	-.42**	-.30**	-.38**	-.56**	-.58**	-							
8.	QPR Baseline	78	.90	-.41**	-.23*	-.40**	-.38**	-.62**	-.60**	.53**	-						
9.	QPR 6 Months	52	.87	-.43**	-.41**	-.30*	-.34*	-.59**	-.49**	.58**	.65**	-					
10.	PANSS Positive Baseline	79	.59	.24*	.23	.19	.07	.46**	.39**	-.40**	-.52**	-.52**	-				
11.	PANSS Positive 6 Months	54	.67	.21	.27*	.12	.02	.49**	.44**	-.36**	-.55**	-.63**	.71**	-			
12.	PANSS Negative Baseline	79	.74	.23	.20	.16	.20	.34**	.34**	-.43**	-.39**	-.38**	.46**	.46**	-		
13.	PANSS Negative 6 Months	54	.74	.15	.05	.16	.24	.25	.10	-.38**	-.24	-.30*	.29*	.43**	.65**	-	
14.	PANSS General Baseline	80	.69	.46**	.44**	.34**	.22	.64**	.58**	-.51**	-.57**	-.55**	.64**	.50**	.63**	.40**	-
15.	PANSS General 6 Months	54	.80	.35**	.37**	.22	.23	.57**	.52**	-.41**	-.55**	-.70**	.51**	.77**	.53**	.49**	.68**

Notes: Total Stigma = KSS Total score, Discrimination = KSS discrimination sub-scale, Disclosure = KSS disclosure sub-scale, Positive Aspects = KSS positive aspects of stigma sub-scale, Hopelessness = BHS, Negative Self Esteem = Negative sub-scale of SERS, Positive Self Esteem = Positive sub-scale of SERS.
*p≤0.05; **p≤0.01, *α* = Cronbach's alpha coefficient.

Table 2

Multiple regressions for subjective recovery at baseline and 6-month follow-up.

Positive PANSS	Suspiciousness/Persecution	Passive Social Withdrawal	Guilt Feelings	Active Social Avoidance		
	Subjective Recovery at Baseline Model 1			**Subjective Recovery at Baseline Model 2**		
Variable	***B***	***Std. Error***	***β***	***B***	***Std. Error***	***β***
Total Stigma	-.27	.07	-.41***	.01	.07	.02
Self-Esteem				3.89	1.21	.42**
Hopelessness				-.58	.22	-.34**
Discrimination	-.29	.14	-.23*	.29	.13	.23*
Self-Esteem				4.64	1.17	.50***
Hopelessness				-.66	.21	-.39**
Disclosure	-.46	.13	-.40***	-.15	.11	-.13
Self-Esteem				3.59	1.15	.39**
Hopelessness				-.50	.21	-.30*

	Subjective Recovery at 6 Months Model 1			**Subjective Recovery at 6 Months Model 2**			**Subjective Recovery at 6 Months Model 3**		
Variable	***B***	***Std. Error***	***β***	***B***	***Std. Error***	***β***	***B***	***Std. Error***	***β***
Baseline	.72	.12	.65***	.63	.12	.57***	.42	.16	.38**
Total Stigma				-.18	.09	-.24*	-.10	.09	-.13
Self-Esteem							2.12	1.69	.20
Hopelessness							-.30	.30	-.16
Baseline	.72	.12	.65***	.64	.12	.58***	.48	.16	.44**
Discrimination				-.41	.15	-.29**	-.24	.19	-.17
Self-Esteem							1.66	1.80	.15
Hopelessness							-.25	.31	-.13
Baseline	.72	.12	.65***	.69	.13	.62***	.40	.16	.36*
Disclosure				-.13	.16	-.09	-.11	.15	-.08
Self-Esteem							2.62	1.63	.24
Hopelessness							-.35	.30	-.18

	B	*Std. Error*	*β*	*B*	*Std. Error*	*β*	*B*	*Std. Error*	*β*	*B*	*Std. Error*	*β*	*B*	*Std. Error*	*β*
Model 1															
Total Stigma	.71	.03	.24*	.04	.01	.37***	.01	.01	.19	.02	.01	.22	.03	.01	.31**
Discrimination	.13	.07	.23*	.06	.02	.34**	.04	.02	.26*	.06	.02	.31**	.04	.02	.24*
Disclosure	.10	.06	.19	.05	.02	.29**	.07	.02	.06	.03	.021	.14	.04	.02	.27*
Model 2															
Total Stigma	-.02	.04	-.08	.01	.01	.05	-.01	.01	-.14	.01	.01	.03	-.00	.01	-.05
Self-esteem	-1.07	.65	-.26	-.48	.20	-.35*	-.27	.16	-.26	-.31	.24	-.22	-.57	.18	-.47**
Hopelessness	.24	.12	.32*	.06	.04	.23	.06	.03	.34*	.03	.04	.13	.04	.03	.19
Discrimination	-.02	.07	-.04	.01	.02	.06	.00	.02	.01	.03	.03	.18	-.02	.02	-.10
Self-esteem	-1.02	.65	-.25	-.47	.20	-.35*	-.21	.16	-1.33	-.24	.23	-.17	-.59	.18	-.48***
Hopelessness	.23	.12	.31*	.06	.04	.23	.06	.03	.30*	.03	.04	.10	.04	.03	.19
Disclosure	-.01	.06	-.02	.01	.02	.07	-.02	.02	-.18	-.00	.02	-.01	.01	.02	.04
Self-esteem	-.97	.63	-.24	-.48	.19	-.35*	-.25	.15	-1.63	-.33	.23	-.23	-.54	.17	-.44**
Hopelessness	.23	.12	.30*	.06	.04	.22	.07	.03	.35*	.04	.04	.14	.04	.03	.16

Table 3

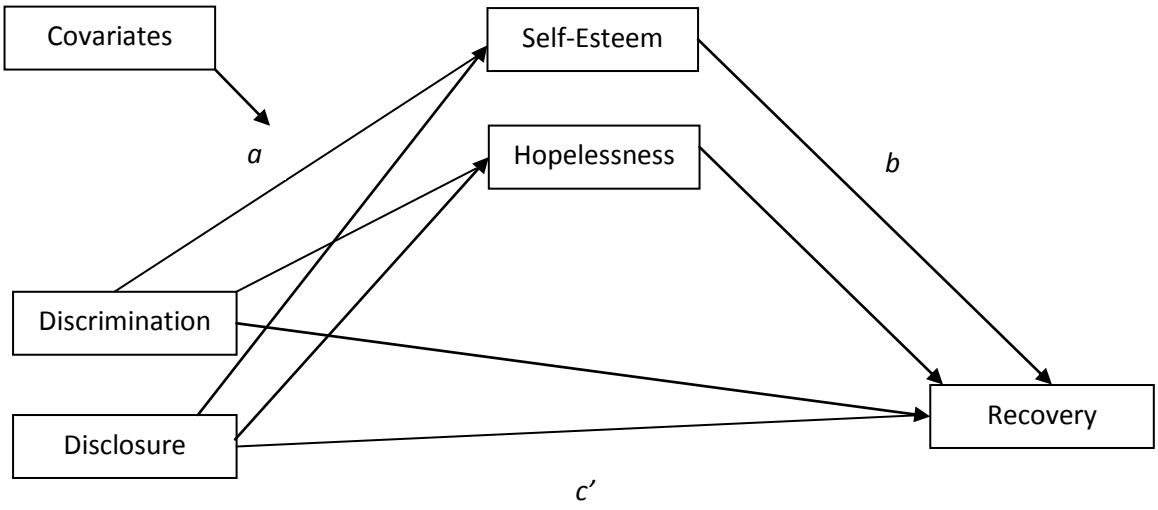
Multiple regressions for PANSS sub-scale and items at baseline.

Note: Positive PANSS = PANSS Positive sub-scale, Suspiciousness/Persecution = PANSS item P6, Passive Social Withdrawal = PANSS item N4, Guilt Feelings = PANSS item G3, Active Social Avoidance = PANSS item G16, Total Stigma = KSS Total Score, Discrimination = KSS discrimination sub-scale, Disclosure = KSS disclosure sub-scale, Self-Esteem = SERS factor, Hopelessness = BHS. *p≤.05, **p≤.01, ***p≤.001.

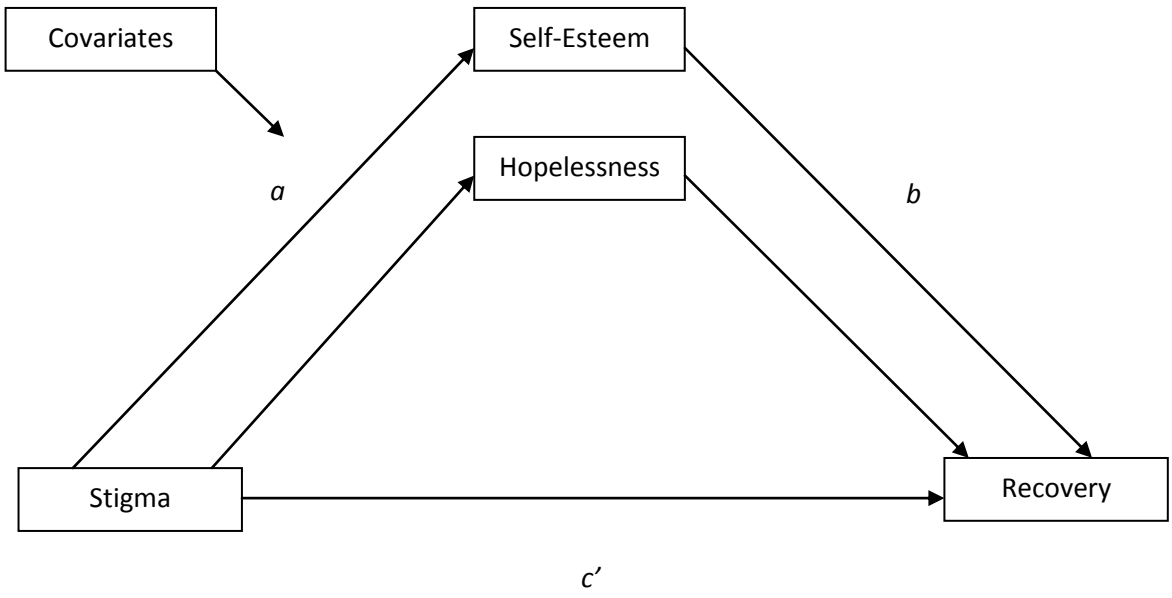
6. Figure(s)

Figure 1

Mediation models 1 and 2



Note: Model 1 was run for PANSS and QPR at baseline and at 6 months. Self-Esteem = SERS factor, Hopelessness = BHS, Discrimination = KSS discrimination sub-scale, Disclosure = KSS disclosure sub-scale, Recovery = QPR, or PANSS subscale, or PANSS item at baseline or at 6 month follow-up.



Note: Model 2 was run for PANSS and QPR at baseline and at 6 months. Self-Esteem = SERS factor, Stigma = KSS total, Recovery = QPR, or PANSS subscale, or PANSS item at baseline or at 6 month follow-up.

Table S1

Results from the mediation analyses for baseline data.

Effect	*B*	95% Confidence Interval *Std. Error*	*Lower*	*Upper*
Baseline Model 1				
Direct Effects (path a)				
KSSTotal → SERS	-.04***	.01	-.05	-.03
KSSTotal → BHS	.22***	.04	.14	.29
Direct Effects (path b)				
SERS → QPR	3.89**	1.21	1.47	6.31
BHS→ QPR	-.58**	.22	-1.01	-.14
SERS→ PANSS+	-1.07	.65	-2.36	.22
BHS→ PANSS+	.24*	.12	.01	.48
SERS→ P6	-.48*	.20	-.88	-.08
BHS→ P6	.06	.04	-.02	.13
SERS→ G16	-.57**	.18	-.92	-.22
BHS→ G16	.04	.03	-.02	.11
SERS→ N4	-.26	.16	-.58	.05
BHS→ N4	.06*	.03	-.03	.01
Direct Effects (path c')				
KSSTotal → QPR	.01	.07	-.13	.16
KSSTotal → PANSS+	-.02	.39	-.11	.05
KSSTotal → P6	.01	.01	-.02	.03
KSSTotal → G16	-.00	.01	-.03	.02
KSSTotal → N4	-.01	.01	-.03	.01
Specific Indirect Effects of Stigma				
KSSTotal → SERS → QPR	-.16*	.06	-.28	-.05
KSSTotal → BHS → QPR	-.12*	.05	-.25	-.04
KSSTotal → SERS → PANSS+	.04	.03	-.01	.10
KSSTotal → BHS → PANSS+	.05*	.02	.00	.10
KSSTotal → SERS → P6	.02*	.01	.01	.03
KSSTotal → BHS → P6	.01	.01	-.01	.03
KSSTotal → SERS → G16	.02*	.01	.00	.04
KSSTotal → BHS → G16	.01	.01	-.01	.03
KSSTotal → SERS → N4	.01	.01	-.01	.03
KSSTotal → BHS → N4	.01*	.01	.00	.03
Baseline Model 2				
Direct Effects (path a)				
Discrimination → SERS	-.06***	.01	-.09	-.33
Discrimination → BHS	.29**	.08	.13	.45
Disclosure → SERS	-.02	.01	-.05	.00
Disclosure → BHS	.17*	.07	.02	.32
Direct Effects (path b)				
SERS → QPR	4.46***	1.15	2.16	6.76
BHS → QPR	-.59**	.21	-1.00	-.18

SERS → PANSS+	-1.03	.65	-2.33	.28
BHS → PANSS+	.23*	.12	-.00	.47
SERS → P6	-.47*	.20	-.87	-.06
BHS → P6	.05	.04	-.02	.13
SERS → G16	-.58***	.18	-.94	-.23
BHS → G16	.04	.03	-.02	.10
SERS→ N4	-.23	.16	-.55	.09
BHS → N4	.06*	.03	.01	.12
Direct Effects (path c')				
Discrimination → QPR	.34**	.13	.08	.59
Disclosure → QPR	-.20	.11	-.42	.01
Discrimination → PANSS+	-.02	.07	-.17	.12
Disclosure → PANSS+	-.01	.06	-.13	.12
Discrimination → P6	.01	.02	-.04	.05
Disclosure → P6	.01	.02	-.03	.05
Discrimination → G16	-.02	.02	-.06	.02
Disclosure → G16	.01	.02	-.02	.04
Discrimination → N4	.01	.02	-.03	.04
Disclosure → N4	-.02	.02	-.05	.01
Specific Indirect Effects of Stigma				
Discrimination → SERS→ QPR	-.28*	.10	-.52	-.11
Discrimination → BHS → QPR	-.17*	.07	-.36	-.06
Disclosure → SERS → QPR	-.11*	.06	-.27	-.01
Disclosure → BHS → QPR	-.11*	.06	-.26	-.02
Discrimination → SERS→ PANSS+	.06	.04	-.02	.16
Discrimination → BHS → PANSS+	.06*	.03	.01	.15
Disclosure → SERS → PANSS+	.03	.02	-.00	.10
Disclosure → BHS → PANSS+	.04*	.02	.01	.10
Discrimination → SERS→ P6	.03*	.01	.01	.06
Discrimination → BHS → P6	.01	.01	-.00	.04
Disclosure → SERS → P6	.01*	.01	.00	.04
Disclosure → BHS → P6	.01	.01	-.00	.03
Discrimination → SERS→ G16	.03*	.02	.01	.08
Discrimination → BHS → G16	.01	.01	-.01	.04
Disclosure → SERS → G16	.02*	.01	.01	.04
Disclosure → BHS → G16	.01	.01	-.01	.04
Discrimination → SERS→ N4	.01	.01	-.01	.04
Discrimination → BHS → N4	.02*	.01	.00	.05
Disclosure → SERS → N4	.01	.01	-.00	.03
Disclosure → BHS → N4	.01*	.01	.00	.03

Note: PANSS+ = PANSS Positive sub-scale, P6 = PANSS item for suspiciousness/persecution, N4 = PANSS item for Passive Social Withdrawal, G16 = PANSS item for Active Social Avoidance, QPR = Subjective recovery (at baseline), KSS Total = Total stigma score, Discrimination = KSS discrimination sub-scale, Disclosure = KSS disclosure sub-scale, SERS = Self-esteem, BHS = Hopelessness. *p≤.05, **p≤.01, ***p≤.001.

Table S2

Results from the mediation analyses for 6 month follow-up.

		95% Confidence Interval		
Effect	*B*	*Std. Error*	*Lower*	*Upper*
6 Month Model 1				
Direct Effects (path a)				
KSSTotal → SERS	-.03***	.01	-.05	-.02
KSSTotal → BHS	.17**	.05	.06	.27
Direct Effects (path b)				
SERS → QPR	3.42*	1.65	.11	6.74
BHS→ QPR	-.56	.29	-1.15	.04
SERS→ N4	-.42*	.19	-.79	-.04
BHS→ N4	.02	.03	-.05	.08
Direct Effects (path c')				
KSSTotal → QPR	-.12	.09	-.30	.07
KSSTotal → N4	.01	.01	-.01	.03
Specific Indirect Effects of Stigma				
KSSTotal → SERS → QPR	-.12	.09	-.36	.01
KSSTotal → BHS → QPR	-.09	.06	-.23	.00
KSSTotal → SERS → N4	.01*	.01	.00	.04
KSSTotal → BHS → N4	.00	.01	-.01	.02
6 Month Model 2				
Direct Effects (path a)				
Discrimination → SERS	-.07***	.02	-.11	-.04
Discrimination → BHS	.34**	.11	.13	.56
Disclosure → SERS	.00	.02	-.03	.04
Disclosure → BHS	.02	.10	-.19	.23
Direct Effects (path b)				
SERS → QPR	3.70*	1.69	.30	7.11
BHS → QPR	-.56	.30	-1.16	.04
SERS→ N4	-.47*	.19	-.85	-.09
BHS → N4	.02	.03	-.05	.04
Direct Effects (path c')				
Discrimination → QPR	-.04	.20	-.44	.37
Disclosure → QPR	-.19	.17	-.53	.16
Discrimination → N4	-.01	.02	-.05	.04
Disclosure → N4	.03	.01	-.01	.07
Specific Indirect Effects of Stigma				
Discrimination → SERS→ QPR	-.27	.17	-.73	-.03
Discrimination → BHS → QPR	-.19	.13	-.51	.03
Disclosure → SERS → QPR	.01	.06	-.12	.14
Disclosure → BHS → QPR	-.01	.07	-.17	.12
Discrimination → SERS→ N4	.03*	.01	.01	.07

Discrimination → BHS → N4	.01	.01	-.02	.03
Disclosure → SERS→ N4	-.00	.01	-.01	.02
Disclosure → BHS → N4	.00	.00	-.01	.02

Note: QPR = Subjective recovery (at six month follow-up), KSSTotal = Total stigma score, Discrimination = KSS discrimination sub-scale, Disclosure = KSS disclosure sub-scale, SERS = Self-esteem, BHS = Hopelessness. *p≤.05, **p≤.01, ***p≤.001.