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## Accepted Manuscript

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Simon Bradstreet , Alyson Dodd , Steven Jones

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**Highlights**

- Perceived public stigma was positively associated with internalised stigma.
- Anxious, but not avoidant, attachment was positively associated with internal stigma.
- Insecure attachment did not moderate the internalisation of stigma.
- There is though sufficient evidence to warrant further research.

ACCEPTED MANUSCRIPT

# Internalised stigma in mental health: an investigation of the role of attachment style

Simon Bradstreet <sup>a</sup>, Alyson Dodd <sup>b</sup>, & Steven Jones <sup>c</sup>

<sup>a</sup>Institute of Health and Wellbeing, University of Glasgow, Glasgow, UK

<sup>b</sup>Department of Psychology, Northumbria University, Newcastle, UK

<sup>c</sup>Division of Health Research, Lancaster University, Lancaster, UK

## Corresponding author

Simon Bradstreet

Postal address: Mental Health Research Facility, Institute of Health and Wellbeing, University of Glasgow, Fleming Pavilion, West of Scotland Science Park (Todd Campus), Glasgow, G20 0XA

E-mail addresses: [simon.bradstreet@glasgow.ac.uk](mailto:simon.bradstreet@glasgow.ac.uk)

## Abstract

Internalised stigma is associated with a range of negative outcomes, yet little is known about what determines the internalisation of stigma. In this study we examined the potential role of adult attachment style in the internalisation process in a transdiagnostic sample of adults with experience of recent mental health service use ( $n = 122$ ), using an online survey. Associations between internalised stigma and perceived public stigma were tested. We also examined whether anxious and avoidant (insecure) attachment styles were positively associated with a significant amount of variance in internalised stigma when controlling for other variables, and whether the relationship between perceived public stigma and internalised stigma was moderated by anxious and avoidant attachment. We found that internalised stigma, perceived public stigma and insecure attachment were commonly reported and that internalised stigma was positively associated with perceived public stigma. However, neither anxious or avoidant attachment were associated with a significant amount of variance in internalised stigma and we found no moderating effect on the relationship between perceived public stigma and internalised stigma for insecure attachment. Despite mixed results, the strength of association between anxious attachment and internalised stigma suggests further research, which addresses some limitations of the current study, is warranted.

## Key words

Internalised stigma, Self stigma, Mental illness, Attachment, Adult attachment style

## 1 Introduction

Stigma associated with experiencing mental health problems is generally divided into three domains; social/public, structural and internal/self stigma (Livingston and Boyd, 2010). Internal or self-stigma has been described as the “psychological point of impact of societal stigma on people with mental illness” (Boyd et al., 2014, p17). It can be understood as a process whereby stigmatising and discriminatory attitudes and behaviours that exist in society towards people with mental health issues become internalised by them. This can lead to a range of negative consequences that can hinder recovery (Warner, 2010) including social isolation (Watson et al., 2007), diminished wellbeing (Morgades-Bamba et al., 2017), sense of identity and self-esteem (Livingston and Boyd, 2010; Yanos et al., 2010), as well as a reduction in goal orientation (Corrigan et al., 2009). Evidence also suggests that internal stigma is widespread. In a study across 14 countries, 41.7% of people with a schizophrenia diagnosis and 21.7% of people with a diagnosis of bipolar disorder or depression were moderately or strongly affected (Brohan et al., 2011, 2010a).

Social cognitive models of internalised stigma propose that coexisting underpinning processes may lead to the internalisation of perceived public stigma (Corrigan et al., 2006; Corrigan and Watson, 2002; Ritsher et al., 2003; Watson et al., 2007). While evidence exists that perceived public stigma and internalised stigma are associated (see, for example, Chronister et al., 2013; Kao et al., 2016), social cognitive theorists propose that the internalisation of perceived stigma is not inevitable and is in fact contingent upon a series of steps in a process, including stigma awareness, agreement and self application (Corrigan et al., 2006). In other words, while the perception of wider societal stigma is a necessary pre-condition of internalised stigma, it is not sufficient in and of itself to determine whether or not someone experiencing significant mental health problems will internalise stigma (Watson et al., 2007). However, the reasons why some people appear more able to resist the internalisation of perceived public stigma are not well understood (Hasson-Ohayon et al., 2011; Livingston and Boyd, 2010). It is possible that the presence of positive stigma coping techniques may play a role. For example, social support (Chronister et al., 2013) and retaining a sense of making a valued contribution

to society (Sibitz et al., 2011; Thoits, 2011), may both play some kind of buffering effect against stigma's internalisation.

Given the incidence and impacts of internalised stigma there is some urgency to test new theoretical approaches (Lucksted and Drapalski, 2015), further emphasised by evidence of the limited effectiveness of interventions designed to reduce internalised stigma (Griffiths et al., 2014; Mittal et al., 2012; Wood et al., 2016). One such novel, theoretically-driven approach (which has been proposed elsewhere: Smith, 2013), is to consider the role of social-relational style in stigma processes and experiences.

Relevant to this, the role of attachment style in the internalisation of stigma and its resistance has not been widely researched in the context of adult mental health. Attachment theory is a developmental theory of psychological and interpersonal functioning, initially proposed by John Bowlby and Mary Ainsworth (Bowlby, 2005). The theory suggests that it is a developmental necessity for infants to have a 'safe haven,' for the regulation of distress, and a 'secure base,' for the exploration of wider opportunities and environments. Attachment experiences with primary caregivers in early childhood are believed to lead to the development of an 'attachment style,' whereby internal working models of self in relation to others develop. These influence, amongst other things, expectations and interpretations of social interactions and relationships as children and adults (Bowlby, 1969; Mikulincer and Shaver, 2010).

Attachment theory suggests that a person's security of attachment may determine how they respond to stigma (Mikulincer and Shaver, 2012). Support for this can be drawn from a number of perspectives. For example, in comparison to people with insecure attachment, people with secure attachment styles have greater resources to call on in the face of emotional distress or perceived threat, including more ready access to positive memories to help alleviate distress (Mikulincer et al., 2003). Conversely, people who are less securely attached have an increased tendency to exaggerate appraisals of threats (Mikulincer et al., 2000), difficulties in the suppression of negative thoughts and feelings (Mikulincer et al., 2004) and a greater tendency for rumination (Mikulincer et al., 2003). It is conceivable that

these same predispositions could play some role in determining how people with experience of mental health problems respond to perceived or experienced stigma, which can be understood as a form of social threat and a source of considerable distress.

It has been proposed that attachment style may influence adult responses to stigma (Mikulincer and Shaver, 2012) with evidence from a small number of studies suggesting an association with aspects of stigma, both from within mental health literature (Cheng et al., 2015; Restek-Petrović et al., 2015) and in other marginalised groups (Elizur and Mintzer, 2003; Riggs et al., 2007; Wells and Hansen, 2003; Zakalik and Wei, 2006, Cheng & Mallinckrodt, 2009). Notable is a study of student help seeking which showed that adolescents with a secure attachment style were significantly less likely to self-stigmatise in relation to mental health help seeking than those with insecure attachment (Zhao et al., 2015)

There has also been a shift in stigma research towards better understanding the availability of 'buffers' against the toxic effects of stigma (Campellone et al., 2014; Rüscher et al., 2006; Thoits, 2011). Support for the potential role of attachment in stigma resistance may be gleaned from wider research which suggests attachment style plays a role in recovery and determining coping style (Berry et al., 2014; Gumley et al., 2014). Further, access to social support has been shown to be a positive buffer against stigma (Livingston and Boyd, 2010; Lysaker et al., 2007a), so it is noteworthy that the extent to which people can access this social support is in part contingent upon attachment style (Graves et al., 1998).

Figure 1 demonstrates how social cognitive models of internal stigma focus on the conditions in which stigma exists, individual's responses to those conditions and the consequences of those responses. Internal working models, governing the interpretation and processing of attachment relevant experiences and access to memories of perceived threat, are hypothesised as influencing responses to conditions in which stigma exists and in playing a role in determining its consequences and outcomes.

***INSERT FIGURE 1***

The theory and evidence discussed here led to the following hypotheses:

1. Perceived public stigma will be positively associated with internalised stigma.
2. Anxious attachment style will be positively associated with a significant amount of variance in internalised stigma when controlling for the effects of potentially confounding variables (perceived stigma, self-esteem, mood and work and social function).
3. Avoidant attachment style will be positively associated with a significant amount of variance in internalised stigma when controlling for the effects of potentially confounding variables.
4. The positive relationship between perceived public stigma and internalised stigma will be moderated by anxious attachment style.
5. The positive relationship between perceived public stigma and internalised stigma will be moderated by avoidant attachment style.

## 2 Methods

### 2.1 Participants

A convenience sample approach was employed with participants recruited to the study using a number of approaches. These included recruitment via the social media platform Twitter, web-based recruitment via mental health awareness and membership organisations and recruitment through direct communication with staff of a social care organisation. The decision to recruit a transdiagnostic sample was informed by calls for increased transdiagnostic research on internal stigma (Quinn et al., 2015) and models of transdiagnostic attachment-related vulnerability to mental health problems (Ein-Dor and Doron, 2015, Ein-Dor et al., 2016).

G\*Power software was used to calculate the required sample size (version 3.1: Faul et al. 2009), based on an expectation of a medium effect size ( $f^2 = .15$ ) in a multiple regression model with eight predictor variables ( $\alpha = .05$ ). One hundred and twenty two people ( $n = 122$ ) people who met the following inclusion criteria were recruited to the study:

1. Over 18 years of age;
2. Living in the United Kingdom;
3. With experience of personally using secondary mental health services within the past two years.

Everyone who started the survey went on to complete it and no participants were later removed for not meeting inclusion criteria.

## 2.2 Measures

### 2.2.1 Internalized Stigma of Mental Illness scale - Brief version (ISMI-B)

The Internalized Stigma of Mental Illness scale - Brief version (ISMI-B: Boyd et al., 2014) is a shortened version of the most widely used measure of internalised stigma (ISMI: Brohan et al., 2010b; Ritsher et al., 2003)

ISMI-B items were derived by selecting the two strongest items from each of the five subscales of the original scale. Those subscales are alienation (e.g., “Having a mental illness has spoiled my life”) discrimination experience (e.g., “People ignore me or take me less seriously just because I have a mental illness”), social withdrawal (e.g., “I don’t socialize as much as I used to because my mental illness might make me look or behave ‘weird.’”), stereotype endorsement (e.g., “Mentally ill people tend to be violent”) and stigma resistance (which is reverse coded and a counterbalance to the other negatively valenced subdomains, e.g., “People with mental illness make important contributions to society).

Responses are recorded on a four point Likert type scale of agreement. A nine item version of ISMI-B was used in the current study, which demonstrated good internal consistency in the current study ( $\alpha = 0.77$ ).

### 2.2.2 Stig-9

Stig-9 is a measure of the perception of public stigma, assessing the extent to which people expect negative thoughts, attitudes and behaviours towards people affected by mental health issues (Gierk et al., 2013). Item content was inspired by the well-established Perceived Devaluation and

Discrimination Scale (PDD: Link, 1987) as well as literature defining aspects of stigma which were not adequately covered in the PDD (B. Gierk, personal communication 12th November 2014).

Questions in Stig-9 include: “I think that most people take the opinion of someone who has been treated for a mental illness less seriously.” Responses are provided on a four point Likert type scale of agreement. Stig-9 showed good internal consistency in the current study ( $\alpha = 0.90$ ).

### **2.2.3 Psychosis Attachment Measure**

The Psychosis Attachment Measure (PAM: Berry et al., 2006) is a self-report measure of adult attachment style. The 16-item PAM relates to thoughts and feeling in close inter-personal relationships and was based on existing measures of attachment (Bartholomew and Horowitz, 1991; Brennan et al., 1998). PAM assesses two dimensions of insecure attachment, namely anxious (e.g., “I tend to get upset, anxious or angry if other people are not there when I need them”) and avoidant attachment (e.g., “I prefer not to let other people know my ‘true’ thoughts and feelings”). Questions are answered on a four point Likert type scale of agreement. While PAM was developed for people with experience of psychosis its validation with student populations (Berry et al., 2006) demonstrates its wider utility and in the current study it demonstrated good internal consistency for anxious ( $\alpha = 0.86$ ) and avoidant subscales ( $\alpha = 0.82$ ).

### **2.2.4 Rosenberg Self-esteem Scale**

The Rosenberg Self-esteem Scale (RSES: Rosenberg, 1989, 1979) is a commonly used ten item self report measure of self-esteem, with an example question being: “I feel that I have a number of good qualities.” RSES is scored on a four point Likert type scale of agreement. The scale has been widely demonstrated to be valid and in the current study showed internal consistency ( $\alpha = 0.88$ ).

### **2.2.5 Internal State Scale**

The Internal State Scale (ISS: Bauer et al., 1991) is a self-report measure of depressed and activated mood. In its full version it consists of sixteen items measuring four subscales of activation, wellbeing, perceived conflict and depression, which may be rated separately. The four items relating to perceived conflict were omitted for this study leaving ten items in the scale. Internal consistency for the three subscales used in the current study was good (activation,  $\alpha = 0.87$ , wellbeing,  $\alpha = 0.80$ , depression,  $\alpha$

= 0.81). Responses are provided on a Likert type scale ranging from zero (not at all rarely) rising in increments of ten to one hundred (very much so/much of the time).

### **2.2.6 Work and Social Adjustment Scale**

The Work and Social Adjustment Scale (WSAS: Marks, 1986) is a widely used measure of functional impairment resulting from a specified problem. It demonstrated good internal consistency in the current study ( $\alpha = 0.88$ ). The five items in WSAS are measured on an eight point Likert scale of severity assessing impairment in work, home life, leisure and relationships.

### **2.2.7 Sociodemographic and psychiatric variables**

In addition to the variables specified above, a number of sociodemographic and psychiatric variables were also included in the survey. These included age and gender, employment status, use of psychiatric services and time since initial diagnosis.

## **2.3 Procedures**

This study employed a cross-sectional survey design. All participants gave informed consent before completing an online survey developed using BOS software (University of Bristol, 2017). Online surveys have been shown to be a reliable alternative to paper based approaches (Rübsamen et al., 2017).

The study was reviewed by the Faculty of Health and Medicine Research Ethics Committee, and approved by the University Research Ethics Committee at Lancaster University.

## **2.4 Statistical analyses**

Data were initially reviewed for reliability and completeness. No unusual patterns of data, which might have suggested a lack of reliability, were observed and levels of missing data were found to be very low.

Correlations between the main variables were assessed using Pearson's product-moment correlation coefficient (there were no major deviations from the assumption of normality). This allowed for the testing of the significance of relationships between predictor, moderator, potentially confounding and outcome variables. Predictor and potentially confounding variables that did not significantly correlate with internal stigma were excluded from later analytic models.

Regression analyses were used to test the direct and indirect relationships between the primary variables of interest where a significant correlation had been identified. A review of the normal probability plot of the regression standardised residuals suggested no major deviations from the assumption of normality. Scatterplots, Mahalanobis and Cooks distances were reviewed to assess the influence of outliers on statistical models with no cases were found to be out with critical values. Hierarchical multiple regression was used to assess whether any identified effects for anxious and avoidant attachment style remained when controlling for the effects of other independent and potentially confounding variables. Potential confounds were entered into a model as an initial block followed by a second block which included both attachment variables. This allowed for an assessment of whether anxious and avoidant attachment were able to explain some of the remaining variance in internalised stigma when controlling for the effects of other variables.

The primary analyses of moderation were conducted using multiple regression techniques described by Hayes (2013) and the associated PROCESS macro plug-in for SPSS (version 21). A moderator variable ( $M$ ) can be understood as controlling the strength of the relationship between independent ( $X$ ) and dependent ( $Y$ ) variables.  $M$  can also be understood as controlling the circumstances in which  $X$  and  $Y$  are related. In other words, the effect of  $X$  on  $Y$  varies as a function of  $M$ . Where the null hypothesis is rejected it implies a reliable moderating effect of  $M$  on the relationship between  $X$  and  $Y$ .

**INSERT FIGURE 2**

### **3 Results**

The majority of participants were female (80.5%) with ages ranging from 18 to 66 ( $M = 41$ ). Overall participants were equally split between people who were employed in some capacity ( $N = 62$ , 50.8%) and those who were not employed ( $N = 60$ , 49.2%). On average each participant noted two current psychiatric diagnoses ( $M = 2.23$ ,  $SD = 1.20$ ) with the most commonly reported being depression ( $N = 77$ , 27.7%) and anxiety ( $N = 65$ , 23.4%) (Table 1). 58.2% had received a psychiatric diagnosis more than ten years previously, while 18.9% had received a diagnosis less than five years ago and 20.5% between five and ten years previously.

A summary of scores for included measures is provided in Table 2. Scores by the four category grouping proposed by Lysaker and colleagues (2007b) suggest that 43% of the sample were moderately or severely affected by internalised stigma. For the Stig-9 measure of perceived public stigma the mean score was notably higher than that found during the tool's psychometric testing (Gierk et al., 2013). Anxious and avoidant attachment style mean scores were higher than those recorded elsewhere for both analogue (Berry et al., 2007) and clinical samples (Arbuckle et al., 2012), suggesting relatively high levels of insecure attachment in the current sample.

#### **INSERT TABLE 2**

After Holm-Bonferroni correction for multiple comparisons (Holm, 1979) internalised stigma (ISMI-B) was moderately positively associated with perceived public stigma (Stig-9). Additionally internalised stigma was moderately positively associated with anxious attachment style (PAM Anxious) but there was no significant association with avoidant attachment style (PAM Avoidant). Correlations between main variables are summarised in Table 3.

#### **INSERT TABLE 3**

Hierarchical multiple regression was used to test whether anxious and avoidant attachment styles were positively associated with a significant amount of variance in internalised stigma, when controlling for the effects of other independent variables. Perceived public stigma, self-esteem, wellbeing, depression and work and social function were entered into a model at step one. This model explained 29.4% of the variance in internalised stigma and was statistically significant,  $F(5, 116) = 9.65$   $p < 0.001$ . At step one the only variable to make a statistically significant individual contribution to the model was perceived public stigma,  $\beta = 0.21$ ,  $p < 0.05$ . After entry of anxious and avoidant attachment at step two the total variance explained by the model as a whole was 30.6%. Anxious attachment explained an additional 1.3% of the variance in internalised stigma after controlling for perceived public stigma, self-esteem, wellbeing, depression and work and social function. This was not a statistically significant contribution,  $R^2$  change = 0.01,  $F$  change (2, 114) = 2.05,  $p > 0.05$ . The model as a whole was, however, statistically significant in step two,  $F(7, 114) = 7.19$   $p < 0.001$ . Again the only variable to make a statistically significant contribution to the final model was

perceived public stigma,  $\beta = 0.19$ ,  $p < 0.05$  (Table 4). Hypotheses two and three were therefore not supported.

**INSERT TABLE 4**

Despite the rejection of hypotheses two and three it was appropriate to continue testing for potential moderating effects for insecure attachment (hypotheses four and five), due to the different analytic technique applied between these stages. Moderation analysis also allows for the testing of combined effects between the predictor (perceived public stigma) and proposed moderator variables (anxious and avoidant attachment). This differs from the earlier regression analysis where the model constrained the effect of perceived public stigma to be unconditional on other variables (including anxious and avoidant attachment).

Figure 3 demonstrates a positive association between the combined effect of anxious attachment and perceived public stigma on internalised stigma at all three levels of anxious attachment specified<sup>1</sup>. The slopes suggest some variation in the strengths of association between perceived public stigma and internalised stigma at different levels of anxious attachment, which suggests some moderating effect. The contribution of each variable in the model (including the combined effect of anxious attachment and perceived public stigma) is summarised in Table 5 where it can be seen that the only variable to make a statistically significant contribution to the model was perceived public stigma. However, the overall combined effect of anxious attachment style and perceived public stigma was not statistically significant when added to the model,  $R^2$  change = 0.00,  $F$  change (1, 118) = 0.46,  $p > .05$ . This means that the combined effect of perceived public stigma and anxious attachment failed to make a statistically significant contribution to the prediction of internalised stigma and hypothesis four was therefore not supported.

**INSERT FIGURE 3**

**INSERT TABLE 5**

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<sup>1</sup> Three different levels of anxious attachment style are arbitrarily selected, these being the mean anxious attachment score and one standard deviation above and below the mean.

The simple slopes plot (Figure 4) suggested no significant interaction effect between avoidant attachment style and perceived public stigma on internalised stigma. As with anxious attachment, the model as a whole was statistically significant,  $R^2 = 0.13$ ,  $F(3, 118) = 7.28$ ,  $p < 0.05$ . This suggests 13% of the variance in internalised stigma was contingent upon avoidant attachment, perceived public stigma and their combined effect. The contribution of each variable in the model (including the combined effect of avoidant attachment and perceived public stigma) is summarised in Table 6 where it can be seen that none of the included variables made a statistically significant unique contribution to internalised stigma. As with anxious attachment, the overall combined effect of avoidant attachment style and perceived public stigma was not statistically significant when added to the model,  $R^2$  change = 0.00,  $F$  change (1, 118) = 0.01,  $p > .05$ . This means that there was no evidence of a statistically significant moderating effect for avoidant attachment and hypothesis five was therefore not supported.

**INSERT FIGURE 4**

**INSERT TABLE 6**

## **4 Discussion**

To our knowledge this was the first adult mental health research study to test whether attachment style played a moderating role in the relationship between public and internalised stigma. Initial analysis of the data confirmed the first hypothesis that perceived public stigma would be positively associated with internalised stigma. It is, however, noteworthy that the correlation between internalised stigma and perceived public stigma barely reached a moderate strength of association and that three other included variables were more strongly associated with internalised stigma. Other research has reported relatively weak strengths of association between perceived public stigma and internalised stigma (Chronister et al., 2013; Krajewski et al., 2013) and these findings might suggest that the hypothesised dependency between the perception of stigma and its internalisation may not be as clear cut as one might assume. An alternative interpretation could be that they simply confirm Corrigan and colleagues' position that while perceived public stigma is a necessary precondition for internalised stigma it does not automatically lead to it, and that other factors play a role in determining internalisation (Corrigan et al., 2009, 2006). However, support for a unique contribution of perceived

public stigma to internalised stigma in the current study can be drawn from regression analyses to test hypotheses two and three. These showed that at both steps in a model where internalised stigma was the outcome, perceived public stigma was the only variable to make a statistically significant contribution.

Hypotheses two and three were primarily concerned with testing whether anxious and avoidant attachment styles were positively associated with a significant amount of variance in internalised stigma when controlling for the effects of other potentially confounding variables. Neither insecure attachment style significantly contributed to the variance in the regression model. This means that hypotheses two and three were not supported by the data. Similarly, no overall effects were observed when testing for potentially moderating effects for anxious and avoidant attachment on the relationship between perceived public stigma and internalised stigma (hypotheses four and five).

Considering wider literature, the finding that avoidant attachment appears to play no significant part in influencing the relationship between perceived public stigma and internalised stigma is perhaps less surprising than the finding that anxious attachment appears to be similarly redundant. In general, studies tend to suggest that anxious attachment plays a more prominent role in influencing stigma relevant variables than avoidant attachment (Riggs et al., 2007; Zakalik and Wei, 2006). However, results from correlation analysis in the current study do provide support for a differential response to stigma based on insecure attachment style.

While both anxious and avoidant attachment were significantly positively associated with the perception of public stigma, only anxious attachment was associated with internalised stigma (after correction for multiple comparisons). This suggests that while people with avoidant and anxious attachment styles are similarly likely to view wider society as stigmatising, it is people with an avoidant attachment style who are be more able to reject, as opposed to internalise, that stigma. Some evidence for an alternate response to stigma can also be observed in the moderation models.

Specifically, a statistically significant unique contribution for perceived public stigma on internalised stigma in the anxious attachment model was not observed in the avoidant model.

Differences between effects for anxious and avoidant attachment styles on stigma might be explained by a number of elements which differentiate these insecure attachment styles. These include a propensity for people with avoidant attachment styles towards self-reliance, holding more negative views of others (Bartholomew and Horowitz, 1991; Riggs et al., 2007) and reduced recall of negative life events (Fraleay and Brumbaugh, 2007). People with anxious attachment style on the other hand have characteristics which may leave them more prone to the internalisation of stigma. These include an excessive concern with the views of others, fear of rejection, being prone to rumination (Mikulincer et al., 2003; Schiffrin, 2014) and having increased recall of negative events (Mikulincer and Orbach, 1995; Pereg and Mikulincer, 2004).

It is also possible that other factors influence the internalisation of stigma for people with insecure attachment styles. For example, people with insecure attachment styles are more likely to show stigmatising tendencies towards other people (Gencoglu et al., 2016) and to seek social distance from people affected by mental health problems (Zhao et al., 2015), possibly as a result of having less access to positive social relationships than people with secure attachment (Gencoglu et al., 2016). Such stigmatising tendencies could theoretically lead to the self-application of stigma in the absence of perceived social stigma for people with insecure attachment. To test this possibility future research might consider the inclusion of a measure of stigmatising attitudes towards others.

Future research might also consider alternative analytic models of stigma's internalisation. For example, a moderated mediation model could allow for the testing of the internalisation of perceived public stigma mediated by known coping strategies (e.g. social support), with those mediators in turn potentially moderated by insecure attachment.

Finally, it is important to keep in mind that initial correlational analysis did show that both insecure attachment styles were associated with internalised stigma. The strength of relationship between anxious attachment and internalised stigma in particular was similar to other widely researched variables, including self-esteem and depression. This in itself suggests that attachment style is worthy

of further consideration in future research which addresses some or all of the limitations of the current study.

#### **4.1 Limitations**

The present findings should be interpreted in light of a number of limitations. The internalisation of stigma is a process which takes place over time but the cross sectional design of this study means that views and experiences of participants were captured at one time point. This makes it impossible to draw causal inferences about the internalisation of stigma from the findings. A longitudinal design would allow for a fuller assessment of the interaction between perceived public stigma and attachment on the internalisation of stigma over time. The convenience sampling approach adopted in the current study also means that the sample is unrepresentative of the wider population of interest. Indications of bias include the sociodemographic characteristics of the sample. Notably, 80% of participants were female and half were employed in some capacity, which is considerably higher than employment rates noted elsewhere for people in receipt of secondary mental health services (Health and Social Care Information Centre, 2015). Additionally, it was not possible to test the possible confounding effects of a number of other sociodemographic variables in the current study, including ethnicity and educational attainment.

Researchers have observed how difficult it can be to identify moderator effects in non-experimentally designed research (McClelland and Judd, 1993), particularly observational studies with continuous variables (Shieh, 2009). While the current sample of 122 was deemed sufficient to demonstrate a medium effect size using regression-based moderation techniques described by Andrew Hayes and others (Hayes, 2013b; Hayes and Rockwood, 2016) a more conservative approach to moderation analysis would have suggested a considerably larger sample size (Baron and Kenny, 1986). It is therefore possible that one explanation for the failure to demonstrate a statistically significant interaction effect in the current study was that it was not sufficiently powered to identify such an effect.

## 4.2 Conclusion

A novel study of the internalisation of perceived public stigma has been completed. Levels of reported stigma were high, as were levels of insecure attachment. As predicted, perceived public stigma and internalised stigma were significantly positively correlated. Anxious, but not avoidant, attachment was positively associated with internalised stigma. Notably, anxious attachment was associated with internalised stigma at a level commonly seen for other widely researched covariates. However, neither anxious nor avoidant attachment played a role in determining the internalisation of stigma, above and beyond the influence of other included variables. There was also no moderating effect on the internalisation of perceived public stigma observed for either insecure attachment style. Limitations may have contributed to this failure to find all hypothesised effects and there is sufficient evidence for the role of attachment style in internalised stigma to recommend further research.

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## Conflicts of interest

None declared

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## TABLES

*Table 1 Psychiatric diagnosis*

| Diagnosis                                | <i>N</i> | %     | % of cases |
|--|----------|-------|------------|
| Depression                               | 77       | 27.7  | 63.1       |
| Anxiety                                  | 65       | 23.4  | 53.3       |
| Personality disorder                     | 34       | 12.2  | 27.9       |
| Bipolar disorder                         | 33       | 11.9  | 27.0       |
| Post traumatic stress disorder           | 19       | 6.8   | 15.6       |
| Eating disorder                          | 12       | 4.3   | 9.8        |
| Obsessive compulsive disorder            | 10       | 3.6   | 8.2        |
| Schizophrenia & schizoaffective disorder | 8        | 1.8   | 4.1        |
| Postnatal depression                     | 2        | 0.7   | 1.6        |
| Not sure                                 | 4        | 1.4   | 3.3        |
| Other                                    | 14       | 6.1   | 13.9       |
| Total                                    | 278      | 100.0 | 227.9      |

*Table 2 Summary mean scores for main variables*

| Measure                           | <i>M</i> | <i>SD</i> | Min  | Max    | Likert scale |
|-----------------------------------|----------|-----------|------|--------|--------------|
| ISMI-B (Internalised stigma)      | 2.20     | 0.49      | 1.00 | 3.33   | 1-4          |
| Stig-9 (Perceived public stigma)  | 17.39    | 5.30      | 0    | 27.00  | 0-3          |
| PAM Anxious attachment            | 1.72     | 0.75      | 0    | 3.00   | 0-3          |
| PAM Avoidant attachment           | 1.95     | 0.62      | 0.38 | 3.00   | 0-3          |
| RSES (Self-esteem)                | 11.85    | 6.15      | 1.00 | 28.00  | 0-3          |
| ISS Activation                    | 136.80   | 119.86    | 0    | 450.00 | 0-100        |
| ISS Wellbeing                     | 111.89   | 70.09     | 0    | 300.00 | 0-100        |
| ISS Depression                    | 80.81    | 56.77     | 0    | 200.00 | 0-100        |
| WSAS (Work and social adjustment) | 23.01    | 9.55      | 0    | 40.00  | 0-8          |

**Table 3 Correlations between measures**

| Measure                           | ISMI-B            | Stig-9             | PAM<br>Anxious | PAM<br>Avoidant    | RSES    | ISS<br>Activation | ISS<br>Wellbeing | ISS<br>Depression | WSAS  | Age |
|-----------------------------------|-------------------|--------------------|----------------|--------------------|---------|-------------------|------------------|-------------------|-------|-----|
| ISMI-B (Internalised stigma)      | -                 |                    |                |                    |         |                   |                  |                   |       |     |
| Stig-9 (Perceived public stigma)  | 0.36**            | -                  |                |                    |         |                   |                  |                   |       |     |
| PAM Anxious attachment            | 0.34**            | 0.31**             | -              |                    |         |                   |                  |                   |       |     |
| PAM Avoidant attachment           | 0.19*             | 0.35**             | 0.23**         | -                  |         |                   |                  |                   |       |     |
| RSES (Self-esteem)                | -0.36**           | -0.30**            | -0.45**        | -0.31**            | -       |                   |                  |                   |       |     |
| ISS Activation                    | 0.18 <sup>†</sup> | 0.21 <sup>†</sup>  | 0.25**         | 0.15               | -0.19** | -                 |                  |                   |       |     |
| ISS Wellbeing                     | -0.38**           | -0.19 <sup>†</sup> | -0.29**        | -0.19 <sup>†</sup> | 0.45**  | 0.19 <sup>†</sup> | -                |                   |       |     |
| ISS Depression                    | 0.43**            | 0.28**             | 0.32**         | 0.18               | -0.52** | 0.05              | -0.65**          | -                 |       |     |
| WSAS (Work and social adjustment) | 0.41**            | 0.33**             | 0.32**         | 0.26**             | -0.54** | 0.06              | -0.48**          | 0.44**            | -     |     |
| Age                               | -0.12             | 0.04               | -0.16          | -0.07              | 0.29**  | -0.04             | 0.23**           | -0.06             | -0.14 | -   |

\* $p < 0.05$ \*\* Retains significance after  $p$  adjusted using Holm-Bonferroni correction (Holm, 1979)

**Table 4 Summary of hierarchical regression analysis for variables effect on internalised stigma (N = 122)**

| Predictor variable                | Step 1   |             |         | Step 2   |             |         |
|-----------------------------------|----------|-------------|---------|----------|-------------|---------|
|                                   | <i>B</i> | <i>SE B</i> | $\beta$ | <i>B</i> | <i>SE B</i> | $\beta$ |
| Stig-9 (Perceived public stigma)  | 0.02     | 0.01        | 0.21*   | 0.02     | 0.01        | 0.19*   |
| RSES (Self-esteem)                | -0.00    | 0.01        | -0.04   | 0.00     | 0.01        | -0.00   |
| ISS Wellbeing                     | -0.00    | 0.00        | -0.10   | -0.00    | 0.00        | -0.10   |
| ISS Depression                    | 0.00     | 0.00        | 0.20    | 0.00     | 0.00        | 0.19    |
| WSAS (Work and social adjustment) | 0.01     | 0.01        | 0.19    | 0.01     | 0.01        | 0.18    |
| PAM Anxious attachment            |          |             |         | 0.09     | 0.06        | 0.13    |
| PAM Avoidant attachment           |          |             |         | -0.01    | 0.07        | -0.01   |

$R^2 = 0.29$  for Step 1;  $R^2$  change = 0.01 for Step 2 ( $p > 0.05$ )  
\* = <0.05

**Table 5 Internalised stigma predicted from perceived public stigma and anxious attachment**

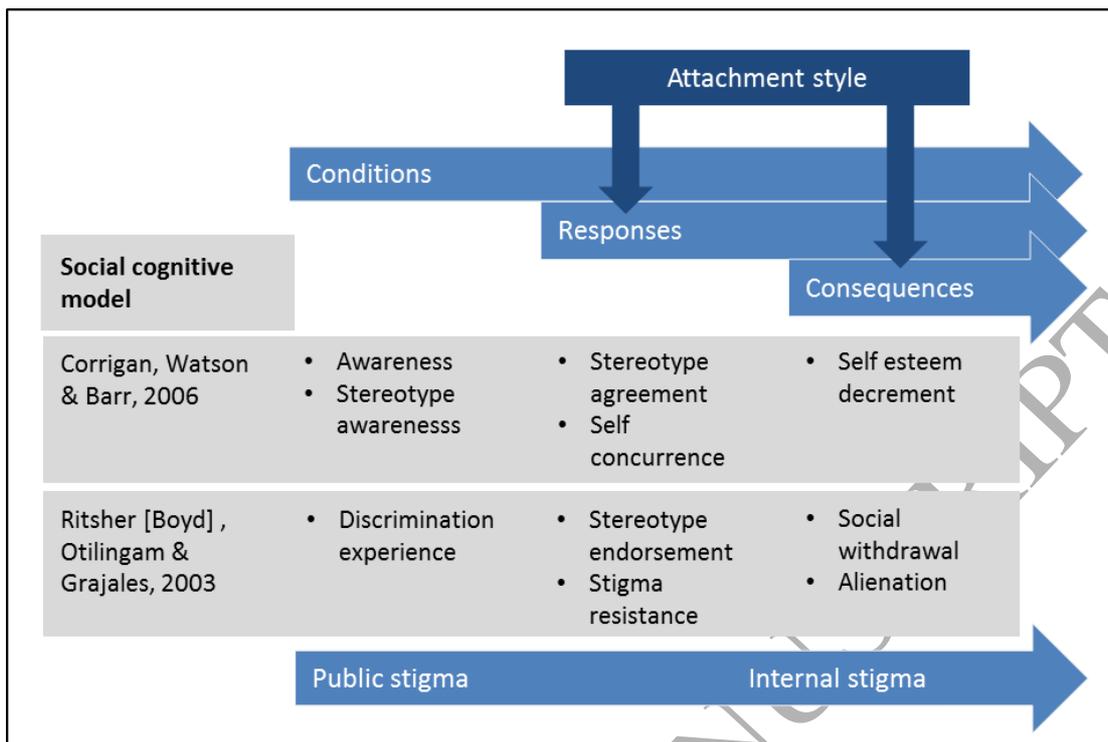
| Predictor variable                           | <i>B</i> | <i>p</i> | 95% CI |      |
|--|----------|----------|--------|------|
| Anxious attachment                           | 0.30     | 0.14     | -0.10  | 0.71 |
| Perceived public stigma*                     | 0.04     | 0.04     | 0.00   | 0.07 |
| Perceived public stigma X Anxious attachment | -0.01    | 0.50     | -0.03  | 0.02 |

\* = &lt;0.05

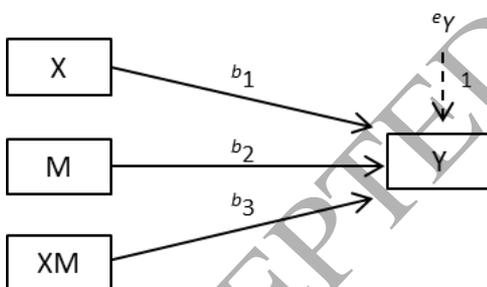
**Table 6 Internalised stigma predicted from perceived public stigma and avoidant attachment**

| Predictor variable                            | <i>B</i> | <i>p</i> | 95% CI |      |
|---|----------|----------|--------|------|
| Avoidant attachment                           | 0.04     | 0.83     | -0.33  | 0.41 |
| Perceived public stigma                       | 0.03     | 0.13     | 0.01   | 0.07 |
| Perceived public stigma X Avoidant attachment | 0.00     | 0.94     | -0.02  | 0.02 |

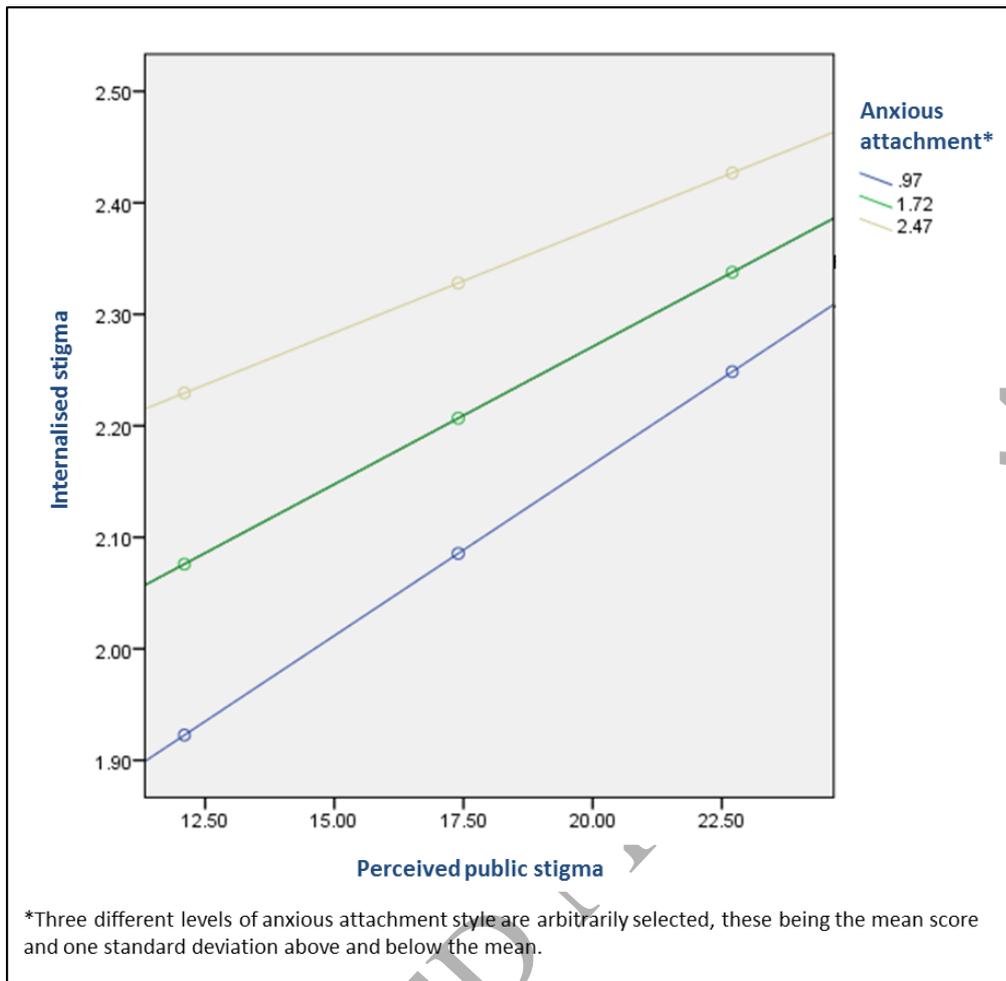
**Figure 1** An attachment informed model of the internalisation of stigma



**Figure 2** A moderation model depicted as a statistical diagram



**Figure 3** The combined effect of anxious attachment and perceived public stigma on internalised stigma



**Figure 4** The combined effect of avoidant attachment and perceived public stigma on internalised stigma

