



## Biogenetic models of psychopathology, implicit guilt, and mental illness stigma

Nicolas Rüsçh<sup>a,b,\*</sup>, Andrew R. Todd<sup>c</sup>, Galen V. Bodenhausen<sup>c</sup>, Patrick W. Corrigan<sup>a</sup>

<sup>a</sup> *Illinois Institute of Technology, Chicago, Illinois, United States*

<sup>b</sup> *Department of Psychiatry and Psychotherapy, University of Freiburg, Germany*

<sup>c</sup> *Department of Psychology, Northwestern University, Evanston, Illinois, United States*

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### ABSTRACT

Whereas some research suggests that acknowledgment of the role of biogenetic factors in mental illness could reduce mental illness stigma by diminishing perceived responsibility, other research has cautioned that emphasizing biogenetic aspects of mental illness could produce the impression that mental illness is a stable, intrinsic aspect of a person (“genetic essentialism”), increasing the desire for social distance. We assessed genetic and neurobiological causal attributions about mental illness among 85 people with serious mental illness and 50 members of the public. The perceived responsibility of persons with mental illness for their condition, as well as fear and social distance, was assessed by self-report. Automatic associations between Mental Illness and Guilt and between Self and Guilt were measured by the Brief Implicit Association Test. Among the general public, endorsement of biogenetic models was associated with not only less perceived responsibility, but also greater social distance. Among people with mental illness, endorsement of genetic models had only negative correlates: greater explicit fear and stronger implicit self-guilt associations. Genetic models may have unexpected negative consequences for implicit self-concept and explicit attitudes of people with serious mental illness. An exclusive focus on genetic models may therefore be problematic for clinical practice and anti-stigma initiatives.

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### 1. Introduction

Extensive research on the etiology of psychiatric disorders has vastly expanded our understanding of the role played by genetic and neurobiological factors in mental illnesses (Kendler and Prescott, 2006). Mental illness stigma remains a major burden for people with mental illnesses (Corrigan, 2005; Thornicroft, 2006; Hinshaw, 2007), but there is widespread optimism that public understanding of the biogenetic aspects of psychopathology will alleviate this stigma by reducing the tendency to hold persons experiencing disorders responsible for their illness. For example, a leading mental health advocacy group, the National Alliance on Mental Illness ([www.nami.org](http://www.nami.org)), promotes a biogenetic model of mental illness in order to reduce stigma and blame against individuals with mental illness. Mental health care providers and people with mental illness argue that use of functional brain imaging in the diagnosis of mental illness will diminish stigma and self-blame among people with mental illness (Illes et al., 2008). Genetic counseling for people with mental illness is also expected to decrease stigma (Hill and Sahhar, 2006; Austin and Honer, 2007). Thus, there is a common expectation that adoption of a biogenetic view of psychiatric disorders will produce benefits in social attitudes about mental illness.

Optimism about the stigma-reducing effects of biogenetic views of mental illness is not universal. Indeed, prominent theories lead to diverging predictions (Phelan, 2005; Spriggs et al., 2008). On the one hand, attribution theory (Weiner et al., 1988) generates the optimistic expectations about the influence of biogenetic models on stigma just described. According to attribution theory, anger and blame are mitigated when personal responsibility is perceived to be low. Because a genetic model implies that persons with mental illness are not responsible for their condition, endorsement of this model should diminish the blame attached to them (Phelan et al., 2002; Corrigan et al., 2003). On the other hand, “genetic essentialism” implies that genes are the unchangeable basis of a person’s identity (Nelkin and Lindee, 1995), and such essentialism is associated with increased prejudice (Keller, 2005). Supporting this view, a stronger endorsement of biogenetic causes for mental illness has been associated with increased social distance (Lauber et al., 2004; Angermeyer and Matschinger, 2005), with perceptions of mental illness as more persistent, serious (Phelan, 2005), and dangerous (Jorm and Griffiths, 2008), and with more pessimistic views about treatment outcomes (Phelan et al., 2006; Lam and Salkovskis, 2007). However, because most of this research has been conducted with members of the general public, very little is known about the correlates of the endorsement of a biogenetic perspective among people experiencing mental illness.

The question of whether biogenetic models of mental illness will be associated with reduction or enhancement of stigma is further complicated by recent evidence suggesting that important components

\* Corresponding author. Department of Psychiatry and Psychotherapy, University of Freiburg, Hauptstr. 5, 79104 Freiburg, Germany. Tel.: +49 761 2706501; fax: +49 761 2706619.

E-mail address: [nicolas.ruesch@uniklinik-freiburg.de](mailto:nicolas.ruesch@uniklinik-freiburg.de) (N. Rüsçh).

of stigma may operate in an implicit, automatic manner that is not necessarily directly aligned with explicit beliefs (Teachman et al., 2006). Attitude researchers have become increasingly interested in automatic aspects of cognition and have documented many dissociations between rapid, automatic reactions and more thoughtful, deliberative ones (Gawronski and Bodenhausen, 2006). A member of the public may, for example, automatically associate 'mental illness' with 'guilt' and thus implicitly harbor a guilt-related negative stereotype about mental illness. Persons with mental illness, on the other hand, might develop implicit-automatic guilt-related self-associations, and thus implicit self-blame, which may operate outside their awareness or control. Automatic and deliberative aspects of stigmatizing attitudes can predict different kinds of cognitive, affective, and behavioral tendencies (Dovidio et al., 2002; Greenwald et al., 2009) and may respond differently to attempts to reduce stigma (Stier and Hinshaw, 2007; Lincoln et al., 2008). In the present research, we thus examined not only explicit, deliberate aspects of mental illness stigma but also its more automatic, implicit components.

Within a biogenetic explanatory framework for mental illness, genetic and neurobiological models are related (Kendler and Prescott, 2006) but have different foci. Genetic models stress heritability and may be seen as implying immutability, whereas neurobiological models focus on the body (specifically, the brain) as the locus of the disorder, analogous to physical illnesses. We therefore investigated the link between endorsing genetic or neurobiological models of mental illness on the one hand and two key types of reactions to people with mental illness on the other hand: decreased responsibility and blame versus increased fear and avoidance. We examined both explicit and implicit manifestations of these reactions, in both a sample of the general public as well as people experiencing a mental illness.

## 2. Methods

### 2.1. Participants

Eighty-five persons with serious mental illness were recruited from outpatient mental health centers in the Chicago area in the context of a larger study on mental illness stigma (Rüsch et al., 2009a,b,c, 2010a,b). The project was advertised as a study on attitudes toward people with mental illness, using flyers in mental health service centers. An eighth grade reading level as assessed by the Wide Range Achievement Test (Wilkinson and Robertson, 2006) was required. Fifty members of the general public – matched for age, gender, and ethnicity, and screened for any life-time or current axis I disorder – were recruited, using flyers in the community and on a university campus. Physical disabilities were an exclusion criterion to avoid confounds in the implicit measures (described below) that used physical disability as a comparison category for mental illness. After a detailed description of the study procedures, all participants gave written informed consent. The study was approved by the institutional review boards of the Illinois Institute of Technology and the collaborating organizations.

Participants with mental illness were, on average, about 45 years old, and about two-thirds were male. More than half were African-American, about a third Caucasian, while a few reported Hispanic, mixed, or other ethnicities (Table 1). Axis I diagnoses were made using the Mini-International Neuropsychiatric Interview (Sheehan et al., 1998) based on Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV) criteria. Twenty-three (27%) participants had schizophrenia, 22 (26%) schizoaffective disorder, 30 (35%) bipolar I or II disorder, and 10 participants (12%) had recurrent unipolar major depressive disorder. In addition, in the entire sample 33 subjects (39%) had comorbid current alcohol- or substance-related abuse or dependence. On average, participants with mental illness were first diagnosed about 15 years ago ( $M = 14.9$ ,  $S.D. = 10.2$ ) and had been hospitalized in psychiatric institutions about nine times ( $M = 9.2$ ,  $S.D. = 13.1$ ).

### 2.2. Self-report measures

Following an introductory question ("What do you think about the causes of mental illness?"), participants responded to two items measuring endorsement of genetic ("Mental illness is caused by genetic and hereditary factors") and neurobiological ("Mental illness is a brain disorder, caused by biological changes in brain metabolism") causes of mental illness. Both items were scaled from 1 to 7, with higher scores indicating stronger agreement.

The belief that people with mental illness are responsible for their condition as well as the fear of people with mental illness was assessed using the Attribution Questionnaire (Corrigan et al., 2003). Following a short vignette about Harry, a man with schizophrenia, participants responded to three items indicating perceived

**Table 1**

Demographic variables and endorsement of genetic and neurobiological models of mental illness among 85 persons with mental illness and 50 members of the general public.

	Persons with mental illness	Members of the general public	<i>t</i> or $\chi^2$ <sup>a</sup>	<i>P</i>
Age (years; <i>M</i> , <i>S.D.</i> )	44.8 (9.7)	45.0 (8.1)	0.11	0.91
Gender (% female)	32%	30%	0.05	0.83
Ethnicity (% African-American/Caucasian/Hispanic/other or mixed)	58/34/5/4	60/32/6/2	0.42	0.94
Endorsement of genetic model (scale-midpoint: 4, range 1–7)	4.7 (1.6)	4.7 (1.6)	–0.14	0.89
Endorsement of neurobiological model (scale-midpoint: 4, range 1–7)	5.6 (1.4)	5.4 (1.3)	–0.60	0.55
Fear <sup>b</sup> (scale-midpoint: 15, range 3–27)	7.4 (4.9)	8.4 (5.6)	–1.11	0.27
Responsibility <sup>b</sup> (scale-midpoint: 15, range 3–27)	11.2 (4.9)	9.4 (3.9)	2.12	0.04
Social Distance <sup>c</sup> (scale-midpoint: 3.5, range 1–6)	3.7 (1.2)	3.9 (1.2)	–0.81	0.42
Mental Illness–Guilty BIAT, <i>D</i> -score <sup>d</sup>	0.15 (0.44)	0.19 (0.46)	–0.45	0.65
Me–Guilty BIAT, <i>D</i> -score <sup>d</sup>	0.25 (0.49)	–	–	–

<sup>a</sup> Comparisons are  $\chi^2$  tests for proportions, or *t*-tests for means across each row (two-sided).

<sup>b</sup> Attribution Questionnaire (Corrigan et al., 2003), higher scores indicating more fear or perceived responsibility.

<sup>c</sup> Social Distance Scale (Link et al., 1999).

<sup>d</sup> Brief Implicit Association Test. Higher scores indicate stronger implicit Mental Illness–Guilty or Me–Guilty associations, respectively.

responsibility (e.g., 'I would think that it was Harry's own fault that he is in the present condition') and to three fear items (e.g., 'Harry would terrify me'). Separately for fear and responsibility, the three respective items (scored from 1 to 9) were summed to yield two subscale scores, with higher scores indicating greater perceived responsibility and fear, respectively.

The desire to avoid people with mental illness was assessed by the Social Distance Scale (Link et al., 1999). Following a short vignette about John, a man with psychotic symptoms, respondents rated five items (e.g., 'How willing would you be to make friends with John?'), scored from 1 to 6, with higher mean scores indicating stronger desire for social distance.

### 2.3. Implicit measures

We used a computer-based response-latency measure, the Brief Implicit Association Test (BIAT; Sriram and Greenwald, 2009), to assess automatic aspects of stigma: this shorter version of the full-length IAT (Greenwald et al., 1998) was selected because we expected more participants to complete the task. It was recently used to measure implicit attitudes toward psychiatric medication among the same participants (Rüsch et al., 2009d). During the BIATs, participants classified a series of words into superordinate categories. In the BIAT measuring the association between mental illness and guilt, the target categories were "Mental Illness" versus "Physical Disability," and the attribute categories were "Guilty" versus "Innocent." For the BIAT measuring implicit guilt-prone self-concepts (used in the diagnosed group only), the target categories were "Me" versus "Not Me", and the attribute categories were again "Guilty" versus "Innocent."

During the BIAT, a series of words was presented at the center of the screen that either did or did not belong to one of two categories represented on the top of the screen (e.g., Me/Guilty). Participants' task was to press a right-hand response key if the word belonged to either of the two categories and a left-hand response key if it belonged to neither category. Thus, for example, if the categories were Me and Guilty, participants should respond with a right-key press to the word "myself" or "blameworthy," but they should respond with a left-key press to the word "them" or "innocent." The logic of the task is that verbal stimuli are classified more quickly when the target and attribute category pairings (e.g., Me/Guilty) match respondents' automatic associations with the target categories versus during the other block when the target and attribute category pairings do not belong together in the respondents' eyes (e.g., Me/Innocent).

In the full-length IAT, all four categories remain on the screen in both blocks (e.g., Mental Illness, Physical Disability, Guilty, Innocent). The BIAT is different in that only two categories are shown on the screen at any one time (e.g., Mental Illness and Guilty in one block; Mental Illness and Innocent in the other block); thus, three focal categories are employed within a given BIAT, whereas one category (e.g., Physical Disability) is never shown on the screen and therefore is referred to as a non-focal category (Sriram and Greenwald, 2009). Physical disability was the non-focal category in our Mental Illness–Guilty BIAT and Innocent in the Me–Guilty BIAT. This design has the advantage of focusing participants' attention on the three focal categories, such that implicit associations with the non-focal category (e.g., Physical Disability) become less

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