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Implicit versus explicit attitudes toward psychiatric medication: Implications for insight and treatment adherence

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Abstract

Implicit attitudes are automatically activated evaluative impulses that are difficult to control and potentially outside conscious awareness. The association of implicit attitudes toward psychiatric medication with treatment adherence and insight was investigated in 85 persons with schizophrenia, schizoaffective, or affective disorders using the Brief Implicit Association Test. Explicit attitudes, insight, perceived need for treatment and adherence were measured by self-report. Implicit, but not explicit, positive attitudes predicted increased insight and perceived need for treatment. Explicit, but not implicit, positive attitudes predicted self-reported adherence. Implicit measures can improve our understanding of medication attitudes and evaluation of interventions to increase treatment adherence.

Keywords

medication; attitudes; Implicit Association Test; insight; adherence

1. INTRODUCTION

Adherence to antipsychotic and other psychiatric medications is often poor, posing major clinical and public health challenges (Corrigan et al., 2008; Rüscha and Corrigan, 2002). Attitudes and beliefs about medication, such as perceived risks and benefits, are key factors in understanding adherence (Jónsdóttir et al., 2009; Kikkert et al., 2006; Weiden, 2007). To the best of our knowledge, the literature on attitudes regarding psychiatric treatment has relied exclusively on deliberate responses to explicit statements in interviews or questionnaires. However, there are important reasons for doubting the adequacy of self-reports in capturing a complete picture of medication attitudes, suggesting the need for alternative approaches to their assessment.

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Explicit responses to questions about medication ('My medication makes me uncomfortable') may be contaminated by self-presentation biases, and the evaluations that people arrive at after thoughtful deliberation may diverge from their initial, immediate evaluative impulses (Gawronski and Bodenhausen, 2006; Greenwald and Nosek, 2009). A growing literature in social psychology has shown that measures designed to capture these rapid, implicit-automatic evaluations can predict significant kinds of behavior more accurately than explicit self-reports (Greenwald et al., 2009). For example, negative implicit attitudes toward smoking predicted abstinence independently of explicit attitudes (Kahler et al., 2007). Implicit versus explicit attitudes are thought to be related, but distinct constructs. Well-established reaction-time tasks such as the Implicit Association Test (Greenwald et al., 1998) can measure automatic associations between two concepts (e.g., 'Psychiatric Medication' and 'Good'), and thus index implicit attitudes toward psychiatric medication. The current research tested the relationship between implicit and explicit, self-reported medication attitudes pertaining to insight, perceived need for treatment, and medication adherence.

2. METHOD

2.1. Participants

Eighty-five persons with schizophrenia, schizoaffective, or affective disorders were recruited from outpatient mental health centers in the Chicago area. All participants gave written informed consent, and the study was approved by the institutional review boards of the Illinois Institute of Technology and the collaborating organizations. An eighth grade reading level as assessed by the Wide Range Achievement Test (Wilkinson and Robertson, 2006) was required. Participants were on average about 45 years old ($M=44.8$, $SD=9.7$) and 68% were male. More than half were African American (58%), about a third Caucasian (34%), while a few reported Hispanic (5%), mixed or other (4%) ethnicities. Axis I diagnoses were made using the Mini-International Neuropsychiatric Interview (Sheehan et al., 1998) based on DSM-IV criteria. Twenty-three (27%) participants had schizophrenia, 22 (26%) schizoaffective disorder, 30 (35%) bipolar I or II disorder, and 10 (12%) participants had recurrent unipolar major depressive disorder (for details see Rüsch et al., 2009a, 2009b).

2.2. Self-report measures

Insight into having a mental illness was assessed by one item ('Do you think you have a mental illness?'), another item measured perceived need for treatment ('Do you think you need any treatment for your mental illness?'), and a third assessed adherence to psychiatric medication in the last month ('Over the last month, have you taken your psychiatric medication exactly as prescribed?'). All items were scaled from 1 to 9, with higher scores indicating more insight ($M=7.2$, $SD=2.3$), perceived need for treatment ($M=7.4$, $SD=2.0$), or medication adherence ($M=8.0$, $SD=1.7$), respectively. Because of its skewed distribution, adherence was coded as a dichotomous dependent variable for a subsequent logistic regression ($n=48$ with maximum score of nine vs. $n=33$ with scores between one and eight; four participants indicated that they currently had not been prescribed psychiatric medication). Self-reported, explicit attitudes toward psychiatric medication were assessed using the ten-item Drug Attitude Inventory (Hogan and Awad, 1992), with higher scores indicating more positive attitudes ($M=17.7$, $SD=2.3$).

2.3. Implicit measures

We used a response-latency measure, the Brief Implicit Association Test (BIAT; Sriram and Greenwald, 2009), to assess implicit attitudes toward psychiatric medication; this shorter version of the standard IAT (Greenwald et al., 1998) was selected because it is less taxing for this population. During the BIAT, participants classified a series of words into superordinate categories. The target categories were "Psychiatric Medication" versus "Furniture" (as a

neutral and non-focal comparison category); the attribute categories were “Good” versus “Bad.”

The logic underlying the task is that verbal stimuli are classified more quickly when the target and attribute category pairings (e.g., Psychiatric Medication-Good in one block of trials) match respondents’ automatic associations with the target categories versus when the target and attribute category pairings are mismatched (e.g., Psychiatric Medication-Bad in the other block of trials). During the BIAT, words were presented that either did or did not match one of the categories represented on the top of the screen. Participants’ task was to press a right-hand response key if the word matched either of the two categories and a left-hand response key if it did not match either category (for details see Sriram and Greenwald, 2009). The order of the two blocks was counterbalanced across participants. BIAT data with more than 30% errors were excluded from analyses (Teachman and Woody, 2003), resulting in 81 valid BIATs. The BIAT yielded a D-score ($M=0.24$, $SD=0.57$; Greenwald et al., 2003), with higher values representing stronger associations between Psychiatric Medication and Good (i.e., more positive implicit attitudes toward psychiatric medication).

We used the following verbal stimuli, four for each category: Furniture (couch, table, chair, furniture), Good (helpful, good, positive, stabilizing), Bad (damaging, harmful, negative, bad). Stimuli for the latter two categories were chosen to reflect qualities of medication, not furniture, because Furniture was a non-focal category; the relevant category pairings, one in each block, were Psychiatric Medication-Good versus Psychiatric Medication-Bad. To provide individually meaningful verbal stimuli for Psychiatric Medication besides ‘psychiatric medication’, we used as idiographic stimuli the names of three psychiatric medications that the participant was currently taking or was most familiar with. The three idiographic medication stimuli consisted of, on average, 1.7 ($SD=1.0$) antipsychotics, 0.8 ($SD=0.8$) antidepressants, 0.4 ($SD=0.6$) mood-stabilizers, and 0.1 ($SD=0.4$) other psychotropic medications.

3. RESULTS

We calculated three regressions with implicit (BIAT scores) and explicit (Drug Attitude Inventory) attitudes toward psychiatric medication as predictor variables (Table 1). The two predictor variables were unrelated ($r=.003$, $p=.98$). Implicit, but not explicit, positive attitudes significantly predicted higher levels of insight and perceived need for treatment; positive explicit attitudes were a marginally significant predictor of perceived need for treatment. Explicit, but not implicit, attitudes predicted current self-reported medication adherence.

We examined differences in implicit and explicit attitudes toward medication among the four groups of participants with schizophrenia, schizoaffective disorder, bipolar disorder, and unipolar depression. Analyses of variance did not indicate significant group effects for explicit (DAI: $F=1.95$, $df=3$, $p=.13$; p -values $>.25$ in post-hoc Scheffé tests between subgroups) or implicit medication attitudes (BIAT: $F=0.07$, $df=3$, $p=.98$; p -values $>.95$ in post-hoc Scheffé tests between subgroups). To control for the possible confound of diagnosis, we also included schizophrenia/schizoaffective versus bipolar/unipolar affective disorder as an independent dummy-coded variable in subsequent regressions. Diagnosis did not predict insight, perceived need for treatment, or adherence (p -values $>.20$), whereas the previously significant predictors remained significant.

4. DISCUSSION

Our results suggest that implicit attitudes toward psychiatric medication can be measured in people with schizophrenia and other mental illnesses. Furthermore, they predict, independently of explicit attitudes and diagnosis, key outcome variables such as perceived need for treatment.

If replicated, our findings point to a link between positive implicit attitudes toward psychiatric medication and increased insight and perceived need for treatment. Self-reported adherence to the currently prescribed medication, on the other hand, may be associated more with explicit than with implicit attitudes. One explanation for this relationship is that self-reported adherence is likely influenced by self-presentational strategies. Other adherence measures, such as pill counts, may be more strongly associated with implicit measures.

The lack of correlation between explicit and implicit medication attitudes and the fact that both were differentially associated with treatment-related variables suggests that implicit and explicit attitudes represent distinct constructs (Gawronski and Bodenhausen, 2006; Greenwald and Nosek, 2009). Both could, however, be more closely related than evidenced by our data, with the low correlation, for example, being partly attributable to measurement or motivational variables. Our results therefore encourage further work on implicit assessment strategies in this area in order to address shortcomings of self-report measures. Implicit measures can tap attitudes toward psychiatric medication that participants are either unwilling or unable to report explicitly.

Limitations of our study should be noted. Cross-sectional data precluded conclusions on causality; dependent variables were assessed by one item only; independent information on adherence, e.g. from relatives or caregivers, was not available but should be included in future studies; the dichotomized adherence variable limited the sensitivity of our analyses; and conclusions are limited to persons participating in outpatient mental health services. Despite these limitations, we have obtained evidence suggesting that the measurement of implicit attitudes toward psychiatric medication is feasible and may provide important information beyond explicit, self-reported attitudes as assessed by commonly used questionnaires or interviews. Future research should investigate how implicit attitudes toward psychiatric medications may change in response to interventions designed to improve treatment adherence (Velligan et al., 2008).

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Regression analyses of implicit and explicit attitudes toward psychiatric medication on insight, perceived need for treatment, and medication adherence^a

Table 1

Dependent variable	Independent variables	beta/B ^b	T/Wald ^b	p ^b	ΔR ² /Nagelkerke ΔR ^{2c}	Total R ² / Nagelkerke R ^{2b}
Insight ^d	Explicit attitudes toward psychiatric medication ^e	0.15	1.37	.17	.022	
	'Psychiatric Medication-Good' IAT score ^f	0.25	2.34	.02	.065	
Perceived need for treatment ^d	Explicit attitudes toward psychiatric medication ^e	0.20	1.89	.06	.042	
	'Psychiatric Medication-Good' IAT score ^f	0.23	2.12	.04	.052	
Adherence to psychiatric medication in the last month ^d	Explicit attitudes toward psychiatric medication ^e	0.25	3.81	.05	.067	
	'Psychiatric Medication-Good' IAT score ^f	0.16	2.00	.16	.034	
						.101

^aLinear regressions on insight and perceived need for treatment, logistic regression on adherence

^bStatistics based on the equation with both independent variables

^cStepwise increase of R², first entering explicit, then implicit attitudes into the equation

^dHigher scores indicate higher levels of insight, perceived need for treatment, or adherence, respectively

^eDrug Attitude Inventory (Hogan and Awad, 1992), with higher scores reflecting more positive attitudes toward psychiatric medication

^fHigher BIAT scores represent a stronger implicit association between 'Psychiatric Medication' and 'Good', i.e. positive implicit attitudes toward psychiatric medication