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By Laura Grace Stull

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Implicit Stigma of Mental Illness: Attitudes in an Evidence-Based Practice

For the degree of Doctor of Philosophy

Is approved by the final examining committee:

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IMPLICIT STIGMA OF MENTAL ILLNESS: ATTITUDES IN AN EVIDENCE-BASED PRACTICE

A Dissertation

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of

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

Stull, Laura Grace. Ph.D., Purdue University, August, 2011. Implicit Stigma of Mental Illness: Attitudes in an Evidence-Based Practice. Major Professor: John McGrew.

Stigma is a barrier to recovery for people with mental illness. Problematically, stigma also has been documented among mental health practitioners. To date, however, most research has focused on explicit attitudes regarding mental illness. Little research has examined implicit attitudes, which has the potential to reveal evaluations residing outside of conscious control or awareness. Moreover, research has tended to use mixed sample of practitioners and programs. The extent to which both explicit and implicit stigma is endorsed by mental health practitioners utilizing evidence-based practices is unknown. The purposes of the current study were to 1) carefully examine implicit and explicit stigmatizing attitudes, or biases, among Assertive Community Treatment (ACT) staff and 2) explore the extent to which explicit and implicit biases predicted the use of treatment control mechanisms. Participants were 154 ACT staff from nine states. They completed implicit (Implicit Association Test) and explicit measures of stigma. Overall, participants exhibited positive explicit and implicit attitudes towards people with mental illness. When modeled using latent factors, implicit, but not explicit bias significantly predicted the endorsement of restrictive or controlling clinical interventions. Practitioners who perceived individuals with mental illness as relatively more dangerous and helpless (both explicit and implicit), as well as participants from Indiana and those with less education were more likely to endorse use of control mechanisms. Thus, despite overall positive attitudes toward those with mental illness for the sample as a whole, even low levels of stigma at the individual level were

found to affect clinical care. Mental health professionals, and specifically ACT clinicians, should work to be aware of ways in which their biases influence how they intervene with consumers.

INTRODUCTION

The stigma surrounding mental illness can act as a pervasive barrier to opportunities that define a good quality of life (e.g., good jobs, safe housing, satisfactory health care, diverse social interactions) and as an impediment to people getting the help they need (Corrigan & Watson, 2002; President's New Freedom Commission, 2003). Stigma also tends to be disempowering; individuals may lose faith or not realize that recovery from mental illness is even possible. It is important to examine the attitudes and stereotypes that contribute to this stigma. Most research on mental illness stigma has focused on the detrimental effects of explicit negative expectations and attitudes of others, including decreased opportunities for employment, housing, and relationships and persons not receiving necessary treatment. However, there is an increasing recognition that explicit measures may underestimate true levels of stigma (Hinshaw & Stier, 2008). In contrast, implicit attitudes may be more sensitive to detecting associations that persons would not explicitly endorse or would prefer not to reveal. Although stigma and its effects are widespread, there is a particular need to study its effects within service organizations charged to work with stigmatized populations.

Both treatment quality and the facilitation of recovery are likely influenced by the attitudes of mental health providers (e.g., Peris, Teachman, & Nosek, 2008; Salyers, Stull, Rollins, & Hopper, 2010). An area of particular importance is the potential impact of negative implicit stereotypes concerning those with mental illness on treatment processes/outcomes (e.g., engagement, retention, outcomes). Given the focus of the field on interventions that are evidence-based and widely accepted, and the concerns by some that Assertive Community

Treatment (ACT) may not facilitate recovery, we chose to investigate these relationships in ACT teams. Accordingly, the aims of this study were 1) to carefully examine implicit and explicit stigmatizing attitudes, or biases, among Assertive Community Treatment staff and 2) explore the extent to which explicit and implicit biases predicted organizational processes and outcomes (use of treatment control mechanisms and job performance).

Please see Appendix A for a full review of background information related to stigma of mental illness, implicit bias, Assertive Community Treatment, and outcomes of implicit attitudes.

Stigma of Mental Illness

As noted above, stigma may present a serious obstacle for diagnosed persons living in the community and for persons looking for help with their mental illness (Corrigan, 2004; Link, 1987). The negative impacts of stigma on outcomes are detectable even when initial levels of symptomatology or functioning are statistically controlled (Link, Struening, Rahav, Phelan, & Nuttbrock, 1997; Wright, Gronfein, & Owens, 2000). Although stigma involves many factors, including attributes, stereotypes, prejudice, and discrimination, the current study focuses on the attitudinal component also termed stereotypes or "bias" and "attitudes."

Commonly held stereotypes about people with mental illness include incompetence (incapable of independent living or real work) and blame (weak character is responsible for the onset and continuation of the disorder). Attitudes of blame and incompetence have been consistently identified in surveys of the general public (Brockington et al., 1993; Hamre et al., 1994; Link et al., 1999). Unfortunately, professionals from most mental health disciplines also have been found to subscribe to negative stereotypes about mental illness (Lyons & Ziviani, 1995; Mirabi, Weinman, Magnetti, & Keppler, 1985; Scott & Philip, 1985). Furthermore, recipients of care may perceive mental health professionals as being insensitive and having low expectations (Wahl, 1999). Even attitudes that may appear to be "helpful" and well intentioned,

such as paternalism, may be viewed by recipients as condescending and implying incompetence and helplessness. As Deegan (1990) stated, "What is truly disabling to [persons with psychiatric disabilities] is stigma which, though rampant in the general population, is also widespread in the helping professions" (p. 309).

Mental Illness Implicit Bias

Early research suggested that complex social behavior that appears to be enacted mindfully may instead be performed without conscious attention (Langer, 1978) and more recent work has found that social behavior often operates in an implicit or unconscious form (Greenwald & Banaji, 1995). The importance of assessing implicit cognition is further supported by the difficulty in assessing explicit attitudes reliably and validly. For example, explicit measures of mental illness stigma have been found to be susceptible to social desirability biases (Link & Cullen, 1983).

Although the majority of research on mental illness stigma has used explicit measures (Stier & Hinshaw, 2007), four studies have examined the implicit stigma of mental illness (Lincoln, Arens, Berger, & Rief, 2008; Peris, Teachman, & Nosek, 2008; Rusch, Corrigan, Todd, & Bodenhausen, 2010; Teachman, Wilson, & Komarovskaya, 2006). These studies are groundbreaking in that they demonstrated the existence of implicit stigma of mental illness across a range of populations, including the general population (Teachman, Wilson, & Komarovskaya, 2006), medical and psychology students (Lincoln, Arens, Berger, & Rief, 2008), and those with mental illness (Rusch, Corrigan, Todd, & Bodenhausen, 2010; Teachman, Wilson, & Komarovskaya, 2006). They also provided initial evidence that implicit and explicit stigma may differentially predict outcomes, including clinical decisions. Across studies, explicit bias was largely uncorrelated with implicit bias (Lincoln, Arens, Berger, & Rief, 2008; Rusch, Corrigan, Todd, & Bodenhausen, 2010; Teachman, Wilson, & Komarovskaya, 2006). Moreover, among

those with mental health training, explicit stigma was related to more negative estimates of patient prognoses, whereas greater levels of implicit bias were related to a tendency to over-diagnose (Peris, Teachman, & Nosek, 2008). Other key findings were that caregivers with mental health training had more positive implicit and explicit biases (Peris, Teachman, & Nosek, 2008) and that, among those with mental illness, lower levels of implicit and explicit self-stigma predicted higher quality of life (Rusch, Corrigan, Todd, & Bodenhausen, 2010).

Assertive Community Treatment

Given current emphases in the mental health field on increasing the availability of services with strong research support and basing services on recovery principles, the issue of integrating evidence-based practices with the recovery model is gaining increasing attention (e.g., Frese et al., 2001; Salyers & Macy, 2004; Torrey et al., 2005). Although ACT is widely recognized as an evidence-based practice and has consistently been shown to produce better client outcomes (e.g., reduced dropout rates, increased housing stability, reduced hospital admission and length of hospitalizations, and higher client and family satisfaction) (e.g., Marshall, 1998; Mueser, Bond, Drake, & Resnick, 1998; Ziguras, 2000; Bond, Drake, Mueser, & Latimer, 2001; Marshall & Lockwood, 1998) it has been criticized as being paternalistic and coercive and as incompatible with a recovery orientation (Gomory, 1999). Thus, an issue of concern for ACT is the degree to which recovery is facilitated. Because the specific aims of the recovery model include the reduction of stigmatizing treatments (e.g., treatment that emphasizes the illness over the person and keeps people from integrating into society), and reducing the effects of stigma on treatment, it is particularly interesting to study explicit and implicit stigma towards mental illness among ACT staff.

Effects of Bias on Treatment Processes

In addition to the general negative effects of stigma on outcomes, such as decreased employment (e.g., Link, 1987; Wahl, 1999) and housing opportunities (e.g., Page, 1995; Segal et al., 1980), stigma is expected to be associated with mental health staff behavior and choice of treatment strategy. For example, stigma may impact the decision to use treatment control mechanisms (e.g., outpatient commitments, let client manage own medications) when intervening with consumers. Indeed, one recent study found that ACT teams judged to have lower levels of recovery-orientation were more likely to endorse the use of treatment control mechanisms such as outpatient commitments, injection medications, and daily medication monitoring in response to a clinical vignette (Salyers et al., under review).

Stigmatizing attitudes also may predict performance of recovery-oriented behaviors. For example, positive attitudes toward a stigmatized group increase the desire to help the group (Batson, Chang, Orr, & Rowland, 2002), increase the likelihood that doctors and nurses engage in positive therapeutic interactions with suicidal patients (e.g., undertake medically appropriate intervention, not leave patient alone; Demirkiran & Eskin, 2006), predict physicians' appropriate use of medical procedures toward patients of color (Green et al., 2007), and predict whether mental health professionals assign more diagnoses and poorer prognoses to consumers portrayed though clinical vignettes (Peris et al., 2008). In the current study, we expected staff who exhibit more positive attitudes (i.e., less stigma) to act in less stigmatizing ways (i.e., act more recovery-oriented), as documented by supervisors' job performance ratings of recovery-oriented behaviors and by less endorsement of treatment control mechanisms.

In summary, the primary purpose of the current study was to examine the extent to which ACT practitioners endorsed explicit and implicit mental illness bias. A second purpose was to explore the extent to which explicit and implicit bias predicted organizational processes and outcomes (use of treatment control mechanisms and job performance).

METHOD

Please see Appendix B for a full overview of the methods used in this study, including additional details regarding participants and recruitment procedures.

Participants

Current staff members, team leaders, and program directors of ACT teams employed at least one quarter of full time (.25 FTE) were targeted for recruitment. There was no minimum requirement for the length of employment. Participants needed computer access as all measures were completed through web-based software (Inquisit Desktop Edition). Participants were first recruited from ACT teams in Indiana, as identified from a contact list maintained by the ACT Center of Indiana (a consultation and training center). A total of 67 ACT staff in Indiana participated, out of an estimated potential pool of 320 individual participants (20.9% response rate). To increase sample size, recruitment was expanded to other states also identified through contacts maintained by the ACT Center of Indiana. A total of 59 ACT staff from eight other states participated. One hundred fifty-four participants completed at least part of the survey. Of the participants who completed the demographic survey (n = 120), seven identified themselves as ACT program directors, 27 were team leaders, and 86 were staff. The following disciplines were identified: social work (n = 59), psychology (n = 25), nursing (n = 7), sociology (n = 4), psychiatry (n = 3), education (n = 1), and other (n = 21). The sample was 77.5% female and had a mean age of 41.7 years (SD = 11.2). Race or ethnicity was reported as 87.5% Caucasian, 7.5% African-American, 0.8% Hispanic, 0.8% multiracial, and 4.2% indicated another group.

Participants reported an average of 11.0 years (SD = 8.9) in the mental health field and 3.2 years (SD = 2.4) in their current position. There were no significant differences on descriptive data for participants recruited from Indiana and from other states.

Staff and program director participants were compensated $10 and team leaders $20 for their participation. The difference in compensation was based on differences in time commitment (30-45 minutes for staff versus 45-60 minutes for team leaders), as team leaders were asked to rate the job performance of each staff on their team.

Measures

Implicit Bias

Mental Illness IAT

A web-based, computerized version of the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998) was used to assess automatic associations to mental illness. The IAT was developed, administered, and managed using Inquisit Desktop Edition—computer software that includes a web license for electronic administration. The IAT has been widely used to assess implicit attitudes and has adequate psychometric properties (Nosek, Greenwald, & Banaji, 2006). The stimuli from a previously developed IAT (Teachman et al., 2006) comparing a stigmatized (mental illness) and non-stigmatized (physical illness) group was used in the current study.

Participants completed three different IAT tasks. All tasks paired “physical illness” and “mental illness” and were rated using one of three stimulus sets: 1) “bad” versus “good”, 2) “blameworthy” versus “innocent”, or 3) “helpless” versus “competent”. Within tasks, participants were presented with both compatible (mental illness + bad) and incompatible (mental

illness + good) trials. The good/bad stimulus is thought to assess a general evaluation of negative attitudes (Teachman et al., 2006). The helpless/competent category taps into responders' attitudes regarding the abilities of persons with severe mental illness. The controllability category (innocent/blameworthy) is thought to be a key distinction between physical and psychological disorders, in that psychological disorders are often believed to be under relatively more personal control (Corrigan et al., 1999; Crandall & Moriarty, 1995). Based on prior findings (Teachman et al., 2006), we expected that mental health practitioners would demonstrate implicit negative attitudes about the helplessness and blameworthiness of persons with mental illness. See Table 1 for a full list of the IAT category labels and stimuli.

The order in which participants first completed explicit or implicit measures was assigned randomly. In addition, the order in which each IAT task (good vs. bad; helpless vs. competent; blameworthy vs. innocent) was completed varied by participant, as did whether they were first presented with compatible or incompatible trials. Participants were assigned to one of 12 "clusters" of trials, each cluster used a fixed trial order (e.g., cluster 1 had trials in the following order: good vs. bad, helpless vs. competent, then blameworthy vs. innocent, with all trials starting with compatible items). Assignment was sequential based on the order in which they completed the survey, such that participant one completed cluster one, participant two completed cluster two, etc. Although it would have been ideal to randomly assign participants to clusters, random assignment was limited by the software. Random assignment could only be used at one level and was reserved for order of presentation of the implicit and explicit measures.

In each IAT task, there were two critical trial blocks: one block where the target and descriptor categories reflected negative mental illness associations and one block where the target and descriptor categories reflected negative physical illness associations. Consistent with Teachman's work (2006), each critical block consisted of 56 classification trials. The first 20 trials were practice (and excluded from analyses) and the remaining 36 constituted the

experimental data. See Table 2 for an example of the sequence of tasks presented to participants. The outcome measure was response time, with shorter latencies indicating stronger automatic associations of concepts with the stimulus group. The specific effects that were considered were faster responding when mental illness was associated with bad, blameworthy, and helpless category labels. Following the IAT scoring algorithm developed by Greenwald and colleagues (Greenwald, Nosek, & Banaji, 2003), difference scores (D scores; calculated by dividing the difference between reaction time averages for the mental illness and physical illness test blocks by the standard deviation of all the latencies in the two test blocks) were calculated for each association such that positive scores indicated more implicit bias against mental illness.

Explicit Bias

Feeling Thermometers

Adopting the methodology suggested by Greenwald and colleagues (1998), participants were asked to rate their general level of warmth or coolness toward: 1) mental illness and 2) physical illness. For both items, a rough illustration of a thermometer was given (a vertical continuous slider) which was numerically labeled at 1-degree intervals from 1 to 100 and anchored at 1 (cold), 50 (neutral), and 100 (warm). See Appendix D for copies of all instruments.

Single-Item Measures

Consistent with previous research (Greenwald et al., 1998; Peris et al., 2008; Teachman et al., 2006), a series of single-item explicit bias measures also were included. Participants were asked to rate their attitudes toward “persons with mental illness” and “persons with physical illness” on three 7-point semantic differential scales (e.g., 1 = bad to 7 = good). Ratings were made for bad/good, blameworthy/innocent and helpless/competent biases, with lower scores

indicating more negative views toward persons with mental and physical illness. Participants were instructed to mark the middle of the range if they considered both anchoring adjectives to be irrelevant to either category. These items were designed to parallel the IAT tasks to permit implicit/explicit comparisons. A total of six items were administered. A difference score was calculated for each target attitude (e.g., blameworthiness ratings for persons with physical illness minus ratings for persons with mental illness), with a positive score indicating a negative evaluation of persons with mental illness relative to physical illness. When the single items pertaining to mental illness were included in analyses, items were reverse-scored so that higher scores indicated a negative evaluation of mental illness.

Perceived Dangerousness

Consistent with the methodology of Teachman and colleagues (2006), perceived dangerousness was assessed as an indicator of explicit bias. A commonly held stereotype about persons with severe mental illnesses is that they are dangerous (Link et al., 1999). To measure stigmatizing beliefs about dangerousness, staff completed the eight-item Perceived Dangerousness Scale (PDS; Link et al., 1987). One change was made to the scale; the term "mental patients" was replaced with "persons with mental illness" as this terminology is more consistent with ACT staff usage. Participants rated each item using a six point Likert scale (0 = strongly agree, 5 = strongly disagree). Six items were reverse-scored, so that higher scores indicated greater levels of perceived dangerousness. Link and colleagues (1987) reported an internal consistency (α) for the scale of 0.85. In this study, α was 0.64.

Other

Demographics

Demographic information about participants was obtained using a brief questionnaire and included the following: age, gender, race/ethnicity, marital status, highest level of education completed, current discipline, length of time in current position, and length of time in the mental health field. Participants were also asked to indicate their position on the team (program director, team leader, or staff member), the name of their team (in order to match team leader and staff data), and the state in which their team was located.

Organizational Measures

Treatment Control Mechanisms

The extent to which staff endorsed the use of treatment control mechanisms was assessed using a clinical vignette. Although use of treatment control mechanisms in ACT has been previously analyzed at an organizational level (Moser, 2007; Salyers et al., under review), endorsement of use has not been assessed at an individual level. Given that vignettes have been identified as a useful tool for measuring stigma towards mental illness (Link, Yang, Phela, & Collins, 2004), a vignette was created which assessed participants' endorsements of the use of various control mechanisms, based on the clinical and personal information provided. Four vignettes were initially developed and piloted with three ACT experts, all of whom were ACT trainers/consultants in Indiana. Based on expert feedback, the vignette with the most variability (i.e. had the largest item range across the most items) was selected for the final measure. Clarifying information was also added and several items were slightly reworded (e.g., taking the client to the hospital was changed to coordinating an inpatient hospitalization). After initial

revisions were made, the vignette was piloted again with five clinicians familiar with ACT, but not eligible for the current study. Item wordings were again refined for clarity. See Appendix D for a copy of the vignette.

After reading the vignette, staff answered a series of 12 questions concerning treatment options using a one (strongly disagree) to seven (strongly agree) scale. Staff rated the degree to which they would endorse the use of six previously studied treatment control mechanisms (Moser, 2007; Salyers et al., under review), five items assessing staff support for client independence/autonomy in various treatment domains (e.g., manage own medications), and a single item assessing response to presence of substance abuse symptoms. An "other" item allowed staff to recommend another intervention. One item was deleted from the final scale based on low item-total correlations (use of agency owned/operated housing). The internal consistency of the final 11-item measure was acceptable ($\alpha = 0.71$).

Job Performance

The extent to which ACT staff's performance reflected anti-stigmatizing views was assessed using supervisor ratings (Iaffaldano & Muchinsky, 1985). Each team leader rated the extent to which their team members' work reflected recovery-oriented attitudes and behaviors using an adaptation of the provider version of the Recovery Self-Assessment (RSA; O'Connell, 2005). The 36-item RSA assesses the degree to which agencies engage in recovery-oriented practices, has face validity (O'Connell, 2005) and has excellent internal consistency, with $\alpha = 0.96$ (Salyers et al., 2007). For the current study, items were dropped that assessed agency behaviors rather than individual staff behaviors (e.g., "This agency provides a variety of treatment options [i.e., individual, group, peer support, holistic healing, alternative treatments, medical] from which agency participants may choose") or that assessed critical ACT model practices that were not expected to vary (e.g., "Most services are provided in a person's natural environment

[i.e., home, community, workplace]"). The 10 remaining items were rewritten to be consistent with terminology and practices of ACT staff. For example, the item "Staff at this agency listen to and follow the choices and preferences of participants" was changed to "This staff member listens to and follows the choices and preferences of consumers." All items were rated on a 1 (strongly disagree) to 5 (strongly agree) scale, with higher scores indicating greater recovery-oriented performance.

To link the supervisor's ratings of staff to specific staff, all participants were asked to provide a three-letter key, the last letters of their first, middle, and last name. This linking variable was selected because it is less identifiable than initials, while still providing enough information to allow team leaders to make ratings. Participants identifying themselves as a team leader were asked to complete the job performance measure for their team members as well as provide the last letters of the staff's first, middle, and last name. Participants were asked to provide the name of their team as an additional linking mechanism.

Although 25 of 27 team leaders in the final sample provided ratings for at least one staff, the data could be linked between a team leader and at least one staff member for only 12 teams because either staff members did not participate from the team leader's team (n = 11) or the team leader did not provide the name of their team (n = 2). This made within site analyses impractical. Given the lack of an adequate sample size, this variable was dropped from further analyses.

Procedures

Team leaders and their supervisors at each of the 30 ACT teams in Indiana were first contacted by email to see if they wanted to participate in the study. Each email contained a brief introduction, brief description of the study, web link for the study, and an attached recruitment letter with more detailed information. All survey measures, including the IAT, could be accessed by the emailed web link. Team leaders who expressed interest and contacted the researcher were

sent a second email to forward on to the staff on their team. Team leaders who had not replied to the initial invitation within one week of the first email were sent a second email and asked to forward the recruitment email on to their staff. Three unique recruitment letters were crafted (for program directors/supervisors, team leaders, and staff) and all were distributed by email (see Appendix E for copies of all recruitment letters). After the second email, follow-up phone calls were made to all team leaders to remind them of the study and to ask them to forward the recruitment email to their staff.

Because only 20 subjects participated within the three week initial recruitment window, recruitment efforts were expanded. Postcards (see Appendix E) were sent to team leaders along with study information and the website address. Additionally, as noted earlier, recruitment efforts were expanded outside of Indiana. Emails were first sent to nine state level contacts in 10 different states, who then forwarded recruitment letters to team leaders of other ACT programs. Although these expanded efforts introduced additional variability (see limitations section), it was considered necessary to obtain an adequate sample of participants from ACT teams.

RESULTS

Program Director, Team Leader, and Staff Sample

As noted earlier, a total of 154 participants completed at least some portion of the survey and of these, seven were program directors and 27 were team leaders. Given the small sample sizes for program directors and team leaders, the position data was collapsed across the entire sample. When the participant's position was significantly correlated with a variable of interest (e.g., perceived dangerousness) and made conceptual sense, it was entered as a covariate in the analyses. When participants who completed the entire survey were compared to those who did not complete the entire survey, there was a difference in the order of compatible and incompatible trials they received when completing the implicit tasks, although those order differences were not related to results. When participants who did not complete the explicit tasks were compared with those who did, there was also a difference in the order of compatible and incompatible IAT trials received, as well as a difference in the years of formal training they had received. The difference in years of training was related to implicit bad and blameworthy tasks. Finally, when participants who did not complete the implicit tasks were compared with those who did, there was a difference in marital status, but this difference was uncorrelated with results. See Table 3 for a summary of demographic variables for the entire sample.

Analytic Issues

The IAT data were scored according to the algorithm developed by Greenwald, Nosek, and Banaji (2003). Their approach maximizes the relationship between implicit and explicit

measures, while also improving the psychometric properties of the tool by taking into account each participant's latency variability and including a latency penalty for errors. Unusually fast or slow response times are accounted for by eliminating trails with latencies > 10,000 ms or < 300 ms. Across the three IATs, the percentage of trials deleted prior to analyses ranged from 0.6% to 1.3% for latencies < 300 ms and from 0.0% to 0.1% for latencies > 10,000 ms. Across the three IATs, the overall average error rate (percentage of incorrectly keyed responses) ranged from 4.7% to 6.8% for the final sample. See Table 4 for descriptive statistics for all measures.

Hypothesis Testing

Explicit Bias

The semantic differential items assess explicit negative evaluations of persons with mental illness as bad (relative to good), blameworthy (relative to innocent), and helpless (relative to competent). One sample t-tests comparing the explicit item scores to 3.5 (midpoint of the 6-point scale) indicated that people with mental illness were viewed as relatively good ($t_{130} = -9.34$, $p < 0.001$), innocent ($t_{130} = -6.14$, $p < 0.01$), and competent ($t_{132} = -5.51$, $p < 0.01$).

Difference scores were created to assess the relative negative evaluations of persons with mental illness compared to physical illness as bad, blameworthy, and helpless. Positive scores indicated viewing mental illness (compared to physical illness) as relatively more bad, blameworthy, and helpless. One sample t-tests were computed to compare the difference scores to 0 (no difference in attitudes) and indicated that people with mental illness, relative to physical illness, were viewed as relatively good ($t_{129} = -3.82$, $p < 0.001$), but did not differ from physical illness on blameworthy versus innocent ($t_{128} = -1.00$, $p = 0.32$) or helpless versus competent ($t_{132} = 0.20$, $p = 0.84$).

A paired sample t-test was used to compare participants' ratings on the mental illness and physical illness feeling thermometers. Participants indicated more positive feelings towards mental illness compared to physical illness ($t_{132} = 4.84$, $p < 0.001$).

Pearson correlations were calculated to determine associations between variables (see Table 5 for correlations between all variables of interest). Items using similar assessment methods were more likely to be correlated with each other. When only semantic differential items were considered, all correlations were significant (r ranged from 0.27 to 0.36, $p < 0.01$), which may reflect common method variance. When restricted to difference scores comparing mental and physical illness, the bad and helpless differences scores were correlated ($r = 0.21$, $p = 0.02$). Correlations between all measures of explicit attitudes were modest. When the associations between the feeling thermometer and semantic differential items were examined, the mental illness feeling thermometer was significantly correlated with the bad (relative to good; $r = -0.30$, $p < 0.01$) and helpless (relative to competent; $r = -0.31$, $p < 0.01$) semantic differential items. Also, perceived dangerousness was significantly related to the mental illness helpless semantic differential item ($r = 0.24$, $p < 0.01$) and the mental illness feeling thermometer ($r = -0.27$, $p < 0.01$).

To further examine potential multi-method, multi-trait relationships, correlations were examined between the corresponding implicit and explicit measures. The vast majority of the correlations between the three IAT tasks and the mental illness feeling thermometer, as well as the corresponding semantic differential items and difference scores (comparing mental illness to physical illness as bad, blameworthy, and helpless) were not significant. Notably, the only significant relationship was between the feeling thermometer and the mental illness + helpless IAT task. Participants with warmer feelings regarding mental illness were less likely to demonstrate implicit stigma regarding the helplessness of persons with mental illness relative to physical illness ($r = -0.29$, $p = < 0.01$).

Implicit Bias

The implicit tasks were scored such that higher values (positive scores) indicate more negative views toward persons with mental illness. One sample t-tests were computed comparing each IAT score to zero. Contrary to hypotheses, participants demonstrated implicit preferences for mental illness compared to physical illness as good (versus bad; $t_{108} = -4.91$, $p < 0.001$) and competent (versus helpless; $t_{106} = -2.29$, $p = 0.02$), and there was a trend toward preference for mental illness compared to physical illness as innocent (versus blameworthy; $t_{107} = -1.98$, $p = 0.05$). All implicit scores were significantly intercorrelated (*r* ranged from 0.19 to 0.42).

Dependent Variable

As noted, job performance ratings were not analyzed due to the small sample and nested data. The only analysis undertaken was an examination of the extent to which staff endorsed the use of various treatment control mechanisms based on the presented vignette. The average score on this measure was 4.16 (SD = 0.80). Staff who endorsed the use of more control mechanisms were also more likely to show increased implicit stigma toward those with mental illness, relative to physical illness, as being bad ($r = 0.23$, $p = 0.02$) and helpless ($r = 0.27$, $p < 0.01$), had higher scores on perceived dangerousness ($r = 0.39$, $p < 0.01$), and were more likely to show increased explicit stigma towards those with mental illness as being more helpless than competent ($r = 0.19$, $p = 0.03$).

Model Testing

To examine whether implicit and explicit mental illness bias would predict the use of control mechanisms, latent variable structural equation modeling (SEM) was used (see Figure 1). The model was fit to the data using AMOS Version 19. Full maximum likelihood methods were used and full information maximum likelihood estimation was used to deal with missing data.

As a first step, multivariate techniques were used to identify the latent variables underlying implicit bias, explicit bias, and control mechanisms to take into account intraindividual variability, thereby reducing measurement error. The explicit bias factor included the three semantic differential Bad-Good, Blameworthy-Innocent, and Helpless-Competent items (all significantly intercorrelated; *r* range 0.27-0.36). These items were chosen rather than the difference score measures because of easier interpretability as predictors of control mechanisms (which are specific to mental illness and not relative in nature), the difference score measures were not intercorrelated, and it is consistent with prior research using similar methodology (Peris, Teachman, & Nosek, 2008). The implicit bias factor was comprised of the three IAT tasks (mental illness + bad, mental illness + blameworthy, mental illness + helpless), which were all significantly intercorrelated (*r* range: 0.19 – 0.42). The control mechanism latent factor was comprised of the average score for the final 11-item control mechanism measure. Statistical normality of all indicator variables was examined and confirmed.

Next, the fit of the hypothesized model (depicted in Figure 1) was examined along with the significance of the paths connecting the mental illness bias factors to the control mechanism factor. Because the control mechanism factor had only one indicator, the variance of the indicator was constrained (Keith, 2006). Assessment of model fit was based on chi-square, the root-mean-square error of approximation index (RMSEA), the comparative fit index (CFI) and the Tucker-Lewis index (TLI). Non-significant chi-square values, RMSEA less than 0.08, and CFI and TLI above .90 indicate an acceptable fit (Browne & Cudeck, 1993; Hu & Bentler, 1999).

Three of the four goodness of fit indices suggested a good fit for the initial model (X^2 = 18.57, df = 12, p = 0.10; RMSEA = 0.06, CFI = 0.91, TLI = 0.80). As depicted in Figure 2, all indicators loaded significantly onto their respective factors. There was a moderately strong relationship between the implicit and explicit bias factors (r = 0.43). Results indicated that implicit bias (standardized coefficient = 0.33, p = 0.05), but not explicit bias (standardized

coefficient = 0.05, p =0.68), was a marginally significant predictor of greater endorsement of control mechanisms. A total of 13% of the variance in control mechanisms was accounted for by the model, with implicit and explicit bias respectively explaining 10.89% and 0.25% of the variance.

Given the limitations related to model testing without accounting for sampling error, an additional model was tested which adjusted for the demographic variables significantly related to the outcome variable, treatment control mechanisms. The following demographic variables were included: level of education, state (Indiana vs. non-Indiana participants), position (staff vs. team leaders and program directors), and length of time in the mental health field (in years). Two additional demographic variables were also added, age and gender, which are often considered to be confounding demographic variables. The goodness of fit indices suggested a poor fit for the model (X^2 = 82.23, df = 48, p = 0.00; RMSEA = 0.07, CFI = 0.85, TLI = 0.71). As depicted in Figure 3, a total of 43% of the variance in control mechanisms was accounted for by the model, with implicit and explicit bias respectively explaining 4.84% and 0.81% of the variance.

Additional model testing can be found in Appendix C. See Table 6 for a comparison of tested models.

Supplemental Analyses

Follow-up regressions were performed using SPSS Version 18 to explore more generally the relationship between relevant variables and the endorsement of treatment control mechanisms. First, two hierarchical multiple regression analyses were performed to examine whether implicit predictors would add incrementally over explicit measures and vice versa in the prediction of treatment control mechanisms. Similar to the methods used in the model testing, the following demographic variables were included: age, gender, education level, position (staff vs. team leaders and program directors), state (respondents from Indiana vs. respondents from all other

states), and length of time in the mental health field (in years). In the first analysis, after adjustment for the demographic variables, explicit measures were entered in the second step (mental illness feeling thermometer, three semantic differential Bad-Good, Blameworthy-Innocent, and Helpless-Competent items, and Perceived Dangerousness) and then implicit measures were entered in the third step (mental illness + bad, mental illness + blameworthy, and mental illness + helpless IAT tasks).

In both regressions, the demographic variables were significant predictors, $F(6,94) = 9.10$, $p < 0.01$, and accounted for approximately 37% of the variance in control mechanisms. In the first analysis, the addition of the explicit measures in the second step significantly increased the explained variance, $\Delta R^2 = 0.08$, $p = 0.04$ (see Table 7) and the addition of the implicit variables in the third step were marginally significant in explaining additional variance, $\Delta R^2 = 0.05$, $p = 0.06$. When each of the individual predictor variables in the regression were examined univariately as predictors of treatment control mechanisms, education ($\beta = -0.38$, $p < 0.01$) and state ($\beta = 0.39$, $p < 0.01$) were statistically significant, while the Helpless-Competent semantic item ($\beta = 0.16$, $p = 0.09$), Perceived Dangerousness scale ($\beta = 0.17$, $p = 0.07$), and the mental illness + helpless IAT task ($\beta = 0.16$, $p = 0.08$) were marginally significant. All other control and predictor variables failed to reach statistical significance.

In the next multiple regression, the addition of the implicit measures in the second step was marginally significant in increasing the explained variance, $\Delta R^2 = 0.05$, $p = 0.05$ (see Table 8) whereas the addition of the explicit variables in the third step significantly explained additional variance, $\Delta R^2 = 0.07$, $p = 0.04$. When each of the individual predictor variables in the regression were examined univariately as predictors of treatment control mechanisms, education ($\beta = -0.38$, $p < 0.01$), state ($\beta = 0.39$, $p < 0.01$), mental illness + helpless IAT task ($\beta = 0.20$, $p = 0.03$), and the Perceived Dangerousness scale ($\beta = 0.20$, $p = 0.04$) were statistically significant. All other control and predictor variables failed to reach statistical significance.

In the third and final analysis, a stepwise regression was performed by regressing the overall treatment control mechanism score on all variables included in the prior analyses (all demographics, implicit, and explicit measures of bias). Using this approach, the following variables were significant in predicting control mechanisms: state ($\Delta R^2 = 0.17$, $\beta = 0.42$, $p < 0.01$), education ($\Delta R^2 = 0.20$, $\beta = -0.44$, $p < 0.01$), mental illness + helpless IAT task ($\Delta R^2 = 0.04$, $\beta = 0.20$, $p = 0.02$), and Perceived Dangerousness ($\Delta R^2 = 0.03$, $\beta = 0.19$, $p = 0.03$). The four variables together accounted for approximately 44% of the total variance in control mechanism scores.

Additional multiple regressions were performed to examine predictors of implicit and explicit attitudes, as well as whether certain attitudes were more predictive of control mechanisms than others. See Appendix C for those results.

DISCUSSION

Evidence of Explicit and Implicit Bias

The primary purpose of the current study was to examine the extent to which ACT practitioners endorsed explicit and implicit mental illness bias. Overall, participants exhibited positive explicit and implicit attitudes toward people with mental illness. More specifically, participants had positive absolute and explicit views of people with mental illness as good (relative to bad), innocent (relative to blameworthy), and competent (relative to helpless). When compared to people with physical illness, those with mental illness were viewed as good (explicit and implicit), competent (implicit), and innocent (implicit). Relative to those with physical illness, participants also reported warmer feelings towards people with mental illness.

Although our findings are inconsistent with an earlier review, which found mixed results, with the majority of studies reporting beliefs of mental healthcare providers that did not differ from or were more negative than the general population (Schulze, 2007), they are consistent with a more recent review, which found that the majority of the 19 reviewed studies demonstrated overall positive attitudes among mental health professionals regarding mental illness (Wahl & Aroesty-Cohen, 2010). Our findings are also consistent with another study with similar methodology, in which participants with advanced mental health training demonstrated more positive implicit and explicit evaluations of people with mental illness (Peris, Teachman, & Nosek, 2008). However, no prior studies have examined the attitudes of practitioners within an evidence-based mental health treatment model.

Relationship between Explicit and Implicit Bias

Consistent with prior work on explicit and implicit bias of mental illness, the individual corresponding explicit and implicit bias measures (i.e., using manifest variables) were not related (Lincoln, Arens, Berger, & Rief, 2008; Peris, Teachman, & Nosek, 2008; Teachman, Wilson, & Komarovskaya, 2006). However, when explicit and implicit biases were modeled as latent factors with multiple indicators, in effect modeling the theoretical relationship between latent factors measured with perfect reliability, there was a moderate to strong relationship between the factors. Specifically, as participant's explicit bias increased, so did their implicit bias. This is contrary to the only other previous study in which explicit and implicit bias of mental illness were examined in a structural equation model and found to be unrelated (Peris, Teachman, & Nosek, 2008). However, the findings are consistent with recent research, which has shown that implicit and explicit measures can be strongly related (Nosek, Greewald, & Banji, 2008), and, in general, there is a moderate relationship, with an average $r = 0.24$ in one meta-analysis of the IAT and self-report measures (Hofmann, Gawronski, Gschwender, Le, & Schmitt, 2005) and an average $r = 0.37$ in a review of 57 different content domains (Nosek, 2005). Moreover, Nosek and colleagues (2006) used a multitrait-multimethod framework and demonstrated that the IAT and self-report were related but distinct constructs, even after accounting for common method variance. Given the mixed findings in regards to explicit and implicit bias towards mental illness, future research is needed to clarify this relationship.

Bias as a Predictor of Control Mechanisms

A second purpose of this study was to explore the extent to which explicit and implicit bias predicted organizational processes and outcomes (use of treatment control mechanisms and job performance). Unfortunately, due to sample limitations, only the use of treatment control mechanisms was examined. Interestingly, when modeled using latent factors, implicit, but not

explicit bias significantly predicted the endorsement of restrictive or controlling clinical interventions.

This finding is consistent with research linking implicit race bias to disparities in medical diagnosis and decision making (Green et al., 2007). Interestingly, Peris and colleagues (2008) found that implicit and explicit bias differentially predicted outcomes, with explicit (but not implicit) bias predicting more negative patient prognoses and implicit (but not explicit) bias predicting over-diagnosis. They argued that clinicians might recognize their prognoses as general evaluations of people with mental illness, whereas diagnostic decision-making may bear little obvious relevance to general evaluations. Thus, they stated, "implicit biases may be linked to deliberative clinical decisions only for circumstances in which the person is not aware that his or her attitudes or stereotypes may be influential" (p. 759). More broadly speaking, responses assessed by indirect measures such as the IAT may be more predictive of spontaneous rather than deliberate behaviors (Norman et al., 2010).

Endorsing the use of clinical interventions which are more restrictive (e.g., daily medication monitoring) or which promote more autonomy (e.g., let the client manage their own medications) may be less clearly related to "general evaluations" or beliefs and so clinicians may be less aware of biases when making such recommendations. Further, these practices are a common part of the clinical decision-making made by ACT staff and may be enacted more spontaneously then deliberately, which could explain why they may be more influenced by implicit, but not explicit attitudes. It may be important for ACT staff to engage in a more deliberate process when determining whether to use more restrictive practices.

Finally, we found that some specific attitudes (explicit and implicit) and staff characteristics were more predictive of endorsing certain clinical interventions than other attitudes and characteristics. Specifically, participants from Indiana and participants with lower levels of education endorsed more restrictive interventions. The vignette used was designed with

the help of ACT consultants in Indiana and was initially intended for use only in Indiana. The control mechanisms included were also derived from a measure previously used in Indiana ACT teams (Moser, 2007; Salyers et al., under review). Thus, the vignette and interventions may be more pertinent to ACT practitioners in Indiana than in other states. The finding that participants with more education endorsed fewer restrictive interventions is consistent with findings that people with mental health training, compared to those without, demonstrated more positive explicit and implicit evaluations of people with mental illness, which in turn was related to clinical decisions (Peris, Teachman, & Nosek, 2008). Additionally, Wright and colleagues (2003) found that nurses who had more training in mental health had higher levels of subjective understanding of mental health patients' needs.

One caveat to the above findings is that the model predicting control mechanisms was a good fit to the data only when using an unadjusted model. When an adjustment was made for demographic and other sampling variables by including those variables in the model, the data was no longer a good fit to the model. This issue of model divergence requires further examination.

It is important to note that even though implicit but not explicit attitudes were significant predictors of control mechanisms when modeled as latent factors, explicit attitudes were significant predictors when examined as manifest variables (i.e. using multiple regressions). Moreover, different types of stigmatizing attitudes may be particularly predictive. For example, perceptions of dangerousness and attitudes (explicit and implicit) regarding the helplessness of people with mental illness emerged as significant predictors of the endorsement of restrictive interventions in the multiple regressions. A recent review found that many mental health professionals share the public belief that people with mental illness are dangerous and doubt the possibility of recovery (Wahl & Aroesty-Cohen, 2010). Additionally, attitudes related to dangerousness have been found to lead to discriminatory behavior among college students (Corrigan et al., 2002). Our findings take this a step further by suggesting that these detrimental

attitudes may predict the use of certain clinical interventions. Further, it makes sense that the more helpless practitioners view people with mental illness, the more likely they would be to step in and recommend more restrictive and less autonomy-enhancing interventions. Thus, strategies are needed which target mental health practitioners' attitudes that people with mental illness are dangerous and helpless. While prior research has found contact with people with mental illness reduces attitudes related to dangerousness (Corrigan et al., 2002; Penn, Kommana, Mansfield, & Link, 1999), additional work is needed to determine what interventions could change the attitudes of mental health practitioners.

Limitations

One limitation of the current study, as well as other studies using the IAT, is that IATs are relative measures. Thus we could only capture implicit bias towards mental illness above and beyond bias of physical illness. Additionally, while providing a clinical vignette is a useful and common method for assessing stigma (Link, Yang, Phelan, & Collins, 2004), our findings are limited in that we did not observe actual behavioral use of interventions. While the treatment control measure created for the current study was based on prior work (Moser, 2007; Salyers et al., under review), the reliability and validity of the measure should continue to be assessed. In regard to the sample, SEM analyses were restricted given the small sample size. Specifically, we would have preferred to treat each of the eleven treatment control mechanisms as separate indicators of the control mechanism factor, but we lacked the power to do so. We also acknowledge that changing recruitment methods during the course of the study introduced some limitations in that the vignette was originally designed for Indiana ACT staff and we were unable to assess the extent to which practitioners were part of high fidelity ACT teams.

Implications and Future Directions

In conclusion, this study addresses a need to examine the attitudes of mental health professionals towards those they treat (Wahl & Aroesty-Cohen, 2010). Explicit and implicit attitudes among ACT practitioners in this study were positive toward individuals with mental illness. This is encouraging given that other studies have found negative attitudes among mental health professionals (Schulze, 2007; Wahl & Aroesty-Cohen, 2010), which could be impeding the recovery of consumers. The extent to which practitioners in evidence-based practices, including ACT, endorse bias against the people they treat should continue to be assessed. However, even though stigmatizing attitudes were not present in the current sample, implicit (but not explicit) latent modeled bias, as well as explicit attitudes that people with mental illness are dangerous and helpless, were found to predict the endorsement of restrictive and non-autonomy enhancing interventions. Thus, even at very low levels, stigma may affect clinical care. Given the concerns that ACT intervenes using paternalistic and coercive means (Gomory, 1999) and since ACT teams often target consumers who are not effectively engaged with treatment and are frequent users of psychiatric hospitals, substance abuse centers, jails, shelters, and other facilities, it may be that certain interventions are enacted without awareness of the underlying reasons and purpose. Mental health professionals, and specifically ACT clinicians, should work to be aware of ways in which their biases influence how they intervene with consumers.

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LIST OF REFERENCES

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TABLES

Table 1
Mental Illness Stigma IAT Categories and Stimuli

Category Label	**Stimuli to be Classified**			
Mental Illness	Depression	Schizophrenia	Bipolar Disorder	Obsessive-Compulsive Disorder
Physical Illness	Diabetes	Appendicitis	Cerebral Palsy	Multiple Sclerosis
Good	Excellent	Joyful	Wonderful	Great
Bad	Horrible	Nasty	Terrible	Awful
Innocent	Faultless	Virtuous	Innocent	Guiltless
Blameworthy	Culpable	At Fault	Guilty	Blameworthy
Helpless	Incompetent	Helpless	Incapable	Unable
Competent	Capable	Qualified	Competent	Able

Table 2
Example Sequence of an IAT Trial Cluster

Task	Block	Number of Trials	Function	Items assigned to left-key response*	Items assigned to right-key response
	1	20	Practice	Mental illness words	Physical illness words
	2	20	Practice	Bad words	Good words
	3	20	Practice	Bad + mental illness	Good + physical illness
1	4	36	Test	Bad + mental illness	Good + physical illness
	5	20	Practice	Physical illness words	Mental illness words
	6	20	Practice	Bad + physical illness	Good + mental illness
	7	36	Test	Bad + physical illness	Good + mental illness
	1	20	Practice	Mental illness words	Physical illness words
	2	20	Practice	Helpless words	Competent words
	3	20	Practice	Helpless + mental illness	Competent + physical illness
2	4	36	Test	Helpless + mental illness	Competent + physical illness
	5	20	Practice	Physical illness words	Mental illness words
	6	20	Practice	Helpless + physical illness	Competent + mental illness
	7	36	Test	Helpless + physical illness	Competent + mental illness
	1	20	Practice	Mental illness words	Physical illness words
	2	20	Practice	Blameworthy words	Innocent words
	3	20	Practice	Blameworthy + mental illness	Innocent + physical illness
3	4	36	Test	Blameworthy + mental illness	Innocent + physical illness
	5	20	Practice	Physical illness words	Mental illness words
	6	20	Practice	Blameworthy + physical illness	Innocent + mental illness
	7	36	Test	Blameworthy + physical illness	Innocent + mental illness

* The task (good vs. bad; helpless vs. competent; blameworthy vs. innocent) varied by participant, as did whether they were first presented with compatible (mental illness + bad) or incompatible (mental illness + good) trials first.

Table 3
Participant Demographics

	M	SD
Age	41.71	11.18
Years in Position	3.19	2.36
Years in Mental Health Field	11.04	8.90

	N	%		N	%
Gender			**State**		
Female	93	77.50	Indiana	67	53.17
Male	27	22.50	Non-Indiana	59	46.83
Race			**Marital Status**		
Caucasian	105	87.50	Single, Never Married	29	24.79
Minority	15	12.50	Married or Living as Married	70	59.83
			Divorced, Widowed, or Separated	18	15.38
Education			**Discipline**		
High School/GED	4	3.33	Social Work	59	49.17
Some College	5	4.17	Sociology	4	3.33
Associate's Degree	6	5.00	Nursing	7	5.83
Bachelor's Degree	44	36.67	Psychology	25	20.83
Master's Degree	60	50.00	Psychiatry	3	2.50
Doctoral Degree	1	0.83	Education	1	0.83
			Other	21	17.50
Position					
Staff	86	71.67			
Team Leader	27	22.50			
Program Director	7	5.83			

Table 4
Descriptive Statistics

Measure	N	Range	M	SD
Explicit Measures				
Mental illness feeling thermometer	133	0-100	74.90	20.30
Physical illness feeling thermometer	133	0-100	66.86	20.09
Semantic differential: mental illness bad	131	1-7	2.35	1.41
Semantic differential: mental illness blameworthy	131	1-7	2.79	1.33
Semantic differential: mental illness helpless	133	1-7	2.86	1.33
Difference score: physical illness-mental illness bad	130	-6-6	-0.36	1.08
Difference score: physical illness-mental illness blameworthy	129	-6-6	-0.12	1.32
Difference score: physical illness-mental illness helpless	133	-6-6	0.02	1.30
Perceived Dangerousness ($\alpha = 0.64$)	131	0-5	1.18	0.68
Implicit Measures				
IAT mental illness (vs. physical illness): bad (vs. good)	109	N/A	-0.20	0.42
IAT mental illness (vs. physical illness): blameworthy (vs. innocent)	108	N/A	-0.07	0.37
IAT mental illness (vs. physical illness): helpless (vs. competent)	107	N/A	-0.09	0.40
Dependent Variable				
Control mechanisms (total scale)	133	1-7	4.16	0.80
Restrictive practices subscale	133	1-7	4.89	1.03
Non-autonomous interventions subscale	133	1-7	3.29	0.80

Table 5

Correlations between Explicit Measures, Implicit Measures, and Dependent Variable

Measure	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
Explicit Measures															
1. MI FT	-														
2. PI FT	0.55**	-													
3. SD: Bad	0.30**	-0.32**	-												
4. SD: Blameworthy	-0.14	-0.00	0.27**	-											
5. SD: Helpless	0.31**	-0.21*	0.34**	0.36**	-										
6. DS: Bad	-0.04	-0.06	0.49**	-0.04	-0.02	-									
7. DS: Blameworthy	-0.02	0.08	-0.02	0.56**	0.07	0.04	-								
8. DS: Helpless	-0.11	0.05	0.06	0.07	0.47**	0.21*	0.04	-							
9. PD	0.27**	-0.09	0.09	0.13	0.24**	-0.01	0.02	0.09	-						
Implicit Measures															
10. IAT: Bad	-0.11	0.09	0.17	0.10	0.23*	0.17	0.26**	0.12	0.21*	-					
11. IAT: Blameworthy	0.29**	-0.09	0.04	0.15	0.29**	0.10	0.19	0.10	0.35**	0.29**	-				
12. IAT: Helpless	0.02	0.07	-0.03	0.06	0.17	0.10	0.17	0.01	0.17	0.42**	0.19*	-			
Dependent Variable															
13. CM Total	0.00	0.05	-0.08	0.11	0.19*	-0.05	0.12	0.07	0.39**	0.23*	0.02	0.27**	-		
14. RP	0.03	0.13	-0.15	0.02	0.09	-0.05	0.06	0.07	0.34**	0.18	-0.09	0.23*	0.92**	-	
15. NAI	-0.04	-0.10	0.04	0.21**	0.27**	-0.03	0.16	0.04	0.32**	0.30**	0.17	0.25**	0.78**	0.47**	-

Note. Abbreviations for the measures are as follows: Mental Illness Feeling Thermometer (MI FT), Physical Illness Feeling Thermometer (PI FT), Semantic Differential (SD), Difference Score (DS), Perceived Dangerousness (PD), Implicit Association Test (IAT), Control Mechanisms Total Scale (CM Total), Restrictive Practices Subscale (RP), Non-Autonomous Interventions Subscale (NAI).

* $p < 0.05$; ** $p < 0.01$

Table 6
Comparison of Structural Equation Models

Model	X^2	df	RMSEA	CFI	TLI	R^2	X^2_{diff}
1. Constrained Model	27.05	19	0.05	0.93	0.87	0.18	
Adjusted Models							
2. Adjusted Hypothesized Model	82.23**	48	0.07	0.85	0.71	0.43	
Difference between Model 2 & Model 1							55.18**
3. Adjusted Hypothesized Model with Two Demographic Variables	46.01**	24	0.08	0.83	0.69	0.38	
Difference between Model 3 & Model 1							18.96**
4. Adjusted Revised Model with Two Factors	67.22**	31	0.09	0.79	0.63	0.49	
Difference between Model 4 & Model 1							40.17**
Unadjusted Models							
5. Unadjusted Hypothesized Model	18.57	12	0.06	0.91	0.80	0.13	
Difference between Model 5 & Model 1							8.48
6. Unadjusted Revised Model with Two Factors	23.48	18	0.05	0.95	0.90	0.22	
Difference between Model 6 & Model 1							3.57*
7. Unadjusted Revised Model with Four Factors	52.42**	32	0.07	0.89	0.82	0.17	
Difference between Model 7 & Model 1							25.37*

$p < 0.05$; ** $p < 0.01$

Table 7
Hierarchical Regression Analysis with Explicit then Implicit Variables as Predictors of Control Mechanisms

	β	R^2	ΔR^2	$\Delta R^2 p$	*df*	F	F-*test p*
Step 1		0.37	0.37	< 0.01	6, 94	9.10	< 0.01
Age	-0.09						0.36
Gender	0.13						0.15
Education	-0.38						0.00
Position	0.12						0.21
State	0.39						0.00
Time in MH Field	0.02						0.89
Step 2		0.45	0.08	0.04	11, 89	6.51	< 0.01
Mental Illness Feeling Thermometer	0.09						0.34
Bad-Good Semantic Item	-0.13						0.16
Blameworthy-Innocent Semantic Item	0.11						0.20
Helpless-Competent Semantic Item	0.16						0.09
Perceived Dangerousness	0.17						0.07
Step 3		0.49	0.05	0.06	14, 86	5.93	< 0.01
Mental Illness + Bad IAT	0.10						0.32
Mental Illness + Blameworthy IAT	-0.16						0.10
Mental Illness + Helpless IAT	0.16						0.08

Table 8
Hierarchical Regression Analysis with Implicit then Explicit Variables as Predictors of Control Mechanisms

	β	**R^2**	**ΔR^2**	**ΔR^2*p***	***df***	**F**	**F-*test p***
Step 1		0.37	0.37	< 0.01	6, 94	9.10	< 0.01
Age	-0.09						0.36
Gender	0.13						0.15
Education	-0.38						0.00
Position	0.12						0.21
State	0.39						0.00
Time in MH Field	0.02						0.89
Step 2		0.42	0.05	0.05	9, 91	7.27	< 0.01
Mental Illness + Bad IAT	0.09						0.36
Mental Illness + Blameworthy IAT	-0.06						0.50
Mental Illness + Helpless IAT	0.20						0.03
Step 3		0.49	0.07	0.04	14, 86	5.93	< 0.01
Mental Illness Feeling Thermometer	0.04						0.64
Bad-Good Semantic Item	-0.15						0.11
Blameworthy-Innocent Semantic Item	0.12						0.15
Helpless-Competent Semantic Item	0.14						0.14
Perceived Dangerousness	0.20						0.04

Table 9
Hierarchical Regression Analysis with Implicit Variables as Predictors of Control Mechanisms

	β	**R^2**	**ΔR^2**	**ΔR^2*p***	***df***	**F**	**F-*test p***
Step 1		0.37	0.37	< 0.01	6, 94	9.10	< 0.01
Age	-0.09						0.36
Gender	0.13						0.15
Education	-0.38						0.00
Position	0.12						0.21
State	0.39						0.00
Time in MH Field	0.02						0.89
Step 2		0.42	0.05	0.05	9, 91	7.27	< 0.01
Mental Illness + Bad IAT	0.09						0.36
Mental Illness + Blameworthy IAT	-0.06						0.50
Mental Illness + Helpless IAT	0.20						0.03

Table 10
Hierarchical Regression Analysis with Explicit Variables as Predictors of Control Mechanisms

	β	**R^2**	**ΔR^2**	**ΔR^2 *p***	***df***	**F**	**F-*test p***
Step 1		0.37	0.37	< 0.01	6, 106	10.27	< 0.01
Age	-0.09						0.33
Gender	0.13						0.12
Education	-0.38						0.00
Position	0.12						0.18
State	0.39						0.00
Time in MH Field	0.02						0.89
Step 2		0.45	0.08	0.02	11, 101	7.38	< 0.01
Mental Illness Feeling Thermometer	0.09						0.31
Bad-Good Semantic Item	-0.13						0.13
Blameworthy-Innocent Semantic Item	0.11						0.17
Helpless-Competent Semantic Item	0.16						0.07
Perceived Dangerousness	0.17						0.05

FIGURES

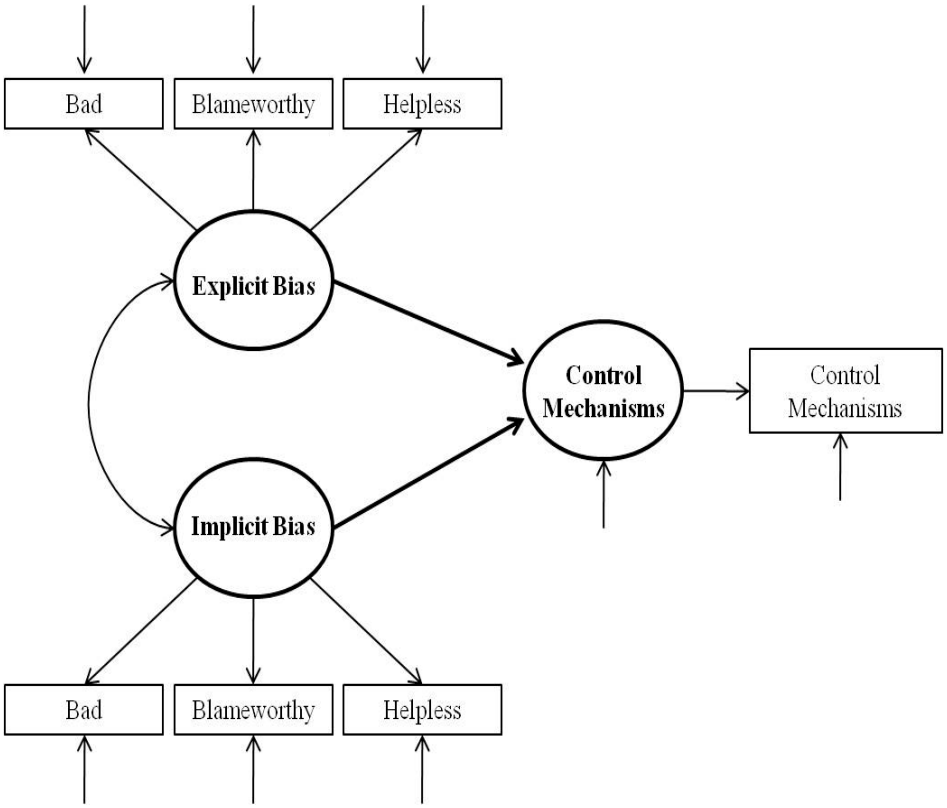
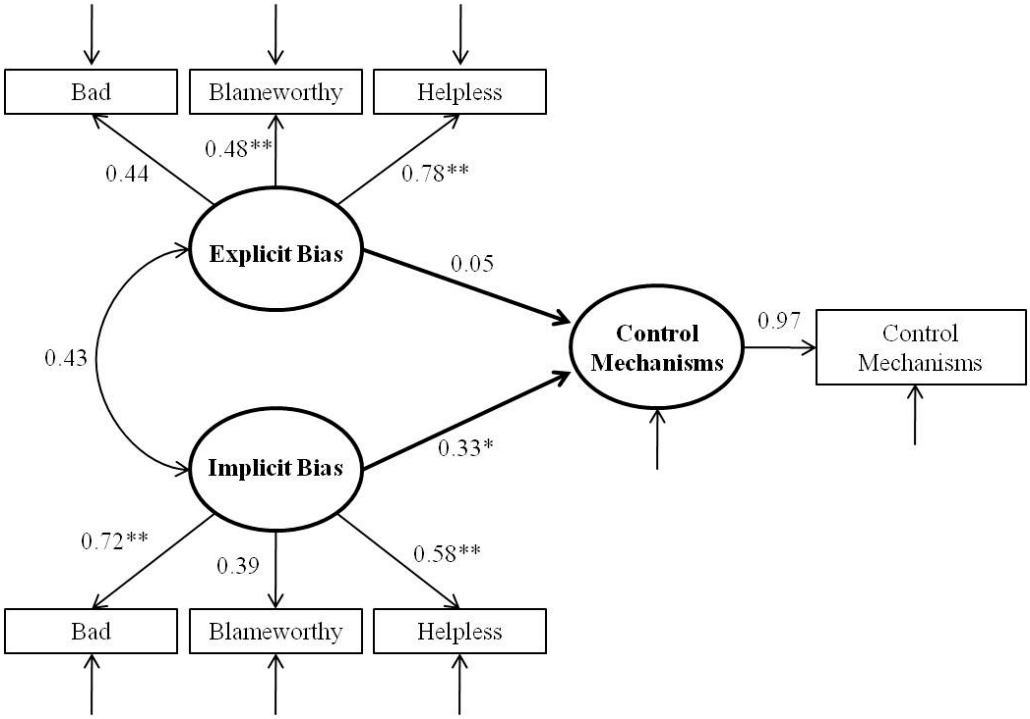
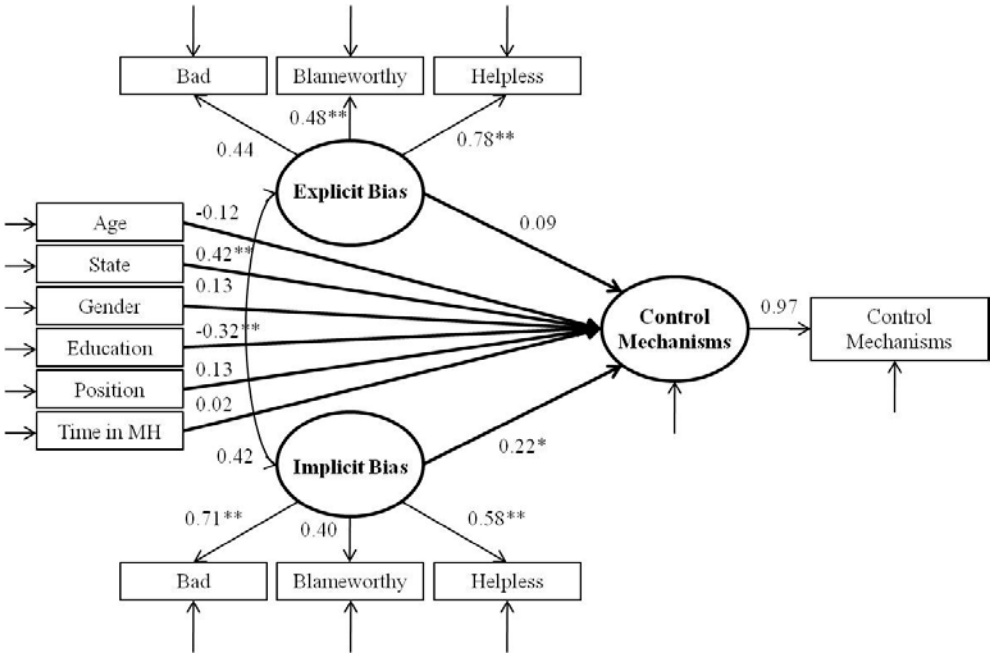


Figure 1. Hypothesized Model



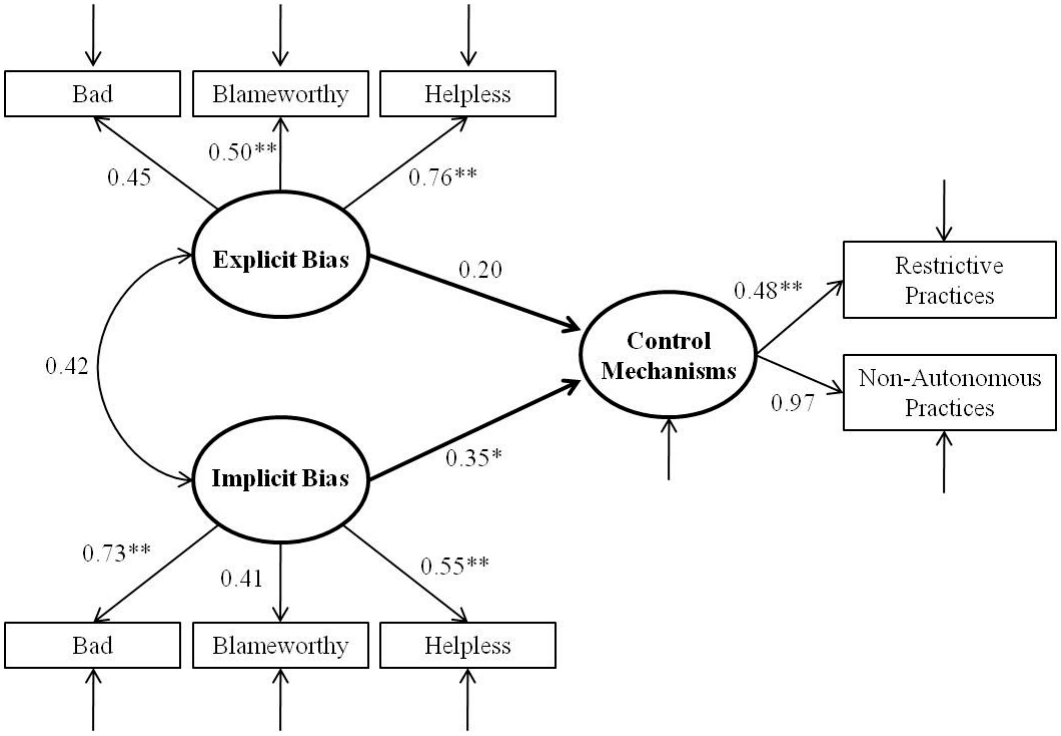
* $p \leq 0.05$, ** $p < 0.01$

Figure 2. Test of Unadjusted Hypothesized Model



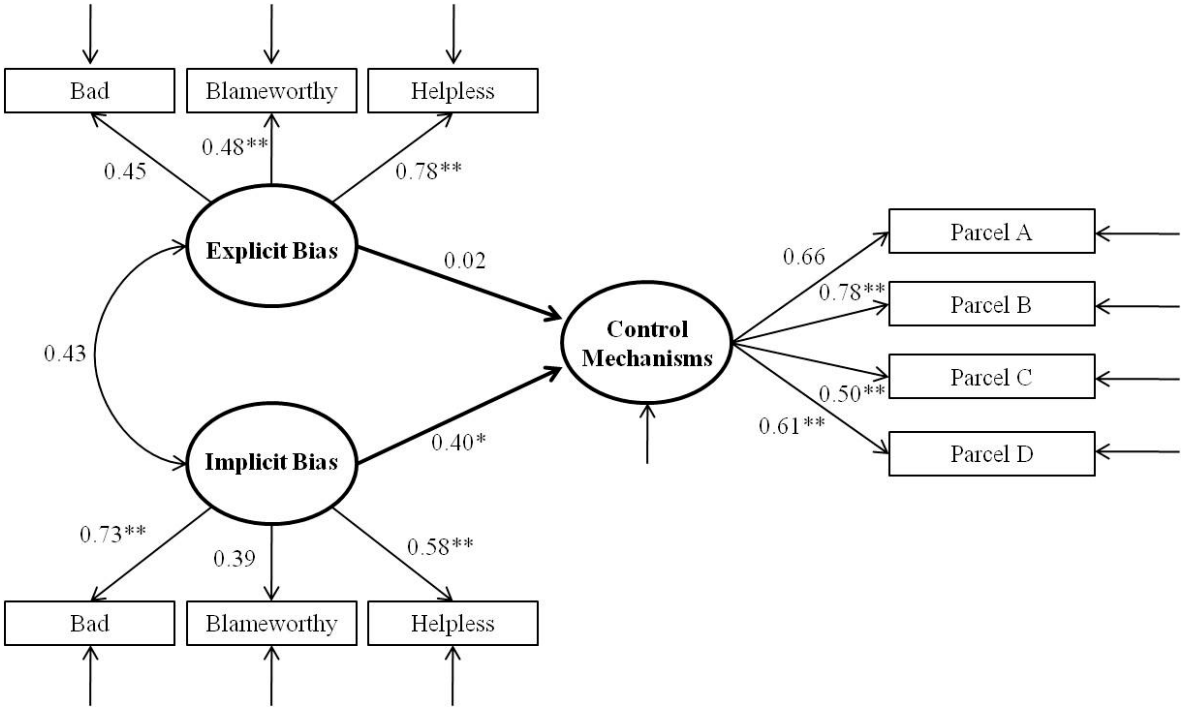
* p < 0.10, ** p < 0.01

Figure 3. Test of Adjusted Hypothesized Model



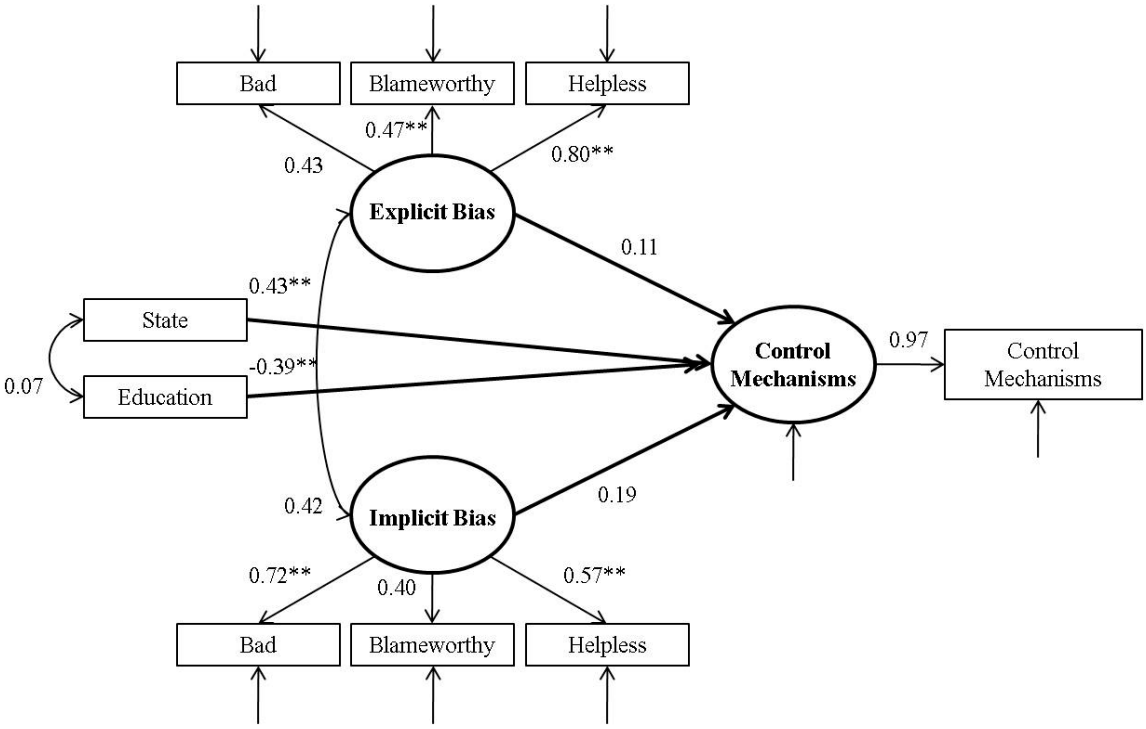
* $p \leq 0.05$, ** $p < 0.01$

Figure 4. Test of Unadjusted Two-Factor Model



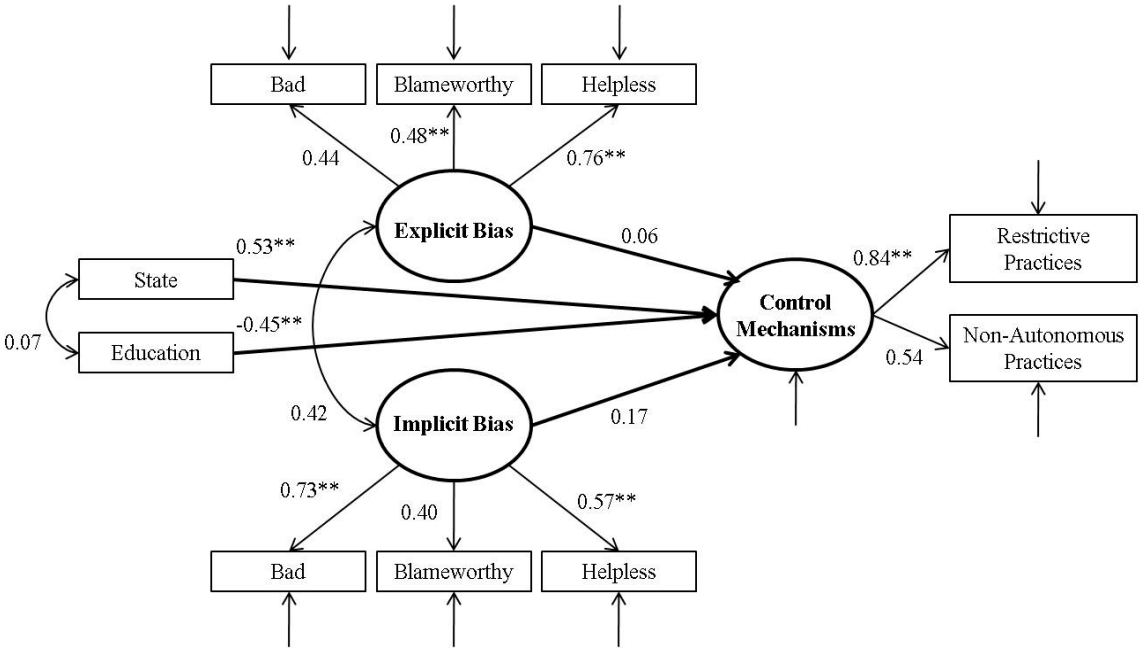
* $p \leq 0.05$, ** $p < 0.01$

Figure 5. Test of Unadjusted Four-Factor Model



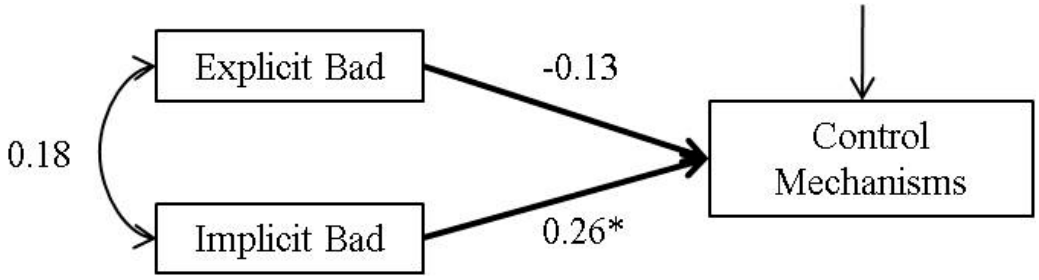
* $p \leq 0.05$, ** $p < 0.01$

Figure 6. Test of Adjusted Hypothesized Model with Two Demographic Variables



* $p \leq 0.05$, ** $p < 0.01$

Figure 7. Test of Adjusted Revised Model



* $p < 0.05$

Figure 8. Path Model of Explicit and Implicit Bad Measures

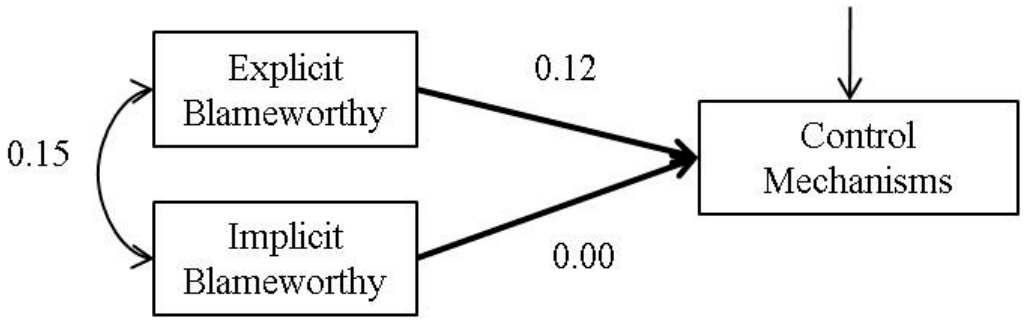
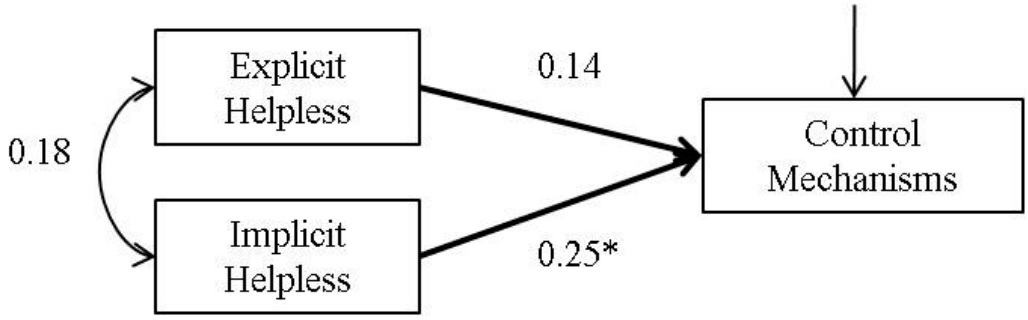


Figure 9. Path Model of Explicit and Implicit Blameworthy Measures



* $p < 0.05$

Figure 10. Path Model of Explicit and Implicit Helpless Measures

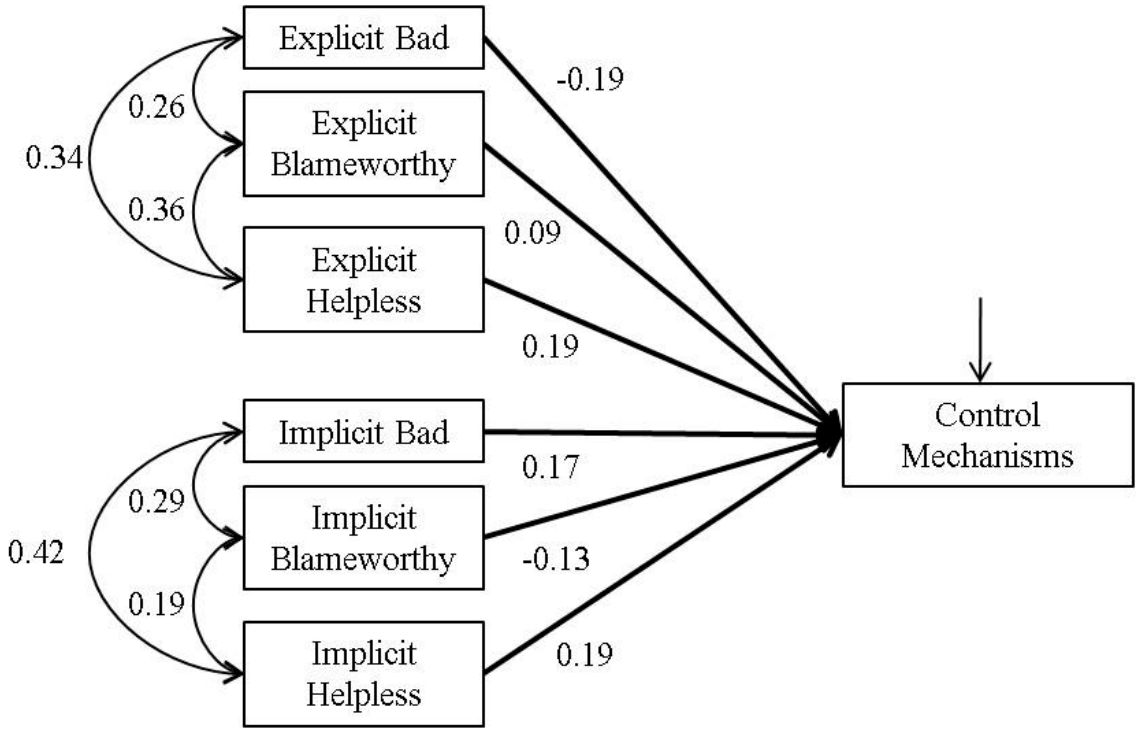


Figure 11. Path Model of Explicit and Implicit Measures

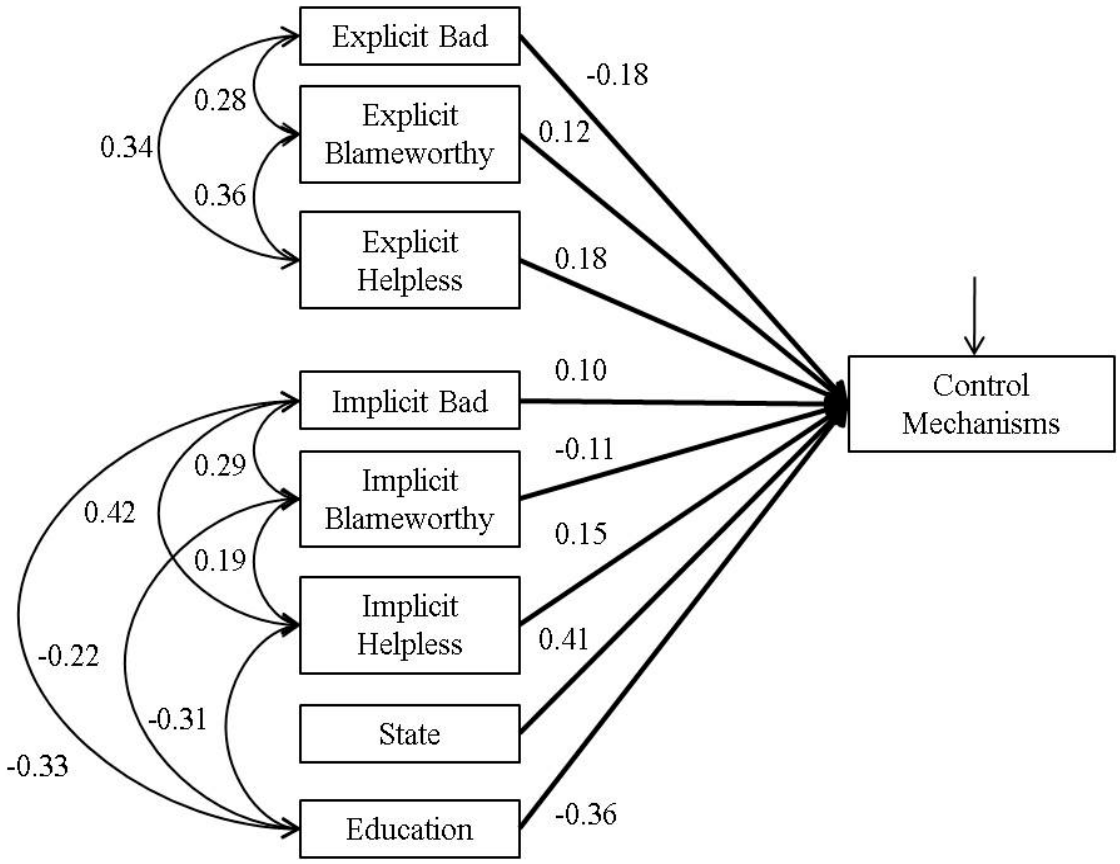


Figure 12. Path Model of Explicit, Implicit, and Demographic Variables

APPENDICES

Appendix A. Introduction

INTRODUCTION

Background Information

While the current study focuses on the explicit and implicit stereotypes towards mental illness, it is important to consider the extent to which such attitudes contribute to the overall stigma of mental illness. Thus, a brief review of stigma will be provided first. It is recognized that the terms stereotypes and stigma are not interchangeable, rather the present study focuses on the attitudinal component of stigma in order to better understand the negative evaluations that contribute to stigma. Further, the terms "bias" and "attitudes" will be used to more broadly refer to stereotypes. Following a brief overview of stigma, specific components of stigma will be reviewed and contrasted (implicit and explicit bias). Then an overview of the organizational context where the study occurs will be given, followed by an overview of potential sources and effects of implicit attitudes.

Stigma

The term stigma originated from the Greeks who used it to refer to bodily signs designed to expose something unusual and bad about the moral status of the bearer. The signs were burnt or cut into the body and advertised that the bearer was a blemished person to be avoided (Goffman, 1963). In Goffman's (1963) seminal work, stigma is described as occurring when others are viewed as possessing an attribute that makes them different from and less desirable than others within their own category. Stigma occurs when we reduce in our own minds "a whole and usual person to a tainted, discounted one" (p. 3). Stigma is a complex construct that involves many factors, including attributes, stereotypes, prejudice, and discrimination. A full review of

stigma is beyond the scope of this paper. Instead, the following discussion will focus on stigma related to mental illness. Stigma may present a serious obstacle for diagnosed persons living in the community and for persons looking for help with their mental illness (Corrigan, 2004; Link, 1987). For example, controlled research has indicated that the negative impacts of stigma outweigh the impairments related to the mental ills themselves, in that stigma predicts poor outcomes even when initial levels of symptomatology or functioning are statistically controlled (Link, Struening, Rahav, Phelan, & Nuttbrock, 1997; Wright, Gronfein, & Owens, 2000). The pervasiveness of mental illness stigma will be briefly discussed first, followed by an examination of one prominent and well-accepted definition of stigma.

Attitudes associated with mental illness stigma seem to be widely endorsed by the general public. Studies suggest that many citizens in the United States (e.g., Corrigan, 1999; Link, Phelan, Bresnahan, Stueve, & Pescosolido, 1999; Rabkin, 1974) and in other Western nations (e.g., Bhugra, 1989; Brockington, Hall, Levings, & Murphy, 1993; Hamre, Dahl, & Malt, 1994) endorse prejudicial attitudes, thus increasing the stigma associated with severe mental illness. An early narrative review of public attitudes toward mental illness stated, "By 1960 it was clearly established that mental illness was feared, and those labeled as mental patients were disliked and avoided by most people" (Rabkin, 1974, p. 28). A more recent study used nation-wide survey data in the United States to characterize public conceptions related to mental illness (Link et al., 1999). Link and colleagues (1999) found that symptoms of mental illness were strongly connected with public fears about potential violence and with a desire for limited social interaction. Interestingly, stigma of mental illness may be less severe in non-Western cultures, potentially because of the lack of differentiation between psychiatric and non-psychiatric illnesses in many non-Western medical traditions (Fabrega, 1991).

Stigma of mental illness has been modeled as a sequence of four related social-cognitive processes: cues, stereotypes, prejudice, and discrimination (Corrigan, 2004). First, cues are used

by individuals to infer the presence of mental illness. These cues include psychiatric symptoms (e.g., inappropriate affect, bizarre behavior), poor social skills, poor physical appearance, and labels. Labels can be obtained from others, such as a diagnosis from a psychiatrist, or through association, such as a person observed coming out of a mental health center (Corrigan, 2000; Penn & Martin, 1998). Second, mental illness cues then elicit or activate stereotypes. Stereotypes are knowledge structures or schemas that individuals learn about a specific social group and are an efficient means of categorizing information about social groups (e.g., Hilton & Von Hippel, 1996; Judd & Park, 1993). Commonly held stereotypes about people with mental illness include: they are incapable of independent living or real work (incompetence) and because of weak character, they are responsible for the onset and continuation of their disorders (blame). Attitudes of blame and incompetence have been consistently identified in surveys of the general public (Brockington et al., 1993; Hamre et al., 1994; Link et al., 1999). However, there is less information about practitioners' attitudes regarding the competence and blameworthiness of consumers.

Although people may have knowledge of a set of stereotypes, this does not mean that they agree with them. Thus, the third social-cognitive process of stigma is prejudice. In contrast to stereotypes, which are beliefs, prejudice involves an evaluative component (Allport, 1954). Prejudice entails a cognitive (endorsement of negative stereotypes) and an affective (negative emotional reaction) response. These responses in turn, then, often lead to a behavior reaction – discrimination, although one can be prejudiced but not discriminate. Discrimination is exhibited as negative action against the out-group or exclusively positive action for the in-group. Corrigan and Watson (2002) suggest that discrimination that results from stigma may take a variety of forms, including withholding help, social avoidance, coercive treatment, and segregated institutions. For example, research has demonstrated that stigma has a negative effect on obtaining good jobs (e.g., Link, 1987; Wahl, 1999) and leasing safe housing (e.g., Page, 1995;

Segal, Baumohl, & Moyles, 1980). Other negative effects will be reviewed in the "Potential Outcomes" section. Although all four social-cognitive processes are important contributors to the stigma process, I will focus on only the implicit and explicit stereotypes in response to the cue of mental illness labels.

Similar to Corrigan's modeling, stigma has been conceptualized by Link and colleagues (Link & Phelan, 2001; Link, Yang, Phelan, & Collins, 2004) as the co-occurrence of the following components: labeling, stereotyping, separation, status loss, and discrimination. Consistent with findings of a review on the measurement of mental illness stigma (Link, Yang, Phelan, & Collins, 2004), the current study will assess the stigma of mental illness by focusing on the measurement of the stereotype component of stigma. Again, it is important to acknowledge that while this study focuses only one component of stigma, it is still considered to be a measurement of stigma (Link, Yang, Phelan, & Collins, 2004).

Unfortunately, research has shown that professionals from most mental health disciplines subscribe to stereotypes about mental illness (Lyons & Ziviani, 1995; Mirabi, Weinman, Magnetti, & Keppler, 1985; Scott & Philip, 1985). Furthermore, recipients of care have been found to perceive mental health professionals as being insensitive and having low expectations (Wahl, 1999). As Deegan (1990) stated, "What is truly disabling to [persons with psychiatric disabilities] is stigma which, though rampant in the general population, is also widespread in the helping professions" (p. 309). Deegan describes stigma that exists among mental health professionals as benevolent paternalism, "false charity," and staff attitudes that are characterized by "low expectations, prophecies, and prognoses of doom" (p. 310), all of which are dehumanizing and spirit-breaking. While being paternalistic may appear to be helpful and not seem stigmatizing superficially, it is condescending and implies incompetence and helplessness among the service recipients. Critical to the current study is understand the extent to which explicit and implicit attitudes contribute to the stigma of mental illness.

Implicit Bias

Within much of American society, it is no longer considered socially acceptable to express overt prejudice. Instead, many individuals have learned to avoid open displays of biases. For example, overt racism appears to have been replaced by alternate forms, such as "modern" racism (e.g., negative beliefs are revealed through more socially acceptable beliefs like favoring meritocracy) and "aversive" racism (e.g., conscious endorsement of egalitarian values while simultaneously having unconscious, negative attitudes) (Gaertner & Dovidio, 1986; McConahay, 1986). While some people still express open displays of bias, it is often couched in humor or expressed in other more socially acceptable ways. In regards to mental illness, the extent to which expressing overt prejudice is socially inacceptable is less clear. For example, based on attitude surveys, levels of stigmatization towards to most serious forms of mental illness seem to have increased rather than decreased in the United States over the past 50 years (Hinshaw & Stier, 2008). However, such measurement is still prone to social desirability effects and it has been posited that these results may still underestimate actual, less censored attitudes (Hinshaw & Stier, 2008). The following discussion will focus on implicit biases, which may be defined as biases that are believed to be unconscious and not easily accessible, thereby requiring atypical measurement strategies. A general overview of implicit bias will be provided first, followed by more focused discussions on the Implicit Association Test (IAT) and implicit stereotypes of mental illness.

General Overview

Early research suggested that complex social behavior that appears to be enacted mindfully may instead be performed without conscious attention (Langer, 1978). In a review on implicit social cognition, Greenwald and Banaji (1995, p. 4) concluded that "considerable evidence now supports the view that social behavior often operates in an implicit or unconscious

fashion." Furthermore, implicit cognitions are formed by past experiences which influence judgment in a fashion not introspectively known by the actor. Attitudes, self-esteem, and stereotypes are all believed to have important implicit modes of operation. Similar to the implicit-explicit distinction in memory, implicit and explicit cognitions are proposed to be two distinct constructs which act as dual processes (Nosek, Greenwald, & Banaji, 2006). Even if people are motivated to retrieve and express implicit cognition, some information will not be available to introspective access (Nosek et al., 2006).

Supporting the notion of implicit cognition, research has found that attributions about individuals may be made spontaneously and as a part of the routine comprehension of social events (Winter & Uleman, 1984). More recent research has supported this notion, with one study finding that intergroup bias can occur automatically and under minimal conditions (i.e. assigning participants randomly to one of two meaningless groups and then testing whether they showed evidence of implicit intergroup bias) (Ashburn-Nardo, Voils, & Monteith, 2001).

The difficulty with assessing explicit attitudes in a reliable and valid manner has also supported the study of implicit cognition. For example, past research on prejudice and stereotyping has suggested that explicit measures of bias and stigma in various domains (e.g., race, sex, age) are subject to social desirability and often correlate poorly with alternative measures of stigma (Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997; Greenwald & Banaji, 1995). In terms of mental illness stigma, the survey response method used for assessing explicit attitudes has also been found to be susceptible to socially desirable response tendencies (Link & Cullen, 1983). As Hinshaw and Stier (2008) stated, in regards to mental illness stigma, "Given that it is no longer socially acceptable to express prejudice overtly, even individuals who hold deeply seated negative beliefs may present accepting attitudes on explicit measures" (p. 377).

The difficulty with assessing explicit attitudes and the findings regarding spontaneous attributions have led to an increased focus on the examination of implicit attitudes, including implicit prejudice and stereotyping. Stereotyping and prejudice are often particularly difficult to measure because people are often unwilling to admit negative attitudes and beliefs about social groups or they are implicit and out of awareness (Sekaquaptewa, Espinoza, Thompson, Vargas, & von Hippel, 2003). Thus, implicit measures were designed to assess prejudicial and stereotyping attitudes or biases by circumventing conscious expectations and biases. Recently, the term "implicit" has been applied to measurement methods that avoid requiring introspective access and reduce the roles of conscious attention and deliberative processes (Nosek et al., 2006).

Implicit vs. Explicit Measurement

It is important to consider the extent to which implicit and explicit measurement of bias differ. In general, initial results suggested that implicit and explicit measures were often to be either weakly or not at all related (DeCoster, Banner, Smith, & Semin, 2006; Greenwald, McGhee, & Schwartz, 1998). However, more recent research has shown that, in some case, implicit and explicit measures can be strongly related (Nosek, Greewald, & Banji, 2008). One meta-analysis of the IAT and self-report correlations found an average $r = 0.24$ (Hofmann, Gawronski, Gschwender, Le, & Schmitt, 2005) and a review of 57 different content domains found an average $r = 0.37$ (Nosek, 2005). The relationship between the IAT and self-report measure has been found to be moderated by various interpersonal (e.g., self-presentation, perceived distinctiveness from the norm) and intrapersonal (e.g., evaluative strength) features of attitudes (Nosek, 2005). As reported by Nosek and colleagues (2006), a multitrait-multimethod investigation demonstrated that the best-fitting models across seven attitude domains represented the IAT and self-report as related but distinct constructs, rather than as a single attitude construct,

even after accounting for common method variance. The relationship between explicit and implicit measures of attitudes toward mental illness will be discussed below.

The extent to which the predictive validity of implicit and explicit measures differ is also important to consider. A meta-analysis conducted by Poehlman and colleagues (2004) compared the predictive validity of the IAT across 61 studies with 86 individual effect sizes. For the studies that examined some measure of discrimination towards a social group, both explicit and IAT measures predicted behavior, but the IAT did a superior job of prediction (mean r = 0.25 for IAT vs. mean r = 0.13 for self-report). However, for studies that measured brand preferences or political candidate preferences, the IAT and explicit measures predicted outcome, but the explicit measures did a superior job of prediction (mean r = 0.40 for IAT vs. mean r = 0.71 for self-report). These differential effects are consistent with the "dual attitudes" model (Wilson, Lindsey, & Schooler, 2000), which posits that people have both automatic and conscious components to their attitudes. When people make a deliberate decision as to what they should do, the conscious component of their attitude has a dominating impact on their behaviors. In contrast, when people act without much deliberation, the automatic component of their attitude will have a dominating effect. Thus, theoretically it [makes sense] that the attitudes captured by explicit measures might predict different outcomes than attitudes captured by implicit measures. The extent to which explicit and implicit attitudes toward mental illness differentially predict behaviors will be reviewed in the "Implicit Stereotypes of Mental Illness" section below.

Thus, while implicit and explicit measures are generally related and are generally both predictors of behaviors, the extent to which they tap into different processes and their differing predictive ability supports the examination of both explicit and implicit attitudes in the current study.

Implicit Association Test (IAT)

The next section will focus on the measurement of implicit bias. Although this is a methodological issue, a more thorough understanding of implicit bias may be provided by examining the measurement of such attitudes as implicit attitudes require an atypical measurement strategy.

Measuring implicit bias has always been a challenge for researchers. Early forms of measurement included social desirability scale corrections (e.g., Carmelli, Rosenman, & Swan, 1988), word fragment completions (Hetts, Sakuma, & Pelham, 1999), and the affective priming procedure (Fazio, Sanbonmatsu, Powell, & Kardes, 1986). One method developed more recently and that is frequently being used to assess implicit biases is the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998). The IAT assesses the differential association of target concepts with an attribute. The task requires sorting stimulus exemplars from four concepts, using just two response options. The logic is that the sorting task should be easier when the two concepts that share a response are strongly associated (e.g., black and bad) than when they are weakly associated (e.g., black and good) (Nosek et al., 2006).

The IAT consists of distinct phases, some of which serve as practice to acquaint responders with the stimulus materials and sorting rules. The critical phases involve simultaneous sorting of stimulus items representing four concepts into two response options. Sorting is done by pressing specific keys on a computer. For example, in one critical phase, stimuli items representing *men* and *good* (e.g., male names and words like wonderful, glorious) are categorized together into one response (e.g., by pressing the “e” key), and stimuli representing *women* and *bad* (e.g., female names and words like terrible, horrible) are categorized together (e.g., by pressing the “i” key) to receive the alternative response. In the second critical phase, stimuli representing *women/good* are categorized together into one response and stimuli representing *men/bad* are categorized together to receive the alternative response. For responders

who have stronger associations of positive evaluations with females compared to males, the second sorting task should be much easier. The outcome measure is ease of sorting, which can be indexed by the reaction time (shorter latencies indicate stronger automatic associations of the stimulus with the category) and the frequency of errors (fewer errors indicate stronger associations). (See http://implicit.harvard.edu/ for a sample IAT). A detailed description of an IAT developed specifically to assess implicit bias toward mental illness is provided in the methods section.

The IAT has been applied in a wide variety of disciplines including social, cognitive, clinical, developmental, and health psychology; neuroscience; and market research (Nosek et al., 2006). Early research using the IAT (Greenwald et al., 1998) found weak to absent correlations between the IAT and self-report measures. More recent research, however (Greenwald, Nosek, & Banaji, 2003; Hofmann, Gawronski, Gschwendner, Le, & Schmitt, 2005; Nosek, 2005), has shown that the IAT and self-report can be strongly related, although multiple variables may moderate the relationship (Nosek, 2005). For example, in a meta-analysis of IAT and self-report correlations, the overall effect size was r = .24 (Hofmann et al., 2005). The types of relationships expected in the current study are discussed below. An area of emerging interest is an examination of the predictive utility of implicit stereotyping. For example, one noteworthy study found that implicit stereotyping was an important predictor of behavior in an interracial interaction (Sekaquaptewa et al., 2003). In a study of healthcare providers, Green and colleagues (2007) tested whether physicians showed implicit racial bias and whether such bias would predict thrombolysis recommendations for black and white patients with acute coronary syndromes. Physicians reported implicit, but not explicit, preference favoring white Americans and as their pro-white implicit bias increased so did their likelihood of treatment white patients and not black patients. Thus, there is some evidence that, even among health care providers, unconscious biases may contribute to discriminatory procedures.

A recent meta-analysis specifically examined the predictive validity of the IAT across 61 studies that produced 86 individual effect sizes (Greenwald, Poehlman, Uhlmann, & Banaji, in press; as cited in Nosek, Greenwald, & Banaji, 2006). For studies that involved some measure of discrimination towards a social group, it was found that although both the IAT and explicit measures predicted behavior, the IAT did a superior job (IAT mean r = .25, self-report mean r = .13). Despite the accumulated evidence for the construct and predictive validity of the IAT, Nosek and colleagues (2006) caution that the IAT should not be interpreted as a lie-detector or used as a diagnostic indicator for things such as employment selection. Rather, they state, "The IAT's best current applications are in education, where it has been used to afford insight into automatic associative processes that are introspectively inaccessible" (p. 285).

Implicit Stereotypes of Mental Illness

Of primary interest in the current study is implicit bias towards mental illness. In a recent review on explicit and implicit stigma toward individuals with mental illness, Stier and Hinshaw (2007) stated, "Despite the limitations of explicit measures, research on mental illness to date has overwhelmingly neglected any alternative methods of assessing stigma" (p.112). As noted earlier, explicit attitudinal measures of stigma are susceptible to social desirability concerns and are likely to underestimate true levels of stigma (Stier & Hinshaw, 2007). That is, persons may be motivated by self-presentation biases and thus appear more tolerant and caring than they actually are by underreporting mental illness stigma on explicit attitudinal measures. They may also think that, as providers who work with the severe mental illness population, there is no way that they would be biased.

In the first published study on mental illness using an implicit measure, Teachman and colleagues (2006) conducted two studies to explore the explicit and implicit stigma of mental illness in diagnosed and healthy samples. In their first study, 119 college students completed

several explicit measures and an investigator-developed IAT, which rated their attitudes toward persons with mental illness and physical illness. The IAT contrasted physical illness and mental illness groups across three descriptors (good/bad, innocent/blameworthy, competent/helpless). The college students demonstrated implicit bias against persons with mental illness relative to those with physical illness regarding their helplessness and blameworthiness, as well as relatively negative explicit bias regarding their helplessness. A second study using the same measures compared the attitudes of a sample of persons diagnosed with a mental illness (n = 34) with a healthy control sample from the general population (n = 36). The results from the second study replicated those from study one, with both groups demonstrating implicit and explicit biases. That is, members of the stigmatized group were no more tolerant toward persons with mental illness than the general public. In regards to the relationship between explicit and implicit measures, in the first study the explicit and implicit Bad-Good ratings were positively correlated ($r = 0.32$, $p = 0.01$), although ratings of Helpless-Competent and Me-Not Me were not correlated (r ranged from -0.12 to 0.10, all $p > 0.10$) (Teachman, Wilson, & Komarovskaya, 2006). However, in the second study, explicit and implicit measures of bias were not (r ranged from -0.06 to 0.17, all $p > 0.05$).

In another study on implicit stigma of mental illness, Peris, Teachman, and Nosek (2008) examined implicit and explicit bias toward mental illness among people with different levels of mental health training. They also investigated the influence of stigma on clinically-relevant decision-making. Participants (n = 1539) were recruited primarily from the Project Implicit Research site (http://implicit.harvard.edu/). Participants completed explicit measures and an IAT comparing persons with mental illness to welfare recipients. It is important to note that a different reference group was used in this study. The purpose of the change was not directly addressed by the authors, they did state that this provided a comparison of two stigmatized groups. They found that, compared to those without training (i.e., undergraduate students and the

general public), individuals with mental health training (i.e. mental health professionals, graduate students, and other health care/social services specialists) demonstrated more positive implicit and explicit evaluations. Minimal relationships were found between the explicit and implicit measure, with the IAT was positively correlated with the explicit Bad-Good rating (which paralleled the categories used for the IAT; $r = 0.12$, $p < 0.001$), but was less strongly correlated with Blameworthy-Innocent ($r = 0.02$, $p = 0.59$) and Helpless-Competent ($r = 0.06$, $p = 0.07$) ratings.

Further findings were that individuals with greater levels of explicit bias gave more negative estimates of patient prognoses (e.g., likelihood of treatment adherence, treatment dropout, harm to self/others) based on clinical vignettes (Peris, Teachman, Nosek, 2008). Individuals with greater levels of implicit bias displayed a tendency to over-diagnose, as indicated by the number of diagnoses given beyond the correct diagnosis, after reading clinical vignettes. Interestingly, when structural equation modeling was used to examine whether explicit and implicit bias would predict clinical decision-making, explicit bias had more predictive validity regarding reported prognoses (standardized coefficient = 0.34 versus -0.01), but implicit bias had more predictive validity regarding over-diagnosis (standardized coefficient = 0.19 versus 0.08). The authors concluded that implicit and explicit measures play unique roles in understanding the stigma of mental illness.

In the only other study published to date on implicit attitudes toward mental illness among the general population, implicit and explicit attitudes toward schizophrenia were examined among medical and psychology students in a study designed to test whether antistigma campaigns could improve such attitudes (Lincoln, Arens, Berger, & Rief, 2008). Specifically, Lincoln and colleagues (2008) examined whether different psychoeducational interventions on the etiology of schizophrenia (biogenic and psychosocial causal attributions vs. a neutral condition) would affect stigmatizing attitudes in medical ($n = 60$) and psychology students ($n = 61$) in Germany. The

IAT was used to examine implicit attitudes, with schizophrenia contrasted with depression, using the following attribution discriminations: culprit vs. victim, cureless vs. healable, and dangerous vs. safe. Various explicit measures were used, including a measure of the behavioral intention to distance oneself from persons with schizophrenia and a measure of 33 statements on schizophrenia stereotypes, grouped into attributions of dangerousness, responsibility, creativity, unpredictability/incompetence, and poor prognosis.

Lincoln and colleagues (2008) found that both medical and psychology students demonstrated significantly higher levels of negative stereotypes for schizophrenia as compared to depression in regards to dangerousness and responsibility, but not prognosis. Not significant positive correlations were found between the implicit and explicit measures, but the IAT for dangerousness was negatively associated with the explicit stereotype of responsibility ($r = -0.21$, $p = 0.02$). Notably, while the educational interventions were found to significantly decrease several explicit stereotype components among the students, there were no changes in implicit stereotyping.

In a recently published study, implicit self-stigma among people with mental illness was examined (Rusch, Corrigan, Todd, & Bodenhausen, 2010). Rusch and colleagues conceptualized implicit self-stigma as a combination of negative implicit attitudes toward mental illness and low implicit self-esteem. Explicit self-stigma and quality of life were also assessed. The Brief IAT was used to assess implicit self-stigma, with Mental Illness-Bad paired and compared relative to Mental Illness-good, used to examine negative implicit attitudes and Not Me-Good (relative to Me-Good) used to examine low implicit self-esteem. The target categories for negative implicit attitudes were “Mental Illness” versus “Physical Disability.” Eighty-five persons with mental illness (primary diagnoses of schizophrenia-spectrum disorders, bipolar disorder, or major depressive disorder) were recruited from mental health centers. Explicit and implicit measures were unrelated ($r = 0.02$, $p = 0.86$). Interestingly, lower levels of explicit and implicit self-stigma

independently predicted higher quality of life and explained nearly a third of the variance, after controlling for demographic variables, depressive symptoms, and diagnosis.

These studies (Lincoln et al., 2008; Peris et al., 2008; Rusch et al., 2010; Teachman et al., 2006) are groundbreaking in that they are the only published studies to date which have examined implicit stigma of mental illness. They demonstrated that implicit stigma of mental illness does exist, among college students and persons with mental illness, and provided initial results that implicit and explicit stigma differentially predict clinical decisions. However, results were mixed regarding the relationship of explicit to implicit attitudes. The current study will further explore this issue. Additionally, the prior studies prompt additional questions regarding whether implicit attitudes exist among staff who work with some of the most severely mentally ill using an evidence-based practice. Thus, the current study will examine the prevalence and impact of these attitudes within a specific organizational model – Assertive Community Treatment (ACT).

Assertive Community Treatment

Of particular interest in the current study is the extent to which mental health professionals in an evidence-based practice endorse stigmatizing attitudes, and the organizational factors that impact those attitudes. Although there are various evidence-based practices for persons with severe mental illness, many people with mental illness do not seek treatment and others begin treatment but fail to adhere to services as prescribed (Corrigan, 2004). One reason that people may make such choices is the stigma associated with various treatments. For example, findings from the Schizophrenia Patient Outcomes Research Team indicated that although 90% of those surveyed received maintenance neuroleptic treatment, only about 10% received intensive case management (Lehman et al., 1998). It has been suggested that people are motivated to avoid the label of mental illness that results when persons are associated with mental health care, such as case management services (Corrigan, 2004), and that people with mental

illness typically delay the seeking of treatment for protracted periods of time, because of ignorance, shame, and other by-products of stigma (Wang et al., 2005). Thus, it is particularly interesting to consider the role of implicit stigma as it impacts an evidence-based case management practice—Assertive Community Treatment (ACT).

ACT originated in the early 1970s in a state psychiatric hospital in Madison, Wisconsin (Stein & Santos, 1998). ACT was targeted for individuals diagnosed with severe mental illness who experienced the most persistent and extreme symptoms of the illness. The intention of the program was to transfer the functions of a long-term psychiatric institution into the community. Initial research results (e.g., Stein, Test, & Marx, 1975; Stein, Test, & Marx, 1980; Weisbrod, 1980) and more recent meta-analyses (e.g., Marshall, 1998; Mueser, Bond, Drake, & Resnick, 1998; Ziguras, 2000) have consistently reported that persons in ACT have better outcomes, including reduced dropout rates, increased housing stability, reduced hospital admission and length of hospitalizations, and higher client and family satisfaction. ACT is widely recognized as an evidence-based practice and is being implemented in several countries throughout the world (e.g., Bond, Drake, Mueser, & Latimer, 2001; Marshall & Lockwood, 1998).

With current emphases in the mental health field on increasing the availability of services with strong research support and basing services on recovery principles, the issue of integrating evidence-based practices with the recovery model is gaining increasing attention (e.g., Frese et al., 2001; Salyers & Macy, 2004; Torrey et al., 2005). Thus, an issue of concern for ACT is the degree to which recovery is facilitated. Notably, one of the specific aims of the recovery model is the reduction of stigmatizing treatments (e.g., treatment that emphasizes the illness over the person and keeps people from integrating into society), as well as reducing the effects of stigma on treatment. Recovery embraces anti-stigma themes of empowerment rather than notions of limitations. In contrast, it has been suggested that ACT tends to intervene using paternalistic and coercive means and, therefore, is not compatible with a recovery orientation (Gomory, 1999).

Recovery-oriented practices may be particularly difficult for ACT teams to perform, given that the admission criteria for the program ensure that many consumers will be noncompliant with treatment. ACT teams often target consumers who are not effectively engaged with treatment and are frequent users of psychiatric hospitals, substance abuse centers, jails, shelters, and other facilities. Some consumers are even specifically assigned to ACT as part of an outpatient commitment order or because they have had negative experiences with other mental health services (Salyers & Tsemberis, 2007).

Recovery is defined in many different ways, but two common perspectives are the internal conditions (i.e. hope, healing, empowerment, connection) experienced by individuals and the external conditions that facilitate recovery (Jacobson & Greenley, 2001). External conditions include a positive culture of healing and recovery-oriented services. According to Patricia Deegan (1988), recovery cannot be forced into rehabilitation programs, but rather environments can be created in which the recovery process can be nurtured. Organizations that embrace recovery attitudes should be the antithesis of programs that foster stigmatizing attitudes. A recovery-oriented environment may help or hinder explicit and implicit staff attitudes. For example, in a recent study examining the recovery-orientation of ACT teams, differences in team culture were noted between a team identified as high recovery-oriented and one identified as low recovery-oriented (Stull & Salyers, 2009). The team with a strong recovery orientation displayed trust in consumers, positive expectations for consumers, and respect for consumers. The team's culture was also characterized by consistency among team members' attitudes and team cohesion. In stark contrast, the staff members on the team with a weak recovery orientation were more paternalistic, did not demonstrate respect for consumers or for each other, and focused on the limitations, rather than the strengths, of the consumers.

The study also provided some evidence for the potential usefulness of implicit vs. explicit attitude indicators when trying to understand staff behavior. Specifically, observations suggested

that staff may explicitly endorse independence, while unconsciously acting in ways that seem to reinforce an implicit assumption that clients are not capable of doing things on their own (Stull & Salyers, 2009). That is, while stereotypes and prejudicial processes were not observed, discrimination was noted. For example, while one staff member talked openly to a researcher about wanting to support independence ("If some of our clients are given a chance, they could be more independent…I think we can sort of help them, but I don't think we need to do it for them."), the same staff person was also observed making negative comments to consumers ("Well, you better not screw up again.") and exhibited patronizing behaviors (e.g., describing in exact detail how a client should prepare for a doctor's visit when the client stated, "you know, I've got it, you know, the nurse explained it all to me yesterday, I'm fine.").

Impact of Stigma

Stigma can have extensive societal consequences. Potential impacts of stigmatization include lower self-esteem, lower academic achievement, and poorer health (Major & O'Brien, 2005). For example with regard to race, although African Americans had higher explicit and implicit self-esteem than white Americans (Nosek et al., 2002; Twenge & Crocker, 2000), African American and Latino students also are more likely than white students to drop out of high school (National Center for Education Statistics, 2004). Further, research has consistently found that members of stigmatized groups, compared to the nonstigmatized, are at a greater risk for mental and physical health problems, such as depression, hypertension, coronary heart disease, and stroke (e.g., Jackson et al., 1996; Krieger, 1990; McEwen, 2000). While these psychological, academic, and physical outcomes have been documented for various stigmatized groups, the extent to which stigma causes such outcomes is unclear.

In regards to stigma related to mental illness, studies have found that people with severe mental illnesses are viewed negatively by the public (e.g., Brockington et al., 1993; Hamre et al.,

1994). Additionally, stigma has been associated with decreased employment (e.g., Link, 1987; Wahl, 1999) and housing opportunities (e.g., Page, 1995; Segal et al., 1980), as well as increased family stress (Wahl & Harman, 1989). When persons with severe mental illness internalize stigma reactions, it can result in depression, lower self-esteem, increased anxiety (Farina, 1981; Link, 1987), and the adoption of secrecy and withdrawal as coping strategies (Link, Cullen, Struening, Shrout, & Dohrenwend, 1989). The stigma of mental illness is believed to interfere with the ability of persons with mental illness to re-integrate into the community and, by increasing stress, could also increase the likelihood of future relapse (Penn & Martin, 1998). In addition to these general impacts of stigma, several specific outcomes are expected to be associated with the biases of staff within mental health service organizations.

Potential Impacts in ACT

There are many factors that could be affected by the stigmatizing attitudes of ACT staff. One site-level factor that seems to be a particularly relevant indicator of a recovery-oriented (i.e., non-stigmatizing) treatment philosophy is the use of treatment control mechanisms. Specifically, stigma may impact how much control the team exerts on consumers during treatment. Results of the IP-RISP pilot study indicate that ACT teams differing on levels of recovery-orientation also differed in the extent to which they used treatment control mechanisms such as outpatient commitments, injection medications, and daily medication monitoring (Salyers et al., under review). Further, it has been suggested that mental health professionals who endorse authoritarian attitudes toward their clients are likely to rob them of their power over treatment, which could result in the use of coercive treatments like outpatient commitments in cases where they are not necessary (Corrigan, 2000). Thus, the use of treatment control mechanisms may be an indicator of both the quality and recovery-orientation of service being provided by teams. Similar to other studies which have measured stigma (see review by Link, Yang, Phelan, &

Collins, 2004), a clinical vignette will be used to assess the extent to which clinicians endorse the use of specific treatment mechanisms (e.g., outpatient commitments, payeeships, injection medications).

Finally, stigmatizing attitudes also may predict job performance. An experimental study found that positive attitudes toward a stigmatized group motivated participants to help the group (Batson, Chang, Orr, & Rowland, 2002). Specifically, Batson and colleagues (2002) had undergraduate students listen to an interview with a convicted heroin addict and dealer. Students who were induced to feel empathy for the group (through prior instruction to imagine how the interviewee felt about what happened and how it affected his life) reported more positive attitudes toward people addicted to hard drugs and acted on their attitudes by allocating more Student Senate funds to an agency to help drug addicts. In a study on the reactions of nurses and doctors in Turkey to patients who had attempted suicide, Demirkiran and Eskin (2006) found that more positive attitudes (feeling sympathy and not feeling anxiety/fear) were independent predictors of therapeutic reactions (e.g., to undertake medically appropriate intervention, not to leave the patient alone) toward suicidal patients among both doctors and nurses. Finally, in the previously mentioned study conducted by Green and colleagues (2007), the implicit racial bias among physicians was found to predict their use of medical procedures, specifically thrombolysis, for myocardial infarction.

In regards to mental health professionals, as previously discussed, professionals who exhibited more explicit and implicit stigma also assigned more diagnoses and poorer prognoses to consumers portrayed though clinical vignettes (Peris et al., 2008). Therefore, while the extent to which explicit and implicit stigma predicts the actual job performance of case managers is largely unknown, it is expected that staff who exhibit more positive attitudes (i.e., less stigma) will act in less stigmatizing ways (i.e., act more recovery-oriented), as documented by supervisors' job performance ratings.

Summary of Research Questions

The primary purpose of the current study is to examine the extent to which ACT practitioners endorse explicit and implicit stigma of mental illness. A second purpose is to explore the extent to which explicit and implicit stigma predict organizational outcomes (use of treatment control mechanisms and job performance).

Appendix B. Method

METHOD

Participants

Staff members, team leaders, and program directors of ACT teams were targeted for recruitment. Staff needed to be current employees of ACT teams and be at least one quarter full time employees (.25 FTE). There was no minimum requirement for the length of time of employment. Discipline and length of time in current position were assessed using a demographic questionnaire (see below) and were used as co-variates in the analyses, as necessary. Staff and program director participants were compensated with $10 and team leaders with $20 for their participation. The difference in compensation was based on differences in time commitment (30-45 minutes for staff versus 45-60 minutes for team leaders), as team leaders were asked to rate the job performance of each staff on their team.

A total of 154 participants completed at least some of portion of the survey. Out of the 154 participants, 123 started and went through the entire survey to get to the final page. Participants were first recruited from ACT teams in Indiana and a total of 67 ACT staff in Indiana participated, out of an estimated target of 320 individual participants (20.9% response rate). Given the small sample size, recruitment was expanded outside of the state and a total of 59 ACT staff from eight different states participated. Whether participants were from Indiana or not was not significantly related to any of the explicit or implicit variables. Of the participants who completed the demographic survey (n = 120), seven identified themselves as ACT program directors, 27 were team leaders, and 86 were staff. The following disciplines were identified: social work (n = 59), psychology (n = 25), nursing (n = 7), sociology (n = 4), psychiatry (n = 3), education (n = 1), and other (n = 21).

The sample was 77.5% female and had a mean age of 41.7 (SD = 11.2). Race or ethnicity was reported as 87.5% Caucasian, 7.5% African-American, 0.8% Hispanic, 0.8% multiracial, and 4.2% indicated another group. Participants reported an average of 11.0 years (SD = 8.9) in the mental health field and 3.2 years (SD = 2.4) in their current position.

Procedures

Phase I Recruitment

Team leaders and the supervisor of each team leader, also considered the program director, at each of the 30 ACT teams in Indiana were first contacted by email. Each email contained a brief introduction, brief description of the study, web link for the study, and had an attached recruitment letter with more detailed information. Email addresses were obtained from a contact list maintained by the ACT Center of Indiana. In order to receive compensation, team leaders and supervisors were asked to email the researcher the mailing address to which their gift card could be sent. When a team leader contacted the researcher, they were immediately sent a second email to forward on to the staff on their team. For those team leaders who had not participated within approximately one week that the first email was sent, they were then sent a second email and asked to forward the recruitment email on to their staff. Thus, three unique recruitment letters were crafted (for program directors/supervisors, team leaders, and staff) and all were distributed by email. See Appendix E for copies of all recruitment letters. Follow-up phone calls were made to all team leaders to remind them of the study and to ask them to forward on the recruitment email to their staff.

Phase II Recruitment

Given that only 20 subjects participated within approximately three weeks of initial recruitment, recruitment efforts were expanded (given approval by the IUPUI Institutional Review Board). First, postcards were sent to each of the ACT team leaders to distribute to their staff. This was attempted because one barrier to participation seemed to be lack of staff access to email and computers. The postcard contained a brief description of the study, as well as the website address which they could enter into any computer to access the survey (see Appendix E for a copy of the postcard). The postcard thus served as a physical reminder of the study and provided the website address, which they could then take with them to a compute of their choice (i.e. their home computer) to complete the survey. Phone calls regarding the postcards were made to all teams the day after the postcards were sent.

Within the next several weeks recruitment increased, but was still below the targeted number. Thus, a third recruitment method was initiated which involved recruiting ACT teams outside of Indiana. Although this method introduced additional variability (see limitations section), it was considered a necessary sacrifice in order to obtain an adequate sample of participants from ACT teams. Further, a barrier that was mentioned by one Indiana ACT team leader was that because of state-changes in the level of funding for ACT, their center was speculative of and resistant to complete any research and they had personally been told that they were not allowed to participate in this research study.

Similar to Phase I recruitment procedures, emails were sent to team leaders of other ACT programs and they were invited to participate and asked to forward an email to their staff, also encouraging their participation. Email addresses for other team leaders were obtained from contacts maintained by the ACT Center of Indiana and by contacting key colleagues in other states who were believed to have contact with ACT programs in their state (e.g., Lorna Moser is a graduate of IUPUI and works for an ACT team in North Carolina and was able to forward a

recruitment email to a listserv of all NC ACT teams). Participation was still considered completely voluntary and we had no way of identifying participants based on their responses. Slight modifications were made to the survey. First, when asking for the name of their program we provided an "other" response to which they could fill in the name of their program, if they chose to do so. Second, a question was added asking them to identify what state their team was located in. A total of nine contacts in 10 states (MN, IL, OH, NC, WA, MO, MA, PA, RI, and NY) were first contacted by email. When considered helpful, reminder postcards were also sent to teams within the state (e.g., MN teams could not all be contacted by email, but mailing addresses were available). For all teams, in and outside of Indiana, an email was sent on May 26 that the survey would close on June 6, although the last survey was taken on June 21.

Appendix C. Results

RESULTS

Additional Model Testing

SEM Unadjusted Models

One limitation of the original hypothesized and unadjusted model was the use of a single indicator for the control mechanism factor. Accordingly, an alternative model was tested with two theoretically-derived indicator variables: interventions which enhanced autonomy (5 items; e.g., let client manage their own medications) and interventions that prescribed restrictive practices (6 items; e.g., daily medication monitoring). For interpretability purposes, the items which assessed enhanced autonomy were reverse-scored. The results suggested a good fit for the revised model using all fit indices (X^2 = 23.48, df = 18, p = 0.17; RMSEA = 0.05, CFI = 0.95, TLI = 0.90). As noted in Figure 4, all indicators loaded significantly onto their respective factors. Results indicated that implicit bias (standardized coefficient = 0.35, p = 0.03), but not explicit bias (standardized coefficient = 0.20, p = 0.14), was a significant predictor of greater endorsement of control mechanisms, including more restrictive and non-autonomous interventions. A total of 22% of the variance in control mechanisms was accounted for by this model.

Another unadjusted model was tested using a parceling approach to provide four indicator variables of the treatment control mechanism. The restrictive intervention items and autonomy-enhancing items were further divided into two parcels, giving a total of four latent indicators. The goodness of fit indices suggested a poor fit for the final model (X^2 = 52.42, df = 32, p = 0.01; RMSEA = 0.07, CFI = 0.89, TLI = 0.82). As depicted in Figure 5, all indicators

loaded significantly onto their respective factors. Using this model, implicit bias (standardized coefficient = 0.41, p = 0.04), but not explicit bias (standardized coefficient = 0.02, p =0.89), was a significant predictor of greater endorsement of control mechanisms. The overall model explained about 17% of the variance in the treatment control factor.

In order to more definitively test whether implicit bias was a superior predictor compared to explicit bias two models were tested against each other, the unadjusted model with two treatment control indicators (the overall best fitting model) and a constrained model in which explicit and implicit bias were constrained to be equal. The results indicated that the models were significantly different at a trend level ($X^2_{diff} = 3.58$, p = 0.06). That is, the unadjusted model was a better fit to the data than the constrained model. See Table 6 for chi-square comparison test results between the constrained model and all other adjusted and unadjusted models.

SEM Adjusted Models

Another adjusted model was tested, similar to the hypothesized model, except that only the significant demographic variables were included (level of education and state). The goodness of fit indices suggested a poor fit for the model ($X^2 = 46.01$, df = 24, p = 0.00; RMSEA = 0.08, CFI = 0.83, TLI = 0.69). As depicted in Figure 6, results indicated that neither implicit (standardized coefficient = 0.19, p = 0.14) nor explicit bias (standardized coefficient = 0.11, p = 0.33) were significant predictors of control mechanisms. However, level of education (standardized coefficient = -0.39, p < 0.01) and state (standardized coefficient = 0.43, p < 0.01) were significant predictors of treatment control. A total of 38% of the variance in control mechanisms was accounted for by the model.

Finally, an adjusted model was tested in which the significant demographic variables (level of education and state) were added to the best fitting unadjusted model, which included two indicators of the treatment control mechanism factor (see Figure 7). The goodness of fit indices

suggested a poor fit for the model (X^2 = 67.22, df = 31, p = 0.00; RMSEA = 0.09, CFI = 0.79, TLI = 0.63). Again, neither implicit (standardized coefficient = 0.17, p = 0.25) nor explicit bias (standardized coefficient = 0.06, p = 0.63) were significant predictors of control mechanisms, but level of education (standardized coefficient = -0.45, p < 0.01) and state (standardized coefficient = 0.53, p < 0.01) were significant predictors. A total of 49% of the variance in control mechanisms was accounted for by the model.

Path Models

Additional models were analyzed to further examine manifest variables using path models, similar to the analyses performed using multiple regression. Analyses were conducted using AMOS software version 19. First, three separate path analyses were performed to compare the predictive power of implicit and explicit bias for the three types of bias (bad, blameworthy, and helpless). For example, in the first path analysis the explicit semantic differential bad item was compared to the mental illness IAT + bad measure in predicting the overall average score on the treatment control measure. Analogous analyses were performed for the blameworthy and helpless items. Across all three analyses, the only significant predictors were the mental illness IAT + bad and the mental illness IAT + helpless measures (see Figures 8-10). Thus, this provides additional support for the latent models in which implicit, but not explicit bias was a significant predictor of treatment control mechanisms.

A final set of path analyses were conducted in order to more fully explore multi-trait (bad vs. blameworthy vs. helpless bias) multi-method (implicit vs. explicit attitudes) comparisons. In these analyses, all of the manifest variables (three explicit measures and three implicit measures) were included as predictors of the overall treatment control mechanism average score. Correlations were added between the explicit measures and between the implicit measures given the bivariate correlations (see Table 5). As depicted in Figure 11, the following were significant

predictors of the treatment control mechanisms: explicit bad (standardized regression weight = -0.18, p = 0.04) and explicit helpless (0.19, p = 0.04), while implicit helpless (0.19, p = 0.06) was marginally significant. Approximately 14% of the variance in treatment control mechanisms was explained in this model.

A final path analysis was performed using the same method described above, except two demographic variables were added (state and level of education) which were found to be significant individual predictors in the multiple regressions (see Figure 12). Based on bivariate correlations, level of education was correlated with all implicit measures. This model explained approximately 44% of the variance in the treatment control mechanism measure. In this model, the following were individually significant predictors: explicit bad (standardized regression weight = -0.18, p = 0.01), explicit helpless (0.18, p = 0.02), state (0.41, p < 0.01), education level (-0.36, p < 0.01), and implicit helpless was a marginally significant predictor (0.15, p = 0.07).

Additional Multiple Regressions

Predictors of Implicit and Explicit Bias

Additional exploratory multiple regressions were performed to examine potential predictors of implicit and explicit bias variables. For all regressions, the following demographic variables were entered in the first step: age, gender, education, position, state, and formal training (i.e. number of years of formal academic coursework related to mental health). In the second step for all regressions, the following variables were entered: Organizational Climate (14-item subscale of the Recovery Enhancing Environment measure which assesses the recovery-oriented climate within an organization), Consumer Optimism (16-item measure which assesses staff's expectations regarding consumers to do things such as remain in the mental health system, function well in the community, etc.), recovery-oriented training (i.e. number of hours of

continuing education received in programs and workshops related to recovery), and non-recovery oriented training (i.e. number of hours of continuing education received in programs and workshops not related to recovery). These variables (Organizational Climate and Consumer Optimism) were additional measures hypothesized to be related to stigma.

Three multiple linear regressions were performed, regressing the three IAT tasks on the previously mentioned variables. The demographic variables were significant predictors of the Mental illness + bad IAT task ($R^2 = 0.17$, $F(6,90) = 2.99$, $p = 0.01$) and the addition of the variables in step two significantly increased the explained variance ($\Delta R^2 = 0.18$, $p < 0.01$). Significant individual predictors included the following: age ($\beta = 0.23$, $p = 0.02$), education ($\beta = -0.27$, $p = 0.03$), Organizational Climate ($\beta = 0.20$, $p = 0.04$), Consumer Optimism ($\beta = -0.32$, $p < 0.01$), and non-recovery oriented training ($\beta = -0.28$, $p = 0.01$). The demographic variables were also significant predictors of the Mental illness + blameworthy IAT task ($R^2 = 0.16$, $F(6,90) = 2.87$, $p = 0.01$) and variables in step two were marginally significant in increasing the explained variance ($\Delta R^2 = 0.08$, $p = 0.06$). The only individual predictor which was significant was Consumer Optimism ($\beta = -0.29$, $p = 0.01$). While the demographic variables were significant predictors of the Mental illness + helpless IAT task ($R^2 = 0.16$, $F(6,89) = 2.92$, $p = 0.01$), the variables in the second step did not increase the explained variance ($\Delta R^2 = 0.04$, $p = 0.39$).

The next set of multiple linear regressions performed examined the three semantic differential items and the mental illness feeling thermometer. The demographic variables were not significant predictors of the Helpless-Competent semantic differential item ($R^2 = 0.02$, $F(6,93) = 0.32$, $p = 0.92$), but variables in step two were significant in increasing the explained variance ($\Delta R^2 = 0.12$, $p = 0.02$). The only individual predictor which was significant was Consumer Optimism ($\beta = -0.35$, $p < 0.01$). The demographic variables also were not significant in predicting the remaining items, and the variables entered in step two did not significantly increase the explained variance for the Bad-Good semantic item (total $R^2 = 0.14$), the Blameworthy-

Innocent semantic item (total $R^2 = 0.12$), or the mental illness feeling thermometer (total $R^2 = 0.14$).

The final analysis regressed the Perceived Dangerousness scale (the dependent variable) on the same variables mentioned above, except that time in the mental health field (i.e. number of years worked in the mental health field) was added in step one with other demographic variables because it was significantly correlated with Perceived Dangerousness. The demographic variables were significant predictors ($R^2 = 0.22$, $F(8,91) = 3.25$, $p < 0.01$) and the addition of the variables in step two significantly increased the explained variance ($\Delta R^2 = 0.14$, $p < 0.01$). Significant individual predictors included the following: education ($\beta = -0.31$, $p = 0.01$), time in the mental health field ($\beta = -0.25$, $p = 0.04$), and Consumer Optimism ($\beta = -0.37$, $p < 0.01$).

Predictors of Control Mechanisms

Follow-up regressions were performed to examine implicit and explicit measures as predictors of control mechanisms. First, a multiple linear regression analysis was performed, regressing the overall average treatment control mechanism score (the dependent variable) on the mental illness + bad, mental illness + blameworthy, and mental illness + helpless IAT tasks. The following demographic variables were entered first: age, gender, education level, amount of time in the mental health field, position (staff vs. team leaders and program directors), and state (respondents from Indiana vs. respondents from all other states).

An initial hierarchical multiple regression was conducted, with the demographic variables entered in the first step and all other predictor variables entered in the second step (see Table 9). The demographic variables were significant predictors of control mechanisms ($F(6,94) = 9.10$, $p < 0.01$) and accounted for approximately 37% of the variance in the control mechanisms. The addition of the IAT tasks were marginally significant in increasing the explained variance, $\Delta R^2 = 0.05$, $p = 0.05$. When each of the individual predictor variables in the regression were examined

univariately as predictors of treatment control mechanisms, education ($\beta = -0.38$, $p < 0.01$), state ($\beta = 0.39$, $p < 0.01$), and the mental illness + helpless IAT task ($\beta = 0.20$, $p = 0.03$) were significant. All other control and predictor variables failed to reach statistical significance.

A second multiple linear regression analysis was performed, regressing the overall average treatment control mechanism score (the dependent variable) on the following explicit measures of stigma: mental illness feeling thermometer, three semantic differential Bad-Good, Blameworthy-Innocent, and Helpless-Competent items, and Perceived Dangerousness. A hierarchical multiple regression was conducted, with the same demographic variables listed above entered in the first step and all other predictor variables entered in the second step (see Table 10). The demographic variables were significant predictors, $R^2 = 0.37$, $F(6,106) = 10.27$, $p < 0.01$. The addition of the explicit stigma measures significantly increased the explained variance, $\Delta R^2 = 0.08$, $p = 0.02$. When each of the individual predictor variables in the regression were examined univariately as predictors of treatment control mechanisms, education ($\beta = -0.38$, $p < 0.01$) and state ($\beta = 0.39$, $p < 0.01$) were significant, and the Helpless-Competent semantic item ($\beta = 0.16$, $p = 0.07$) and Perceived Dangerousness scale ($\beta = 0.17$, $p = 0.05$) were marginally significant. All other control and predictor variables failed to reach statistical significance.

Given the pattern of findings in the SEM and multiple regression results, two more multiple regression analyses were performed to examine whether certain biases were more predictive of control mechanisms than other variables. Specifically, it was expected that both the implicit and explicit measures of helplessness might be more predictive, thus the first two regressions examined whether the addition of these measures would explain more variance in control mechanisms than the other implicit and explicit measures combined. For both regressions, the following demographic variables were entered in the first step: age, gender, education, amount of time in the mental health field, position (staff vs. team leaders and program directors), and state (respondents from Indiana vs. respondents from all other states). In the first

analysis, all explicit and implicit measures of bias except for the helplessness measures were entered in the second step (mental illness + bad IAT, mental illness + blameworthy IAT, mental illness feeling thermometer, Bad-Good semantic differential, Blameworthy-Innocent semantic differential, and Perceived Dangerousness), and the helplessness measures (mental illness + helpless IAT and Helpless-Competent semantic differential) were entered in the third step.

The demographic variables were significant predictors of control mechanisms ($F(6,94) = 9.10$, $p < 0.01$) in both regressions and accounted for approximately 37% of the variance in the control mechanisms. The addition of the bias measures in the second step were significant in increasing the explained variance, $\Delta R^2 = 0.09$, $p = 0.04$, and the addition of the helpless measures in the third step were marginally significant in increasing the explained variance, $\Delta R^2 = 0.04$, $p = 0.05$. When each of the individual predictor variables in the regression were examined univariately as predictors of treatment control mechanisms, education ($\beta = -0.38$, $p < 0.01$), state ($\beta = 0.39$, $p < 0.01$), and Perceived Dangerousness ($\beta = 0.23$, $p = 0.02$) were significant and the mental illness + bad IAT task ($\beta = 0.17$, $p = 0.07$), Blameworthy-Innocent semantic differential item ($\beta = 0.16$, $p = 0.06$), and mental illness + helpless IAT task ($\beta = 0.16$, $p = 0.08$) were marginally significant. All other control and predictor variables failed to reach statistical significance.

In the final regression, steps two and three were reversed so that the helplessness measures were added in the second step and all other implicit and explicit measures were entered in the third step. The addition of the helpless measures in the second step were significant in increasing the explained variance, $\Delta R^2 = 0.06$, $p = 0.01$, and the addition of all other measures were not significant in increasing the explained variance, $\Delta R^2 = 0.06$, $p = 0.12$. When each of the individual predictor variables in the regression were examined univariately as predictors of treatment control mechanisms, education ($\beta = -0.38$, $p < 0.01$), state ($\beta = 0.39$, $p < 0.01$), mental illness + helpless IAT task ($\beta = 0.20$, $p = 0.02$), and Perceived Dangerousness measure ($\beta = 0.20$,

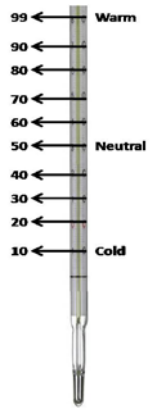
$p = 0.04$) were significant and the Helpless-Competent semantic differential item ($\beta = 0.14$, $p = 0.09$) was marginally significant. All other control and predictor variables failed to reach statistical significance.

Appendix D. Measures

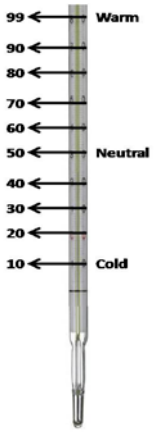
MEASURES

Feeling Thermometers

1. Make a mark at the appropriate position on the thermometer to describe how you feel about people with mental illness.



2. Make a mark at the appropriate position on the thermometer to describe how you feel about people with physical illness.



Single Item Measures

1. Circle the mark on the scale that best describes your attitudes toward persons with mental illness. Mark the middle of the scale if you consider both anchors (bad and good) to be irrelevant to persons with mental illness.

Bad			Irrelevant			**Good**	

2. Circle the mark on the scale that best describes your attitudes toward persons with mental illness. Mark the middle of the scale if you consider both anchors (blameworthy and innocent) to be irrelevant to persons with mental illness.

Blameworthy			Irrelevant			**Innocent**	

3. Circle the mark on the scale that best describes your attitudes toward persons with mental illness. Mark the middle of the scale if you consider both anchors (helpless and competent) to be irrelevant to persons with mental illness.

Helpless			Irrelevant			**Competent**	

4. Circle the mark on the scale that best describes your attitudes toward persons with physical illness. Mark the middle of the scale if you consider both anchors (bad and good) to be irrelevant to persons with physical illness.

Bad			Irrelevant			**Good**	

5. Circle the mark on the scale that best describes your attitudes toward persons with physical illness. Mark the middle of the scale if you consider both anchors (blameworthy and innocent) to be irrelevant to persons with physical illness.

Blameworthy			Irrelevant			**Innocent**	

6. Circle the mark on the scale that best describes your attitudes toward persons with physical illness. Mark the middle of the scale if you consider both anchors (helpless and competent) to be irrelevant to persons with physical illness.

Helpless			Irrelevant			**Competent**	

Perceived Dangerousness

Please indicate how much you agree or disagree with each statement below by circling your answer.

	SA	A	NS, PA	NS, PD	D	SD
1. If a group of persons with mental illness lived nearby, I would not allow my children to go to the movie theatre alone.	**0**	**1**	**2**	**3**	**4**	**5**
2. If a person with mental illness applied for a teaching position at a grade school and was qualified for the job I would recommend hiring him or her.	**0**	**1**	**2**	**3**	**4**	**5**
3. One important thing about persons with mental illness is that you cannot tell what they will do from one minute to the next.	**0**	**1**	**2**	**3**	**4**	**5**
4. If I know a person has a mental illness, I will be less likely to trust him or her.	**0**	**1**	**2**	**3**	**4**	**5**
5. The main purpose of mental hospitals should be to protect the public from persons with mental illness.	**0**	**1**	**2**	**3**	**4**	**5**
6. If a person with mental illness lived nearby I would not hesitate to allow young children under my care to play on the sidewalk.	**0**	**1**	**2**	**3**	**4**	**5**
7. Although some persons with mental illness may seem alright it is dangerous to forget for a moment that they are mentally ill.	**0**	**1**	**2**	**3**	**4**	**5**
8. There should be a law forbidding a person with a mental illness the right to obtain a hunting license.	**0**	**1**	**2**	**3**	**4**	**5**

Note: SA = Strongly agree; A = Agree; NS,PA = Not sure, but probably agree; NS, PD = Not sure, but probably disagree; D = Disagree; SD = Strongly disagree

Demographics

1. What is your age?	_____
2. What is your gender?	1) female, 2) male
3. What is your ethnicity?	1) Hispanic or Latino, 2) Not Hispanic or Latino, 3) Unknown
4. What is your race?	1) American Indian/Alaska Native 2) Asian 3) Native Hawaiian or other Pacific Islander 4) Black or African American 5) White 6) More than one race (e.g. Black/White) 7) Other
5. What is your current marital status?	1) Single, Never Married 2) Married, or Living as Married 3) Divorced, Widowed, or Separated
6. What is the highest grade in school you completed?	1) High School/GED 2) Some College 3) Associate's Degree 4) Bachelor's Degree 5) Master's Degree (e.g., MS, MSW) 6) Doctoral Degree (e.g., M.D., Ph.D.) 7) Other
7. What is your current discipline?	1) Social Work 2) Sociology 3) Nursing 4) Psychology 5) Psychiatry 6) Education 7) Other
8. What is your current position?	1) Staff 2) Team Leader 3) Program Director
9. What is the name of your team?	(Given dropdown option to select one of the 30 team names in Indiana or to provide an “other” response)
10. What state is your team located in?	(Given dropdown option to select one of the 50 states)

11. How long have you been in your current position (in decimal years)? For example, if you have been in your position for 6 months, you would respond with 0.5 years. _____

12. How long have you worked in the mental health field (in decimal years)? For example, if you have been in the mental health field for 18 months, you would respond with 1.5 years. _____

13. Please indicate the number of years you received formal academic coursework related to mental health (including internships). _____

14. Please indicate the number of hours of continuing education you have received in agency sponsored and non-agency sponsored programs and workshops that were NOT related to recovery; for example, in-house trainings on intake assessments or a workshop on suicide prevention. _____

15. Please indicate the number of hours of continuing education you have received in agency sponsored and non-agency sponsored programs and workshops that WERE RELATED TO RECOVERY; for example, motivational interviewing or person-centered planning workshops.

Treatment Control Mechanisms

Please read the vignette below and indicate how likely you would be to recommend the following interventions for the consumer. You may recommend more than one intervention.

Jane is a 21 year-old female who has been on your ACT team for one year. She has been diagnosed with paranoid schizophrenia and cannabis abuse. She has experienced unstable housing since she first joined your team a year ago and frequently puts herself in dangerous situations by hanging out with violent people, who have previously hurt her. In the past she has beaten up her step-mom while off meds and using drugs. While she will occasionally come to the office to receive medication, she will also disappear for several weeks at a time, during which time staff are unable to locate her.

Based on what I've read about Jane, I would recommend…

	Strongly Disagree			Neutral			Strongly Agree
1. Involuntary outpatient commitment/treatment	1	2	3	4	5	6	7
2. Coordinating an inpatient hospitalization	1	2	3	4	5	6	7
3. Placing the consumer in a place of residence that is owned or operated by the ACT program or agency	1	2	3	4	5	6	7
4. Engaging family and/or friends and include them fully in treatment	1	2	3	4	5	6	7
5. The ACT program becoming the representative payee	1	2	3	4	5	6	7
6. Letting the client manage her own money	1	2	3	4	5	6	7
7. Daily medication delivery/monitoring	1	2	3	4	5	6	7
8. Injection medications	1	2	3	4	5	6	7
9. Letting the client manage her own medications	1	2	3	4	5	6	7
10. Require random drug screens	1	2	3	4	5	6	7
11. Assisting client to seek employment	1	2	3	4	5	6	7
12. Have a discussion with the client regarding her personal goals and make her goals the focus of treatment	1	2	3	4	5	6	7
13. Other (please specify):							

Adapted Recovery Self-Assessment Scale: Provider Version

(Job performance measure collected only from the team leader.)

Please indicate the degree to which the following 10 statements reflect the activities, values, and practices of the staff listed.

	Strongly Agree				Strongly Disagree
1. Helping people build connections with their neighborhoods and communities is one of primary activities in which this staff member is involved.	1	2	3	4	5
2. This staff member makes every effort to involve significant others (spouses, friends, family members) and other natural supports (i.e., clergy, neighbors, landlords) in the planning of a consumer's services, if so desired.	1	2	3	4	5
3. This staff member listens to and follows the choices preferences of consumers.	1	2	3	4	5
4. This staff member does not use threats, bribes, or other forms of coercion to influence a consumer's behavior or choices.	1	2	3	4	5
5. This staff member encourages consumers to take risks and try new things.	1	2	3	4	5
6. The achievement of goals by people in recovery is formally acknowledged and celebrated by this staff member.	1	2	3	4	5
7. This staff member uses a language of recovery (i.e. hope, high expectations, respect) in everyday conversations.	1	2	3	4	5
8. This staff member actively assists people in recovery with the development of career and life goals that go beyond symptom management and stabilization.	1	2	3	4	5
9. This staff member assists consumers with fulfilling their individually-defined goals and aspirations.	1	2	3	4	5
10. This staff member believes that people can recover and make their own treatment and life choices.	1	2	3	4	5

Appendix E. Recruitment Information

Recruitment Letters

March 9, 2010

Dear ACT Supervisor:

This letter is to solicit your participation in a dissertation on the stigma of mental illness. For individuals with mental illness, stigma can act as a barrier to a better life and to getting needed help. The purpose of this study is to examine treatment providers' explicit (conscious) and implicit (often unconscious) attitudes toward mental illness. Specifically, we want to examine implicit and explicit attitudes among ACT staff. Secondarily, we want to explore the extent to which attitudes are related to treatment interventions and overall job performance. You were selected as a possible participant because you have been identified as a program director of at least one of the 30 ACT Teams in the state of Indiana.

If you agree to participate, we ask that you use the web-link included in the email to access and complete an online survey. The survey includes measures of explicit stigma and a measure of implicit stigma, as well as surveys which assess burnout, attitudes regarding consumers, perceptions of the team's recovery orientation, and demographic information. Additionally, you will be asked to respond to a vignette and indicate the extent to which you would recommend the use of various treatment interventions. A potential risk of this study is that you would be uncomfortable answering certain questions, although the included surveys are not intended to be threatening in any way. You may stop the survey at any time by simultaneously pressing the Control and Q buttons (Ctrl + Q). You may also choose to skip any questions with which you are uncomfortable. The survey is expected to take about 45 minutes to complete. Due to the nature of the survey, you will be unable to minimize the survey on your computer to work on other tasks at the same time. The entire survey must be completed at one time (i.e. if you choose to exit the survey you will not be able to go back later to finish it). **You will be compensated with a $10 gift card for your participation**. When you exit the online survey you will be given information on how to contact the researcher. If you choose to contact the researcher and provide a mailing address, you then will be mailed a $10 gift card.

At the completion of the study, group-level results will be sent back to you, the program director, which you may then disseminate to your teams. We believe that an understanding of the extent to which implicit and explicit attitudes exist is a critical first step to uncovering and addressing hidden biases. Currently there is limited data on implicit stigma towards mental illness or its potential impact on clinician behavior and job performance. It is hoped that the outcomes of this project will lead to improved training for staff working with persons with severe mental illness and enhanced opportunities for the recovery of persons with severe mental illnesses.

The study has been reviewed and approved by the Indiana University Purdue University Indianapolis (IUPUI) Institutional Review Board. You may contact the IUPUI IRB with any questions regarding your rights as a research participant at 317-278-3458 or 800-696-2949.

We hope you will be willing to participate in the study. You will be contacted within the next two weeks by a researcher to see if you have any questions. If after having all of your questions answered, you are interested and willing to participate in the study, you will be asked to complete the online survey. The team leaders and staff of your ACT teams will also be sent an email similar to this one and asked to complete a similar online survey.

Thank you very much for considering participating in this study!

John H. McGrew, Ph.D.
Professor of Psychology, IUPUI
Phone: 317-274-8672
Email: jmcgrew@iupui.edu

Laura Stull, M.S.
Doctoral Student, IUPUI
Phone: 317-275-8827
Email: lgc@iupui.edu

Indiana University Purdue University Indianapolis
402 N. Blackford Street
Department of Psychology
Indianapolis, IN 46202

March 9, 2010

Dear ACT Team Leaders:

This letter is to solicit your participation in a dissertation on the stigma of mental illness. For individuals with mental illness, stigma can act as a barrier to a better life and to getting needed help. The purpose of this study is to examine treatment providers' explicit (conscious) and implicit (often unconscious) attitudes toward mental illness. Specifically, we want to examine implicit and explicit attitudes among ACT staff. Secondarily, we want to explore the extent to which attitudes are related to treatment interventions and overall job performance. You were selected as a possible participant because you have been identified as a team leader of at least one of the 30 ACT Teams in the state of Indiana.

If you agree to participate, we ask that you use the web-link included in the email to access and complete an online survey. The survey includes measures of explicit stigma and a measure of implicit stigma, as well as surveys which assess burnout, attitudes regarding consumers, perceptions of the team's recovery orientation, and demographic information. Additionally, you will be asked to respond to a vignette and indicate the extent to which you would recommend the use of various treatment interventions. You will also be asked to rate the performance of each of your staff members on indicators of a recovery orientation. A potential risk of this study is that you would be uncomfortable answering certain questions, although the included surveys are not intended to be threatening in any way. You may stop the survey at any time by simultaneously pressing the Control and Q buttons (Ctrl + Q). You may also choose to skip any questions with which you are uncomfortable. The survey is expected to take about 45-60 minutes to complete. To help it go more quickly, we recommend that you have a staff roster on hand while you take the survey. Due to the nature of the survey, you will be unable to minimize the survey on your computer to work on other tasks at the same time. The entire survey must be completed at one time (i.e. if you choose to exit the survey you will not be able to go back later to finish it). **You will be compensated with a $20 gift card for your participation**. When you exit the online

survey you will be given information on how to contact the researcher. If you choose to contact the researcher and provide a mailing address, you then will be mailed a $20 gift card.

At the completion of the study, group-level results will be sent back to your program. We believe that an understanding of the extent to which implicit and explicit attitudes exist is a critical first step to uncovering and addressing hidden biases. Currently there is limited data on implicit stigma towards mental illness or its potential impact on clinician behavior and job performance. It is hoped that the outcomes of this project will lead to improved training for staff working with persons with severe mental illness and enhanced opportunities for the recovery of persons with severe mental illnesses.

The study has been reviewed and approved by the Indiana University Purdue University Indianapolis (IUPUI) Institutional Review Board. You may contact the IUPUI IRB with any questions regarding your rights as a research participant at 317-278-3458 or 800-696-2949.

We hope you will be willing to participate in the study. You will be contacted within the next two weeks by a researcher to see if you have any questions. If after having all of your questions answered, you are interested and willing to participate in the study, you will be asked to complete the online survey and forward an email similar to this one to your staff, so that they may complete a similar online survey. The staff's survey differs only in that they will not be asked to rate the performance of others. Staff will be compensated with $10 for their participation.

Thank you very much for considering participating in this study!

John H. McGrew, Ph.D.
Professor of Psychology, IUPUI
Phone: 317-274-8672
Email: jmcgrew@iupui.edu

Laura Stull, M.S.
Doctoral Student, IUPUI
Phone: 317-275-8827
Email: lgc@iupui.edu

March 9, 2010

Dear ACT Staff:

This letter is to solicit your participation in a dissertation on the stigma of mental illness. For individuals with mental illness, stigma can act as a barrier to a better life and to getting needed help. The purpose of this study is to examine treatment providers' explicit (conscious) and implicit (often unconscious) attitudes toward mental illness. Specifically, we want to examine implicit and explicit attitudes among ACT staff. Secondarily, we want to explore the extent to which attitudes are related to treatment interventions and overall job performance. You were selected as a possible participant because you have been identified as a staff member of one of the 30 ACT Teams in the state of Indiana.

If you agree to participate, we ask that you use the web-link included in the email to access and complete an online survey. The survey is anonymous. Your responses will not be linked to your email address or any other identifying information. Researchers involved in the project will have access only to the responses. The survey includes measures of explicit stigma and a measure of implicit stigma, as well as surveys which assess burnout, attitudes regarding consumers, perceptions of your team's recovery orientation, and demographic information. Additionally, you

will be asked to respond to a vignette and indicate the extent to which you would recommend the use of various treatment interventions. **The survey is expected to take about 45 minutes to complete**. You may stop the survey at any point by pressing the Control and Q buttons simultaneously (Ctrl + Q). You may also skip any questions that you are uncomfortable answering. Due to the nature of the survey, you will be unable to minimize the survey on your computer to work on other tasks at the same time. The entire survey must be completed at one time (i.e. if you choose to exit the survey you will not be able to go back later to finish it). **You will receive a $10 gift card for your participation**. When you exit the online survey you will be given information on how to contact the researcher. If you choose to contact the researcher and provide a mailing address, you then will be mailed a $10 gift card.

At the completion of the study, group-level results will be sent back to your team. We believe that an understanding of the extent to which implicit and explicit attitudes exist is a critical first step to uncovering and addressing hidden biases. Currently there is limited data on implicit stigma towards mental illness or its potential impact on clinician behavior and job performance. It is hoped that the outcomes of this project will lead to improved training for staff working with persons with severe mental illness and enhanced opportunities for the recovery of persons with severe mental illnesses.

The study has been reviewed and approved by the Indiana University Purdue University Indianapolis (IUPUI) Institutional Review Board. You may contact the IUPUI IRB with any questions regarding your rights as a research participant at 317-278-3458 or 800-696-2949. We hope you will be willing to participate in the study. You may ask questions at any time using the contact information below.

Thank you very much for considering participating in this study!

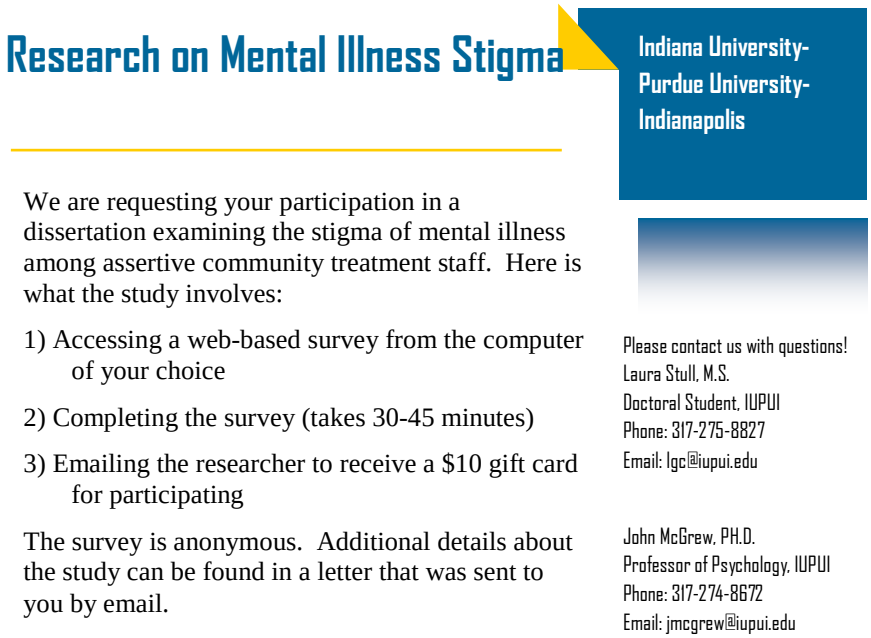
John H. McGrew, Ph.D.
Professor of Psychology, IUPUI
Phone: 317-274-8672
Email: jmcgrew@iupui.edu

Laura Stull, M.S.
Doctoral Student, IUPUI
Phone: 317-275-8827
Email: lgc@iupui.edu

Indiana University Purdue University Indianapolis
402 N. Blackford Street
Department of Psychology
Indianapolis, IN 46202

Recruitment Postcard

Front:



Back:

If you choose to participate, you may access the survey at the following website:

HTTP://RESEARCH.MILLISECOND.COM/KAURR/BATCH.WEB

VITA

VITA

Laura Grace Stull

EDUCATION

August 2011	Doctor of Philosophy Clinical Psychology, APA Accredited Program Indiana University-Purdue University Indianapolis (IUPUI)

Dissertation Title: Implicit Stigma of Mental Illness: Attitudes in an Evidence-Based Practice.

May 2009	Master of Science Clinical Rehabilitation Psychology Indiana University-Purdue University Indianapolis (IUPUI)

Thesis Title: Staff and Consumer Perspectives on Defining Treatment Success and Failure in Assertive Community Treatment Practices.

May 2006	Bachelor of Arts *Summa cum laude* with University Honors Anderson University, Anderson, IN Major: Psychology, Minors: Math and Statistics

CLINICAL EXPERIENCE

8/2010-8/2011	Pre-doctoral Psychology Intern Minneapolis VA Health Care System, Minneapolis, MN APA Accredited Program
5/2009-12/2009	Practicum Student Alzheimer's Training and Research Center, Psychiatry Department, Indiana School of Medicine, Indianapolis, IN
1/2009-5/2009	Practicum Student Larue D. Carter Memorial Hospital, Indianapolis, IN
5/2008-12/2008	Practicum Student Richard L. Roudebush VA Medical Center, Indianapolis, IN

1/2008-5/2008	Practicum Student Children's Resource Group, Indianapolis, IN
5/2005-8/2005	Undergraduate Student Intern Mental Health Association of Indiana, Indianapolis, IN
5/2005-8/2005	Undergraduate Student Intern Our Town, Indianapolis, IN
5/2004-8/2004	Undergraduate Student Intern Fountain House, New York City, NY

PUBLICATIONS

McGrew, J.H., **Stull, L.G.**, Salyers, M.P., Rollins, A.L., & Hicks, L. (in press). A comparison of phone-based and onsite-based fidelity for Assertive Community Treatment (ACT): A pilot study in Indiana. *Psychiatric Services.*

Salyers, M., **Stull, L.**, & Tsemberis, S. (2009; in production). Assertive community treatment and recovery. In V. Vandiver (Ed.), *Best Practices in Mental Health: A Pocket Guide*. New York, NY: Oxford University Press.

Salyers, M., **Stull, L.**, Rollins, A., & Hopper, K. (2011). The work of recovery on two assertive community treatment teams. *Administration and Policy in Mental Health, 38,* 169-180.

Stull, L., McGrew, J., & Salyers, M. (2010). Staff and consumer perspectives on defining treatment success and failure in assertive community treatment. *Psychiatric Services, 61,* 929-932.

PUBLICATIONS (under review)

Isenhart, C., Dieprink, E., Thuras, P., Fuller, B., **Stull, L.**, Koets, N., & Lennox, R. (under review). Training and maintaining motivational interviewing skills in a clinical trial. *Substance Abuse*.

McGuire, A.B., **Stull, L.G.**, Mueser, K., Santos, M., Mook, A., et al. (under review). Illness management and recovery treatment integrity scale (IT-IS): Creation and reliability. *Psychiatric Services.*

Salyers, M., **Stull, L.**, Rollins, A., McGrew, J., Hicks, L., Thomas, D., & Strieter, D. (under review). Measuring the recovery orientation of ACT. *Community Mental Health Journal.*

Stull, L.G., McGrew, J.H., & Salyers, M.P. (under review). Processes underlying success and failure in assertive community treatment. *Journal of Mental Health.*

MANUSCRIPTS IN PREPARATION

Stull, L.G., Salyers, M.P., Rand, K.L., & McGrew, J.H. (in progress). Hope and optimism among assertive community treatment consumers.

Stull, L.G. & Salyers, M.P. (in progress). Correlates of patient activation.

Stull, L.G., Salyers, M.P., McGuire, A., Brennan, M., & Presnell, J. (in progress). Personal goals and assertive community treatment: Perspectives of consumers and staff.

PRESENTATIONS

Stull, L.G., McGrew, J.H., & Salyers, M.P. (2011, May). *An innovative approach in measuring ACT model fidelity.* Presented at the 27th Annual Assertive Community Treatment Association Conference, Huntington Beach, CA.

McGrew, J.H. & **Stull, L.G.** (2009, September). *Testing alternative fidelity assessment methods.* Presented at the Festschrift for Gary Bond, Indianapolis, IN.

Stull, L.G., Medeiros, K. (2009, July). *Making ACT work for you*. Presented at the National Alliance to End Homelessness Annual Conference, Washington D.C.

Stull, L.G. (2008, June). *Perspectives on defining treatment success in ACT practices.* Presented at the First Annual New York State ACT Conference, Saratoga Springs, NY.

Stull, L.G., Salyers, M.P., & McGrew, J.H. (2008, May). *Perspectives on defining treatment success in ACT practices*. Presented at the 24th Annual Assertive Community Treatment Association Conference, Indianapolis, IN.

Stull, L.G. (2007, November). *RISP Pilot #1: Measuring the recovery orientation of ACT teams*. Presented to the IP-RISP National Advisory Committee, Indianapolis, IN.

Stull, L.G. (2007, September). *State of Indiana dual diagnosis capability in addiction treatment*. Presented to the Indiana Addictions Council Planning Committee, Indianapolis, IN.

Stull, L.G. (2006, April). *Changing the attitudes of college students regarding mental illness*. Presented at the 17th Annual Butler Undergraduate Research Conference, Indianapolis, IN.

Stull, L.G. (2005, April). *The effect of co-residence with grandparents on the mental health of college students*. Presented at the 16th Annual Butler Undergraduate Research Conference, Indianapolis, IN.

POSTER PRESENTATIONS

Stull, L.G., McGrew, J.H., & Salyers, M.P. (2009, September). *Staff and consumer perspectives on defining treatment success and failure in ACT.* Poster presented at the Festschrift for Gary Bond, Indianapolis, IN.

Williams, J.R., **Stull, L.G.**, Donovan, A. (2009, September). *Can commitment to change increase employees vulnerability to burnout?* Poster presented at the Festschrift for Gary Bond, Indianapolis, IN.

Stull, L.G. (2008, November). *Perspectives on defining treatment success and failure*. Poster presented at the Indiana Psychological Association Fall Conference, Indianapolis, IN.

Stull, L.G. (2005, May). *Stigmatization and self-esteem in high school and college learning disabled and mainstream students*. Poster presented at the Psi Chi Midwestern Regional Convention, Chicago, IL.

RESEARCH EXPERIENCE

9/2009-5/2011 Dissertation Research
Chair: John H. McGrew, Ph.D.

Project: "Implicit Stigma of Mental Illness: Attitudes in an Evidence-Based Practice"

5/2007-8/2010 Research Assistant, ACT Center of Indiana
Supervisor: Michelle P. Salyers, Ph.D.

Projects: "IP-RISP Pilot #1: Recovery-Oriented Assertive Community Treatment (ACT)"
"Randomized Controlled Trial of IMR in the VA"
"A Comparison of Phone-Based and Onsite-Based Fidelity for Assertive Community Treatment"

3/2007-4/2009 Masters Thesis Research
Chair: John H. McGrew, Ph.D.

Project "Staff and Consumer Perspectives on Defining Treatment Success and Failure in Assertive Community Treatment"

5/2007-9/2007 Research Assistant, IUPUI Department of Psychology
Supervisor: John H. McGrew, Ph.D.

Project: "Indiana Integrated Dual Diagnosis Capability"

8/2005-5/2006 Undergraduate Research Project
Anderson University, Department of Psychology
Supervisor: Curtis K. Leech, Ph.D.

Project: "Changing the Attitudes of College Students Regarding Mental Illness"

TEACHING EXPERIENCE

08/09-05/10 Instructor
B104: Psychology as a Social Science
IUPUI Department of Psychology
Supervisor: Lisa Contino, Ph.D.

08/08-05/09	Teacher's Assistant B386: Introduction to Counseling IUPUI Department of Psychology Supervisor: John Guare, Ph.D.

HONORS AND AWARDS

February 2010	IUPUI Clinical Psychology Student Research Excellence Award
May 2008	School of Science Graduate Student Travel Grant Recipient Indiana University-Purdue University Indianapolis
August 2007- May 2008	Psychology Graduate Student Representative to the School of Science Graduate Student Council
August 2007- August 2010	Research Assistantship
August 2006- May 2007	University Fellowship
August 2004- May 2006	*Psi Chi*—National Psychology Honor Society *(Chapter President)* *Alpha Chi*—National Honor Society *Kappa Mu Epsilon*—National Honor Society
August 2002- May 2006	Presidential Scholar, Dean's List (8 semesters) Anderson University

PROFESSIONAL MEMBERSHIP

2009-present	American Psychological Association