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Socio-Psychological Mediators of the Relationship Between Behavioral Health Stigma and Psychiatric Symptoms

Bronwyn A. Hunter,

University of Maryland, Baltimore County

Nathaniel Vincent Mohatt,

University of Colorado Denver - Anschutz Medical Campus

Dana M. Prince,

Case Western Reserve University

Azure B. Thompson,

The National Center on Addiction and Substance Abuse

Samantha L. Matlin, and

The Thomas Scattergood Foundation & Yale University School of Medicine

Jacob Kraemer Tebes

Yale University School of Medicine

Abstract

The stigma associated with mental illness or addiction is significantly and positively related to psychiatric symptoms. According to Modified Labeling Theory, several processes should mediate this relationship, including rejection experiences, stigma management (secrecy coping), and social support. In the first comprehensive test of this theory, we examined a serial mediation model on three waves of data from 138 adults receiving outpatient behavioral health treatment. Participants were recruited from outpatient behavioral health clinics in a large northeastern city in the United States and completed interviews that assessed stigma, rejection experiences, stigma management, social support, and psychiatric symptoms. There was a direct effect between stigma and psychiatric symptoms and an indirect effect in which perceived rejection, secrecy coping and social support sequentially and longitudinally intervened in the stigma and psychiatric symptom relationship. Higher perceptions of stigma predicted more rejection experiences, which marginally increased secrecy coping and decreased social support. In turn, decreased social support increased psychiatric symptoms. We provide support for Modified Labeling Theory and the clinical utility of specific mediators in the relationship between stigma and psychiatric symptoms among adults in behavioral health treatment living in urban settings.

Conflict of interest

The authors declare no conflict of interest.

Keywords

Stigma; Substance Abuse; Addiction; Mental Health; Mental Illness; Mediators; Modified Labeling Theory; African American

1. Introduction

Stigma has a pervasive and continuing impact on the lives of individuals who have mental illness and/or addiction challenges. Stigma refers to a discrediting attribute or status that is carried by an individual (Goffman, 1963; Link and Phelan, 2001) that may increase experiences of rejection and/or discrimination, and ultimately limit opportunities for health and well-being (Link and Phelan, 2001). Stigma may be internalized, to varying degrees, by individuals if they believe the negative biases about their group (Glass et al., 2013b; Hatzenbuehler et al., 2013; Link and Phelan, 2001; Livingston and Boyd, 2010). In this paper, public stigma refers to social and cultural stereotypes related to group membership; felt or experienced stigma refers to specific experiences of rejection and discrimination that result from group membership; and self-stigma occurs when an individual internalizes and accepts societal views and incorporates them into one's belief system and values (Livingston and Boyd, 2010).

Modified Labeling Theory (MLT; Link et al., 1989) provides a framework for understanding the mechanisms through which stigma affects health and well-being, with a particular focus on psychiatric symptoms. Modified Labeling Theory consists of a five-step model – Beliefs, Official Labeling/Internalization, Response, Consequences, and Vulnerability – that was developed to describe how labeling affects individuals diagnosed with a mental illness (Link et al., 1989). As shown in Fig. 1, a person not yet diagnosed with a mental illness or addiction becomes aware of socially- and culturally-constructed beliefs about mental illness or addiction, and thus may perceive individuals who experience these challenges as devalued by society (Step 1; Beliefs). This public stigma reflects an awareness of societal and cultural views of those with mental illness and/or addiction. When an individual receives a diagnosis of a mental health or substance use disorder, the individual is assigned a formal label (Step 2; Official Label and Internalization), and may internalize the negative stereotypes related to that label because the person is now part of the stigmatized group. An official label provides the individual with an opportunity to connect public social and cultural stereotypes about the group to the self, which may result in internalization of the negative attributes associated with the label (Link and Phelan, 2001). For those so labeled with mental illness or addiction, internalized stigma has been associated with decrements in quality of life, self-esteem, self-efficacy, empowerment, and social support (Boyd Ritsher et al., 2003; Corrigan et al., 2006; Link and Phelan, 2001; Link et al., 2001; Link et al., 1997). Research also indicates that internalized stigma exacerbates psychiatric symptoms (Boyd Ritsher et al., 2003; Glass et al., 2013b; Link et al., 1997; Livingston and Boyd, 2010; Lysaker et al., 2007), and a recent meta-analysis showed that increased internalized stigma is related to greater psychiatric symptoms and poor treatment outcomes (Livingston and Boyd, 2010). In addition, higher internalized stigma for alcohol abuse was related to an increased risk for persisting alcohol use disorder and internalizing psychiatric symptoms (Glass et al., 2013b).

Individuals who are assigned a formal label and internalize the stigma associated with that label may have a heightened awareness for, or more experiences of, rejection or discrimination due to stigma (Hamilton et al., 2014). For example, experienced stigma in the form of rejection and discrimination has been found to predict depressive symptoms one year later among men with co-occurring mental illness and addiction (Link et al., 1991). Experienced stigma may lead to various coping responses, such as an attempt to keep one's labeled status secret or hidden (Step 3; Response). The strategies individuals use to cope with or manage experienced stigma, or stigma management, may reduce, buffer, or exacerbate the impact of stigma (Link et al., 1989; Link et al., 1991). A key stigma management strategy is secrecy, in which one attempts to hide a stigmatized status. For individuals in treatment for substance use disorder, high use of secrecy was negatively associated with indicators of well-being and also related to high internalized stigma (Luoma et al., 2007). In addition, secrecy has been found to mediate the relationship between social stigma, internalized stigma, and mental health recovery (Chronister et al., 2013). Importantly, given the paucity of longitudinal research on Modified Labeling Theory, we know little about the specific pattern of, or the relative impact of, these mediators in the stigma–symptom relationship.

Maladaptive coping strategies may make it less likely that the labeled person receives social supports and other resources that are critical for symptom reduction (Step 4; Consequences). Social support has long been established as a buffer of varying forms of stress (Berkman et al., 2000; Broadhead et al., 1983; Cohen and Wills, 1985; Kessler et al., 1985; Milner et al., 2016), although other studies have reported inconsistent findings depending on the type of perceived or received supports (i. e. Brondolo et al., 2009). Research has also shown that high internalized stigma is related to lower social support among individuals diagnosed with an alcohol use disorder (Glass et al., 2013a). These findings suggest that social support may be a critical resource that can reduce the negative effects of stigma on health outcomes, specifically psychiatric symptoms. Finally, with diminished social supports, the person with mental illness or addiction may be at increased risk for further psychiatric symptoms or relapse (Step 5; Vulnerability).

Although several studies have examined components of Modified Labeling Theory (i.e., Kroska and Harkness, 2006; Link et al., 1989; Glass et al., 2013b), none to date have examined rejection-related experiences, secrecy coping, and social support as sequential mediators of the relation between public stigma and psychiatric symptoms. Further, there is a dearth of longitudinal studies on stigma, as most research has been cross-sectional (Livingston and Boyd, 2010). The few longitudinal studies that do exist often examine changes in stigma as a predictor of well-being, as indicated by self-esteem and recovery-related outcomes (Livingston and Boyd, 2010). To date, a comprehensive longitudinal test of the patterns of relations for the constructs in Modified Labeling Theory (Link et al., 1989) has not yet been conducted (Glass et al., 2013b). Such a test is essential to identify the theoretical sociopsychological processes through which stigma operates so as to affect long-term outcomes of individuals with a mental illness or addiction label, and to advance theory, research, and practice on stigma.

1.1 The Present Study

The present study analyzes longitudinal data to examine public stigma (Time 1) and its relationship to psychiatric symptoms (Time 3) as sequentially mediated by rejection experiences, secrecy coping and social support (Time 2) among low income, mostly minority adults who have been labeled with mental health and/or substance use disorders. This analysis examines longitudinal patterns among the constructs in Modified Labeling Theory (Link et al., 1989) for individuals in outpatient treatment for mental illness and/or addiction, thus providing the basis for subsequent examination of causal pathways among these constructs. We hypothesize that public stigma will be internalized and will predict rejection experiences, which will be related to more use of secrecy coping. Secrecy coping, in turn, will be related to lower social support, which will predict higher psychiatric symptoms over time. In addition, since we expect that gender, race, and psychiatric treatment will influence mediators and outcome variables, we control for these effects.

2. Method

2.1 Participants

The present study included 138 participants receiving mental health and/or addiction treatment who were available for three waves of data collection over the course of one year. All participants were enrolled in publicly-funded behavioral health clinics in a large, northeastern city in the United States. The final study sample of 138 individuals was drawn from 264 participants in treatment at Time 1 (52.3% of the sample), a sample whose attrition is comparable to that found among underserved and vulnerable populations (Begun et al., 2016). The restriction of the final sample only to those participants available for data collection at each of the three time points was necessary to examine the pattern of relationships among constructs to complete a rigorous test of Modified Labeling Theory.

To test for attrition effects for the remaining sample, t-tests were performed comparing baseline scores between the final sample and those excluded from the sample using listwise deletion (138 vs 126 participants, respectively). No significant differences were observed in baseline scores between groups based on gender, intervention status, stigma, and rejection or secrecy coping. However, the study sample was more likely to be African American (75% vs 61%, $t(262) = -2.51$, $p = 0.01$), have higher baseline scores in social support (3.01 vs 2.84, $t(261) = -2.08$, $p = 0.04$), and lower baseline scores in psychiatric symptoms (1.00 vs 1.23, $t(261) = 1.95$, $p = 0.05$).

At baseline, study participants were 46.09 (SD = 10.93) years of age, more than half were women (N = 80; 58.0%) and more than three-quarters were African American (N = 107; 77.5%). In addition, more than half of participants were single (N = 81; 59.6%), most had either not completed high school (N = 51; 38.0%) or had a high school diploma or GED (N = 45; 33.6%), and just over three-quarters (N = 110; 80.7%) reported an annual income of \$20,000 or less. These demographics are consistent with the characteristics of residents from the distressed urban neighborhoods in which the study was conducted (Tebes et al., 2015). All participants received treatment from publicly funded behavioral health treatment settings, in which services were provided based on income thresholds; 67 participants

received usual treatment during this period and 71 participated in an innovative arts-based intervention combined with behavioral health treatment (Mohatt et al., 2015; Tebes et al., 2015). Of the 105 participants for whom administrative data on diagnoses were available, 86% met criteria for a mental health disorder, 76% met criteria for a substance use disorder, and 62% met criteria for a co-occurring mental health and substance use disorder.

2.2 Procedure

Participants were recruited from outpatient behavioral health clinics and provided active consent to participate in 1- to 1.5-hour confidential interviews at Time 1, 4–6 months after Time 1 (Time 2), and 4–6 months after Time 2 (Time 3). All interviews were conducted by trained research staff who read each interview question to participants. Participants were compensated with a \$20 gift card for each completed interview. All procedures were approved by both university and city IRB ethics committees.

2.3 Measures

Public Stigma was measured at baseline with the Devaluation Discrimination Scale (Link et al., 1989). The present study used a 7-item version from the original 12-item scale, which was used in an examination of stigma among individuals in treatment for cooccurring addiction and mental illness (Link et al., 1997). In this study, the target of stigma was modified and combined ‘mental illness or addiction’ because study recruitment was completed in clinics that served dually-diagnosed individuals with a high cooccurrence of mental illness and addiction. Items included, “*Most people believe that a person with an addiction or mental illness can’t be trusted,*” and “*Most people think that a person with an addiction or mental illness is just as intelligent as average person.*” Answers were recorded on a 6-point Likert scale ranging from “Strongly agree” to “Strongly disagree.” One item was reverse coded and the scale was averaged such that a high score reflects a high level of public stigma ($M = 4.20$; $SD = 0.98$). Reliability for this scale was good, $\alpha = 0.77$.

Stigma-related *Rejection Experiences* and *Secrecy Coping* were adapted from two Link et al. (1997) measures developed for individuals with co-occurring mental health and substance use disorders. Similar to the public stigma measure described above, the target for stigma experiences were modified and combined ‘mental illness or addiction.’ We used four items to assess stigma-related rejection experiences at Time 2, which included questions such as, “*Did your friends treat you differently because of your [mental illness or addiction]?,*” and “*Have people used the fact that you have a [mental illness or addiction] against you?*” Questions were answered in a dichotomous format (Yes/No) and the four items were averaged across participants ($M = 1.18$; $SD = 1.49$). Reliability for the Rejection Experiences scale was good, $\alpha = 0.83$. The Secrecy Coping scale (Link et al., 1997) used four items to assess participants’ use of secrecy related to their substance use or mental health disorders at Time 2. Items were also answered on a dichotomous (Yes/No) format, and included, “*Do you sometimes hide the fact that you have a [mental illness or addiction]?,*” and “*Would you advise a close relative to not tell anyone about their [mental illness or addiction]?,*” Answers were summed and averaged ($M = 1.20$; $SD = 1.18$), and reliability was fair, $\alpha = 0.59$.

Social Support was assessed with the Interpersonal Support Evaluation List (ISEL; [Cohen, Mermelstein, Kamarck, & Hoberman, 1985]), a commonly used measure of social support that consists of a 12-item global measure of belonging, tangible and appraisal supports. Example items include, “*I have a hard time finding a friend for a trip,*” and “*I can turn to someone for advice with family problems.*” Participants rated each statement on a 4-point Likert scale ranging from ‘definitely false’ to ‘definitely true.’ Six items were reverse coded for scoring purposes such that a high score equals high social support. The choice to use a general measure of social support in this study was intentional in order to provide a more generalized assessment of this construct and to be consistent with previous studies that have examined Modified Labeling Theory using similar measures of social support (Glass et al., 2013a). The average social support score at Time 2 ($M = 3.01$; $SD = 0.67$) was used in the present study, and the scale demonstrated very good reliability, $\alpha = 0.87$.

Psychiatric Symptoms were assessed at Time 3 with the Brief Symptom Inventory (BSI; Derogatis, 2001), an 18-item measure of specific and global psychiatric symptoms in the past week. For the present study, we calculated overall psychiatric symptom scores at Time 3 ($M = 1.05$; $SD = 0.94$). Participants indicated how much they experience each symptom on a 5-point Likert scale ranging from ‘Not at all’ to ‘extremely.’ Symptoms range from ‘*feelings of worthlessness*’ to ‘*shortness of breath.*’ Reliability for the scale was high, $\alpha = 0.95$.

3. Analytic Approach

Our analytic approach comprised several steps. First, we examined correlations among all study variables. Next, we analyzed the direct and indirect effects for rejection experiences, secrecy coping and social support on the relation between stigma and psychiatric symptoms among behavioral health consumers. The PROCESS (Hayes, 2012) macro for SPSS v21 was used to test this serial mediation model. PROCESS (Hayes, 2012) uses a stepwise analysis to examine the total, direct and indirect effects to examine sequential mediators of the stigma and symptom relationship. As shown in Figure 2, we were most interested in the sequential pathway among all study variables (i. e. public stigma [T1] → rejection experiences [T2] → secrecy coping [T2] → social support [T2] → psychiatric symptoms [T3]). The PROCESS macro also estimates the direct effect (i. e. public stigma → psychiatric symptoms) and all possible indirect effects among the independent variable, mediators and the dependent variable.

4. Results

Table 1 provides the correlations for all study variables. As expected, stigma at baseline was positively correlated with rejection experiences and secrecy coping at Time 2. Rejection experiences were positively related to secrecy at Time 2 and psychiatric symptoms at Time 3, and negatively related to social support at Time 2. The use of secrecy as a coping strategy was negatively related to social support at Time 2, and social support was negatively related to psychiatric symptoms at Time 3.

We tested whether rejection experiences, secrecy coping and social support measured at Time 2 sequentially mediated the relation between stigma (Time 1) and psychiatric

symptoms (Time 3). We controlled for gender, race and the intervention on the three mediators and outcome variable. As noted above, the serial mediation analysis (model 6 in the PROCESS program) was performed with bias-corrected confidence intervals from 5,000 bootstrapped samples (Hayes, 2012).

As shown in Table 2, there was a direct effect for public stigma (Time 1) predicting rejection experiences (Time 2), with higher stigma at Time 1 predicting more perceived rejection experiences at Time 2 ($b = 0.39$; $SE = 0.13$; $CI = 0.138 - 0.635$), $t(133) = 3.08$, $p < 0.01$). Higher perceived rejection experiences (Time 2) were related to more use of secrecy as a coping strategy at Time 2 ($b = 0.36$; $SE = 0.06$; $CI = 0.24 - 0.48$), $t(132) = 5.77$, $p < 0.001$). Higher use of secrecy coping was related to decreased social support ($b = -0.11$; $SE = 0.06$; $CI = -0.22$ to -0.004), $t(131) = -2.05$, $p < 0.04$), while higher social support (Time 2) was related to lower psychiatric symptoms at Time 3 ($b = -0.43$; $SE = 0.12$; $CI = -0.67$ to -0.20), $t(130) = -3.63$, $p < 0.001$). In addition, African Americans reported less use of secrecy compared to Whites ($\beta = -0.55$; $SE = 0.21$; $CI = -0.97$ to -0.136), $t(132) = -2.62$, $p < 0.01$). Gender was the only other significant predictor of psychiatric symptoms at Time 3, with women reporting more symptoms than men.

There were no significant total (c) or direct effects (c') for public stigma on psychiatric symptoms. As shown in Figure 3, the serial mediation model was consistent with Modified Labeling Theory, with a significant indirect effect for public stigma sequentially influencing psychiatric symptoms through rejection experiences, secrecy coping and social support, $\beta = 0.007$; $SE = 0.005$; $CI = 0.0007 - 0.0217$. Thus, public stigma is associated with increased rejection experiences, which are related to increased secrecy coping. In turn, using secrecy coping is related to less social support, which, is related to higher psychiatric symptoms.

5. Discussion

This study represents the first comprehensive empirical test of Modified Labeling Theory using serial mediation analysis. We studied a vulnerable population of low-income, predominantly minority adults with mental illness and addiction challenges to examine rejection experiences, secrecy coping, and social support as mediators of the relation between public stigma and psychiatric symptoms. The results emphasize the importance of including mediators in studies of Modified Labeling Theory (Glass et al., 2013b; Link et al., 1989; Perlick, 2001) as individual and socialpsychological processes e specifically, rejection experiences, secrecy coping, and social support – that have an indirect effect on the stigma and psychiatric symptom relationship

Because few studies have examined the combination of rejection experiences, secrecy coping, and social support on the relation between stigma and health outcomes, our findings also illustrate the benefits of further longitudinal research on stigma. We should note that we used experienced stigma, in the form of rejection experiences, as an indicator of stigma at Time 2. Given that this population had been diagnosed and carried a label for many years, the temporality of the relation between public and experienced stigma remains uncertain. However, our results suggest that rejection experiences may be a better indicator of stigma – and one that may be targeted for modification – than public stigma.

Our results also suggest that additional stigma coping strategies, including withdrawal/avoidance, education, advocacy, and so on (Link et al., 2002), be examined further in order to understand better how stigma coping strategies strengthen or weaken the stigma - symptom relationship. In addition, more research is needed to understand the context in which these coping strategies are used (Karnieli-Miller et al., 2013). For example, future studies could employ ecological sampling methods to understand better the antecedents and consequences of the relation between stigma and health outcomes as they occur in real time. Also, clinical providers could work with individuals in treatment to identify and discuss rejection experiences and individuals can better cope with their stigma. These findings strongly suggest that, in addition to increasing social support for individuals with mental illness or addiction challenges, efforts to reduce stigma may yield benefits by targeting rejection experiences and stigma coping strategies in their own right.

The present study also identified important racial and gender differences to consider when addressing stigma. Specifically, African Americans reported less secrecy than Whites, which was surprising given that it is well documented that African Americans' experiences of discrimination have been shown to lead to poor health outcomes (Schulz et al., 2006). Given the paucity of research on race differences in managing stigma for mental health and substance use, more research is needed to understand racial differences in stigma management strategies. It would also be useful to extend prior research on the responses by African Americans to racism (Fleming et al., 2012) in order to understand stigma management strategies related to mental health and substance use. Also, consistent with prior research, women reported more symptoms than men (i. e. Kessler, 2003), which needs to be taken into account when working with stigmatized populations. However, it is important to note that race and gender differences in this sample should be interpreted with caution, as the sample was primarily African American and not randomly selected.

Our results do not align with studies that have shown stigma to increase psychiatric symptoms (Boyd Ritsher et al., 2003; Link et al., 1997, 2001; Livingston and Boyd, 2010), emotional discomfort in schizophrenia (Lysaker et al., 2007) and the likelihood for an alcohol use disorder (Glass et al., 2013b). This may be because we measured the relationship between public stigma and psychiatric symptoms over the course of one year. It may also have been because participants were already labeled and were in treatment for mental illness and/or addiction when they participated in the study, or because they had higher social support and lower psychiatric symptoms at Time 1 compared to their counterparts who were not included in the analyses. In addition, because our participants were in treatment, our findings may not be representative of individuals who experience stigma as a barrier to treatment participation. This point is important given the lower stigma scores and psychiatric symptoms in the present sample as compared to reports from other studies (e. g. Link et al., 1991). Thus, the generalizability of these study findings may be limited to a treatment-seeking sample receiving publicly-funded services in an urban setting, and not to non-treatment seeking underserved populations with comparable behavioral health conditions.

5.1 Limitations

This study has several limitations. In addition to the above limitation on recruiting a treatment-seeking sample, one limitation of this study is that the data obtained were based on participant self-report. The limits of this method were offset, to some degree, through the use of trained interviewers who used structured standardized measures in treatment settings in which participants were more comfortable answering honestly about personal information. Second, mediators were measured concurrently at Time 2, and must be viewed as correlational and not causal, without a temporal ordering sequence at that assessment period. In addition, the measures of stigma-related rejection experiences and secrecy coping were not grounded in a specific time period, such as the past two weeks or one month. However, our analyses provide a rigorous statistical test of the patterns of relationships over time based on Modified Labeling Theory (Link et al., 1989). To further parse the causal nature of these relations, future research should include more than three longitudinal assessments and include specific time periods for assessing rejection and secrecy coping. Third, it is important to note that participants in our sample had already been labeled with a mental health or substance use disorder. A stronger test of Modified Labeling Theory would include the label as a moderator of the relationships examined in this study (Glass et al., 2013a; Link et al., 1989). Future research should recruit participants soon after receiving the label of a diagnosis to provide a more robust analysis of Modified Labeling Theory (Link et al., 1989) over time.

A fourth study limitation is that we combined mental illness and addiction for the target label when measuring stigma. Although stigma is correlated for these labels, public attitudes towards each label have been found to differ in various ways, as the public holds slightly more negative attitudes towards addiction than mental illness (Barry et al., 2014; Corrigan et al., 2009). However, research has not examined stigma for these labels for individuals with cooccurring mental illness and addiction challenges, which was the norm in our sample. Additional research is needed to examine the specific types of labels – mental illness, addiction, or their cooccurrence – as a moderator when assessing the sociopsychological processes that mediate the stigma and symptom relationship. Fifth, the present study only included one coping strategy, use of secrecy. It is critical for future research to include multiple coping strategies and to understand the contexts in which each are adaptive or maladaptive.

A sixth study limitation is that the social support measure included in this study measured general support, not support specific to mental illness or addiction. However, as noted earlier, our choice to limit the measurement of social support to a general measure was intentional in order to obtain a broader conceptualization of this construct and to be consistent with previous similar studies (e.g., Glass et al., 2013a). Future research should include measures of social support specific to addiction and mental illness. A related limitation regarding the social support measure is that they were not anchored to a specific time period, such as two weeks or one month. However, our selection of the ISEL as the measure used in this study was explicitly because of its wide use and applicability to numerous social support contexts and populations. Nevertheless, future studies may seek to

examine whether a generalized measure of social support differs empirically when compared to the same measure grounded to a particular time interval.

A final study limitation is the relatively high attrition rate (47.7%) observed across the three waves of data collection over a one-year period. As the attrition analyses showed, the study sample reported slightly higher levels of social support and lower psychiatric symptoms at baseline than individuals unavailable for all three waves of data collection. Nevertheless, the hypothesized relationships predicted by Modified Labeling Theory were observed, albeit with a sample that may have differed slightly from the initial treatment-seeking sample at Time 1. A related concern due to attrition is that the study sample was slightly more African American than the initial Time 1 sample. In both instances, attrition may have limited the external validity of the study findings, but does not diminish the study's contribution to our understanding of stigma.

5.2 Summary

This study is the first to examine longitudinal and sequential mediators of the relationship between stigma and psychiatric symptoms in a sample of individuals in behavioral health treatment. Our findings indicate that rejection experiences, stigma coping, and social support have an indirect effect on the relationship between stigma and psychiatric symptoms. Future research should examine the socio-psychological processes that mediate the effects of stigma on other health outcomes. In addition, interventions should target coping strategies and social supports that may reduce the negative implications of stigma. Our findings highlight the value of theory-driven research in the understanding of stigma and illustrate the need for additional work to identify mechanisms by which stigma affects health and well-being.

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Figure 1.
Modified Labeling Theory

Figure 2.
Sequential Mediation Analysis.

Figure 3.
Indirect effects model for sequential mediation.

Table 1
Means, Standard Deviations and Intercorrelations for Predictor and Dependent Variables

Variable	M	SD	1	2	3	4	5	6	7	8
1. Race	0.78	0.42	--	0.34	-0.14	-0.03	0.14	-0.12	0.12	-0.02
2. Gender	0.58	0.50		--	0.05	-0.09	0.07	0.05	0.03	0.16
3. Intervention	0.51	0.50			--	-0.08	-0.18*	-0.20*	0.01	-0.13
4. Perceived Stigma (T1)	4.20	0.98				--	0.25**	0.22**	-0.05	0.09
5. Rejection (T2)	1.18	1.49					--	0.47**	-0.23**	0.20**
6. Secrecy Coping (T2)	1.20	1.18						--	-0.28**	0.13
7. Social Support (T2)	3.01	0.67							--	-0.32**
8. BSI Scores (T3)	1.05	0.94								--

N = 138;

* p

0.05;

** p

0.01.

Table 2

Indirect effects between perceived stigma and psychiatric symptoms in serial mediation

Effect	Psychiatric symptoms		
	BC 95% CI		
	Lower	Upper	
<i>b</i>			
<i>a</i> ₁	0.39**	--	--
<i>a</i> ₂	0.11	--	--
<i>a</i> ₃	0.03	--	--
<i>a</i> ₄	0.39**	--	--
<i>a</i> ₅	-0.11*	--	--
<i>b</i> ₁	0.06	--	--
<i>b</i> ₂	-0.04	--	--
<i>b</i> ₃	-0.43**	--	--
<i>c</i>	0.06	--	--
<i>c</i> '	0.09	--	--
Point estimate			
<i>ab</i>	0.026	-0.0402	0.1010
<i>a</i> ₁ <i>b</i> ₁	0.023	-0.0256	0.0793
<i>a</i> ₁ <i>a</i> ₄ <i>b</i> ₂	-0.005	-0.0329	0.1901
<i>a</i> ₁ <i>a</i> ₅ <i>b</i> ₃	0.013	-0.0003	0.4214
<i>a</i> ₁ <i>a</i> ₄ <i>a</i> ₅ <i>b</i> ₃	0.007	0.0007	0.0216
<i>a</i> ₂ <i>b</i> ₂	-0.004	-0.0482	0.1078
<i>a</i> ₂ <i>a</i> ₅ <i>b</i> ₃	0.005	-0.0018	0.0259
<i>a</i> ₃ <i>b</i> ₃	-0.012	-0.0648	0.0392
Psychiatric Symptoms Total Effect <i>R</i> ² = 0.12			

Sample size = 138. *a*, *b*, *c*, and *c*' represent unstandardized regression coefficients; *a*₁ = direct effect of perceived stigma on rejection; *a*₂ = direct effect of perceived stigma on secrecy; *a*₃ = direct effect of perceived stigma on social support; *a*₄ = direct effect of rejection on social support; *a*₅ = direct effect of secrecy on social support; *b*₁ = direct effect of rejection on psychiatric symptoms; *b*₂ = direct effect of secrecy on psychiatric symptoms; *b*₃ = direct effect of social support on psychiatric symptoms; *c* = total effect of perceived stigma on psychiatric symptoms without accounting for rejection, secrecy and social support; *c*' = direct effect of perceived stigma on psychiatric symptoms after accounting for rejection, secrecy and social support; *ab* = Total Indirect Effect; *a*₁*b*₁ = specific indirect effect through rejection; *a*₁*a*₄*b*₂ = specific indirect effect through rejection and secrecy; *a*₁*a*₅*b*₃ = specific indirect effect through rejection and social support; *a*₁*a*₄*a*₅*b*₃ =

* = $p < 0.05$
** = $p < 0.01$