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A New Brief Opioid Stigma Scale to Assess Perceived Public Attitudes and Internalized Stigma: Evidence for Construct Validity

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1. Introduction

Non-medical use of opioids, including pain relievers, heroin, and synthetic opioids, is a pressing public health issue, with over 40% of all overdose deaths in 2017 attributable to synthetic opioids alone (NIDA, 2018). Using provisional 2017 data, the CDC further reports that the total number of overdose deaths attributable to opioids have increased steadily since 2002, with a 4.1-fold increase in opioid-related deaths from 2002 to 2017, and over 7,000 more deaths in 2017 than the year before, thus signifying a national emergency (NIDA, 2018). A report released by the National Institute on Drug Abuse (2018) echoes these trends, reporting a staggering 30% increase in opioid-related overdoses from 2016 to 2017 across 45 states. One crucial element in improving access to treatment and recovery services for persons with opioid use disorder (OUD) is overcoming the stigma that is perceived and internalized by individuals who use opioids, which discourages people from seeking care. Accordingly, opioid-related stigma reduction has been identified as a crucial area of research by numerous national organizations including the American Medical Association's Task Force to Reduce Opioid Abuse (AMA, 2015).

Stigma has long been described as socially-constructed, via Goffman's (1963) classic definition whereby stigma reduces a stigmatized individual "from a whole and usual person

to a tainted, discounted one” (p. 3), and Link and Phelan’s (2001) influential sociological definition of stigma as an umbrella concept that links interrelated stigma components. Structural (Hatzenbuehler, Phelan, & Link, 2013) and cultural frameworks (Yang et al., 2007) describing stigma’s effects have also been articulated. While these frameworks are all likely to be relevant to opioid-based stigma, how the conceptualization and measurement of stigma at the individual level leads to harmful individual-level outcomes has been emphasized (Earnshaw & Chaudoir, 2009). We focus on two frameworks that provide a theoretical foundation for our scale, which focuses on assessing individual-level stigma processes among individuals with OUD. The first, that of perceived stigma (Fox et al, in press, which we will refer to as “stereotype awareness” or “aware”; Corrigan, Watson, & Barr, 2006, Corrigan, 2011; also connected with “symbolic interaction stigma”; Link, Wells, Phelan, & Yang, 2015), is the process by which stigmatized individuals may be generally aware of stigmatizing attitudes and how the general public may act towards stigmatized individuals (Link, Struening, Rahav, Phelan, & Nuttbrock, 1997; Luoma, O’Hair, Kohlenberg, Hayes, & Fletcher, 2010). Negative psychosocial consequences may be linked with awareness of stigma alone, in that individuals may be aware that their stigmatizing status may elicit unfair treatment from others (Link et al., 1989). Initiating from awareness of stereotypes is the process of internalized stigma (also known as “self-stigma”; Corrigan and Watson, 2002, Corrigan, 2006), which refers to the process by which stigmatized individuals accept societal stereotypes and consequently experience reduced self-esteem and self-efficacy. Following awareness of societal stereotypes, people may endorse that the stereotypes are actually true (i.e., “stereotype agreement”, or “aware”, Corrigan et al, 2011)—e.g., that people addicted to opioids are untrustworthy; (Nieweglowski et al., 2018)—but they may not believe that the stereotypes applies to themselves (Corrigan et al., 2006). The final steps of internalized stigma include whether a person believes that he or she fits the stereotype (e.g., is untrustworthy; known as “stereotype self-concurrence”, or “apply”, Corrigan et al, 2011), and that one loses self-respect because one corresponds to the stereotype (i.e., “I respect myself less because I am untrustworthy,” known as “self-esteem decrement”, or “harm”, Corrigan et al, 2011). Because few theoretically-derived, multidimensional measures of substance abuse stigma exist (see Smith et al., 2016; Schomerus, 2011, for noteworthy exceptions), we contribute a brief, theoretically-based measure of opioid-related stigma that is operationalized using the above stigma frameworks.

Reviews of the public stigma towards individuals who use drugs (Corrigan et al., 2017; Schomerus et al., 2011, Kulesza et al., 2013, Yang et al., 2017) found that public perceptions of dangerousness, unpredictability, irresponsibility, and blame for their condition were commonly endorsed. These stereotypes appear to be perceived by (and potentially internalized by) individuals who use drugs themselves. In a recent study identifying different components of substance-use stigma among key stakeholder groups (including individuals who currently and formerly used drugs), core stereotypes were endorsed, including dangerousness, criminality (i.e., being untrustworthy), hopelessness and worthlessness (i.e., being lazy and weak), and blameworthiness (Nieweglowski, 2018). In turn, while contradictory findings (Rivera, DeCuir, Crawford, Amesty, & Lewis, 2014) exist, initial studies indicate that use of substance abuse treatment programs are associated with increased stigma. For example, a higher frequency of stigma-related rejection has been associated with

greater prior episodes of substance abuse treatment (Luoma et al., 2007). Studies examining opioid-related stigma specifically, and its resulting impact on treatment adherence, are emerging and generally are concordant with findings concerning substance use disorders. For example, a qualitative study exploring different forms of stigma among methadone-maintenance therapy patients indicated a substantial source of stigma stemming from healthcare workers, with patients reporting experiences related to stereotypes (i.e., being stereotyped as “untrustworthy”) and enacted stigma or discrimination (being treated coldly; Earnshaw, Smith, & Copenhaver, 2013). Endorsement with higher levels of general drug-use stigma (a measure assessing heterogeneous aspects of perceived, internalized, and enacted stigma [i.e. discrimination]) and drug-use treatment stigma have been associated with previous opioid treatment use (i.e., prior entrance into detoxification programs; Bozinoff, Anderson, Bailey, & Stein, 2017). Additionally, recent opioid treatment use (i.e., in the past 12 months) has been associated with increased stigma (i.e., fears of others finding out; Wu, Blazer, Li, & Woody, 2011). The present study thus contributes to the relatively few studies of stigma among individuals with OUD themselves (Smith et al., 2016; Earnshaw et al, 2013, Bozinoff et al, 2017, Nieweglowski, 2018) and substance abuse generally (Corrigan et al, 2017), with our study focusing on perceived opioid-related stigma (i.e., “aware”) and internalized stigma (i.e., “agree”, and “harm”) from the perspective of individuals with OUD, and serves to introduce a brief, theoretically-defined measure to assess these constructs.

1.1 Hypotheses

We developed a new, brief, opioid stigma scale to assess constructs identified by Corrigan et al (2006, 2011). To establish initial psychometric properties for our new scale, we first conducted an exploratory factor analysis to examine the underlying dimensional structure of our scale, followed by examining reliability (i.e. internal consistency) of identified subscales. To test validity, we next proposed tests of construct validity; that is, we proposed that our new, brief opioid-stigma measure would show an expected pattern of correlations with hypothesized constructs in a cohort of persons using opioids who recently entered a managed withdrawal program (i.e., “detoxification”, see below). Based on the broader substance use stigma literature (Smith et al, 2016), we proposed the following hypotheses: (1) greater opioid-related perceived stigma (i.e., “aware”) and internalized stigma (i.e., “agree” and “harm”) will be associated with harmful negative psychological outcomes including lower self-esteem, reduced social functioning, and increased depressive symptoms (Smith et al., 2016); and (2) that greater opioid-related stigma (operationalized as “aware”, “agree” and “harm” per above) will be associated with increased intention to use medication treatment (i.e. managed withdrawal medications such as methadone, buprenorphine, or extended-release naltrexone (ER-naltrexone) following discharge from a managed opioid withdrawal program (Bozinoff, et al., 2017; Smith et al., 2016), and that “aware” specifically will be associated with those aftercare OUD treatments typically located in specialty opioid treatment settings (i.e., methadone or ER-naltrexone; Substance Abuse and Mental Health Services Administration, 2015). When evaluating these hypothesized associations, per the original validation study (Corrigan 2006), we expect that “harm” will show the strongest associations with hypothesized constructs, with “aware” and “agree” showing more modest associations. As a second step, we compared the association between our new, brief opioid

stigma scale and similar psychosocial outcomes among prior studies that used similar, theoretically-consistent measures of mental illness stigma (Corrigan, 2006; Fung, Tsang, Corrigan, Lam, & Cheng, 2007), and likewise, to studies of substance abuse stigma that used comparable measures (Luomo, 2010, Schomerus, 2011).

2. Method

2.1 Recruitment

Between September 2016 and April 2017, persons entering a short-term inpatient opioid managed withdrawal program were approached by Butler Hospital-employed research assistants after their initial dose of methadone, but within 24 hours of admission to the Stanley Street Treatment and Resources, Inc. (SSTAR) facility. The questions included in this study were part of a longer screening instrument being used at SSTAR to find persons eligible for an ongoing NIH-sponsored clinical trial for aftercare linkage to long-term opioid agonist treatment. Data were collected by research assistants (not involved in the clinical treatment of participants) after verbal assent.

SSTAR in Fall River, Massachusetts is a program that provides evaluation and withdrawal management, individual and group counseling, and aftercare case management. Notably, managed withdrawal is another name for what others call “detoxification.” At SSTAR, managed withdrawal includes a five-day taper of methadone (to reduce opioid withdrawal symptoms) and other medications that might affect withdrawal symptom relief, daily counseling, 12-step groups, and case management to develop an aftercare plan (which may or may not include long-term, aftercare OUD medication treatment), whereby a participant is sent back to the community. Program staff strongly recommended long-term OUD medication treatment to all patients and often directly linked inpatients into outpatient care (Chang, Kilmas, Wood, & Fairbairn, 2018; Friedmann & Suzuki, 2017).

Of patients admitted to SSTAR during the recruitment period, 417 were individuals who use opioids, who were 18 years or older, English-speaking, and able to provide informed consent as approved by the Butler Hospital Institutional Review Board. Thirty refused study participation or were discharged before staff could interview them. The remaining 387 persons completed an approximately 15-minute non-incentivized, face-to-face interview administered by non-treating research staff.

2.2 Measures

In addition to age, sex, race, ethnicity, years of education, past 30-day injection drug use, prior detoxification (yes or no), and age of opioid initiation, the following measures were assessed.

2.2.1. Rosenberg Self Esteem Scale (RSES)—The Rosenberg Self-Esteem Scale is a 10-item scale (*1=Strongly Agree, 5= Strongly Disagree*) used to assess global self-worth (Rosenberg, 1965) (Cronbach’s alpha = 0.86).

2.2.2. Centre for Epidemiological Studies Depression Scale (CES-D-10)—The CESD-10 (Radloff, 1977) is a 10-item scale (0=rarely or none of the time, 3= most or all of the time) used to assess depressive symptoms (Cronbach's alpha = 0.84).

2.2.3. Social Functioning-12 (SF-12)—The SF-12 (Ware, Kosinski, & Keller, 1996) is a 12-item questionnaire used to produce a physical health composite score ("SF-12 Physical Health") and a mental health composite score ("SF-12 Mental Health") on a scale of 0–100 with higher scores indicating better health. Sample items include "during the past 4 weeks have you felt downhearted or depressed?" (i.e., mental health) and "during the past 4 weeks, how much did pain interfere with your normal work?" (i.e., physical health).

2.2.4. Brief Opioid Stigma Scale: Development and Description—The Brief Opioid Stigma Scale was developed to assess stereotype awareness ("aware"), stereotype agreement ("agree"), and self-esteem decrement ("harm") surrounding opioid dependence, as perceived by individuals who uses opioids. We sought to develop a brief scale that could be used by research and treatment sites to assess stigma of opioid use with minimum burden to respondents. The Brief Opioid Stigma Scale is based on the Self-Stigma of Mental Illness Scale (SSMIS; Corrigan et al., 2006), a multidimensional scale assessing four dimensions of stigma (of which we adapt the "aware", "agree", and "harm" subscales, original SSMIS n=15 items each; note, the original SSMIS had a fourth dimension, that of self-concurrence or "apply", which we chose to omit because of its very high correlation with "harm" in the original validation study, and in an adapted scale for alcohol-abuse stigma [bothr's>.8]; Corrigan, 2006, Schomerus, 2011).

Item stems for the Brief Opioid Stigma Scale were kept identical to assess the general processes of: (1) "Aware"; i.e. "*Most people believe that* [OUD stereotype]"; (2) "Agree"; e.g. "*I think* [OUD stereotype]"; (3) "Harm"; e.g. "*I currently respect myself less* because of [OUD stereotype]" (See Appendix for scale items). Specific item content (i.e., opioid-related stereotypes) was derived by consulting four prominent reviews of the public stigma towards people who use drugs (Corrigan et al., 2017; Kulesza et al., 2013; Schomerus et al., 2011; Yang et al., 2017), and corroborating that these substance-use stigma stereotypes were held in a study of key stakeholders (including individuals who currently use drugs and those who formerly used drugs; Nieweglowski, 2018). Through discussion with two opioid use experts (M.S., G.B.), four key opioid-related stereotypes were identified: 1) "cannot be trusted"; 2) "to blame for their problems," 3) "are lazy," and; 4) "are dangerous". In some cases, phrasing of stereotypes were softened to reduce potential stigma (e.g., "criminality" was rephrased as "cannot be trusted"; Nieweglowski, 2018, Earnshaw et al, 2013). The Brief Opioid Stigma Scale is thus comprised of 12-items, assessing 4 opioid-related stereotypes across 3 subscales. Per Schomerus et al. (2011) to ease potential burden on respondents, response sets were shortened from the original 9-point scale (Corrigan et al., 2006) to a 5-point Likert scale (1= *Strongly Disagree*, 3= *Unsure*; 5= *Strongly Agree*). Internal consistency reliabilities (Cronbach's Alpha) were 0.72, 0.68, and 0.70 for the "aware", "agree", and "harm" subscales, respectively.

2.2.5 Preference for Aftercare OUD Medication Treatment—Preference for "aftercare OUD medication treatment" (a term we use instead of "medication-assisted

therapy” to normalize treatment of substance use therapy) was assessed using the item “If you were to start a medication after you leave SSTAR, which medication are you most likely to choose?” Response categories were methadone, buprenorphine, ER-naltrexone, and none. Notably, while all participants in this study were entering a short-term inpatient opioid managed withdrawal program at the time of the study, items assessing desire for aftercare OUD medication treatment remain appropriate given that participants may desire not to receive medication treatment after completion of the program.

2.3 Analytical Methods

We present descriptive statistics to summarize the sample characteristics and item distributions. Exploratory factor analysis was used to investigate the dimensional structure underlying the items intended to measure stigma. We used Velicer’s (1976) minimum average partial and Horn’s (1965) parallel analysis to help determine the number of factors to retain. We report factor loadings for an iterated principal factor analysis with promax rotation. Cronbach’s alpha was used to estimate the internal consistency of the final subscales. Factor analyses and internal consistency was evaluated using the full sample ($n=387$).

We used bivariate regression to evaluate the unadjusted association of each stigma subscale with demographic characteristics, psychosocial outcomes, and preference for aftercare OUD medication treatment when released from managed withdrawal. We report fully-standardized coefficients for continuous covariates and y-standardized coefficients for categorical covariates. Ordinary least squares regression was also used to estimate the adjusted associations of each stigma subscale with psychosocial outcomes. Control variables included age, sex, race (White vs Other), ethnicity (Hispanic vs Other), and educational attainment. Multinomial logistic regression was used to estimate the adjusted association of each stigma subscale with preferred aftercare OUD medication treatment (methadone, buprenorphine, ER-naltrexone, vs. no medically assisted treatment as the reference group) after release from the managed opioid withdrawal program. Initially, we ran separate models that included only one stigma subscale for the psychosocial outcomes and aftercare OUD medication treatment variables. To further investigate these associations, we then estimated models in which all three stigma subscales were included in a common multivariable model.

3.0 Results

Participants averaged 33.1 (± 8.4) years of age, 73.8% were male, 10.1% were Hispanic, 82.7% were white, 3.1% were Black, and 14.2% identified other racial origins (Table 1). Mean educational attainment was 11.7 (± 1.8) years. The average participant initiated opioid use at 21.0 (± 6.7) years of age. About 72.4% said they had injected drugs within the last 30-days; most (80.8%) had experienced prior detoxification. The mean CESD-10 score was 17.0 (± 7.4). Descriptive statistics for the 3 opioid stigma subscales and other variables used in subsequent analysis are reported in Table 1. The three opioid stigma subscales were also significantly intercorrelated with one another, showing the following associations; “aware” and “agree” ($r=.28$, $p<.0001$); “agree” and “harm” ($r=.38$, $p<.0001$); and “aware” and “harm” ($r=.32$, $p<.0001$).

Velicer's (1976) minimum average partial for principal components and Horn's (1965) parallel analysis for an iterated principal factor solution suggested retaining 3 factors. Item distributions and factor loadings for an iterated principal factor analysis with promax rotation are given in Table 2. Items intended to represent opioid-related stigma constructs of "aware", "agree", and "harm" had relatively high loadings on the expected factors with small cross-factor loadings. Internal-consistency (Cronbach's Alpha) reliabilities were .72, .68, and .70 for opioid-related "aware", "agree", and "harm" subscales, respectively.

None of the stigma subscales were associated significantly with age, race, or ethnicity (Table 3). Males had significantly lower mean "aware" scores ($\beta = -0.309$, $p = 0.007$), and educational attainment was inversely and significantly associated with both "agree" ($\beta = -0.158$, $p = 0.002$) and "harm" ($\beta = -0.112$, $p = 0.022$). The stigma subscales were associated significantly with several psychosocial measures (Table 2). Opioid-related "aware" was positively associated with CESD-10 scores ($\beta = 0.261$, $p < 0.001$), inversely associated with self-esteem ($\beta = -0.278$, $p < 0.001$), and inversely associated with SF-12 mental health scores ($\beta = -0.140$, $p = 0.006$). Opioid-related "agree" was inversely and significantly ($\beta = -0.146$, $p = 0.004$) associated with self-esteem, but was not associated with either CESD-10 or SF-12 mental functioning scores. Opioid-related "harm" was moderately and positively associated with the CESD-10 ($\beta = 0.393$, $p < 0.001$) and inversely with self-esteem ($\beta = -0.432$, $p < 0.001$). It was also inversely associated with SF-12 mental health scores ($\beta = -0.153$, $p = 0.003$), but that association was not as strong substantively. The SF-12 physical health score was inversely and significantly associated with both opioid-related "agree" ($\beta = -0.120$, $p = 0.018$) and "harm" ($\beta = -0.211$, $p < 0.001$).

Persons who reported they desired treatment with methadone ($\beta = 0.581$, $p < 0.001$) or ER-naltrexone ($\beta = 0.462$, $p < 0.001$) had significantly higher mean opioid-related scores on "aware" than those preferring no aftercare OUD medication treatment after release. Persons preferring either buprenorphine ($\beta = 0.388$, $p = 0.016$) or ER-naltrexone ($\beta = 0.365$, $p = 0.012$) had significantly higher mean opioid-related scores on "harm" than those preferring no aftercare OUD medication treatment after release. Opioid-related "agree" was not significantly associated with aftercare OUD medication treatment.

Controlling for age, sex, race, ethnicity, and education, opioid-related "aware" was positively and significantly associated with depression ($\beta = 0.24$, 95% CI 0.146; 0.337, $p < 0.001$), inversely associated with self-esteem ($\beta = -0.277$, 95% CI -0.373 ; -0.181 , $p < 0.001$), inversely associated with SF-12 mental health scores ($\beta = -0.125$, 95% CI -0.225 ; -0.025 , $p < 0.05$), and positively associated with the likelihood that participants want either methadone (RRR = 1.79, 95% CI 1.23; 2.62, $p < .01$) or ER-naltrexone treatment (RRR = 1.54, 95% CI 1.15; 2.05, $p < .01$) aftercare OUD medication treatment (Table 4). Opioid-related "agree" was inversely associated with self-esteem ($\beta = -0.145$, 95% CI -0.244 ; -0.046 , $p < 0.01$), but was not associated significantly with other measures of psychosocial outcomes or desiring aftercare OUD medication treatment. Opioid-related "harm" was associated positively with CESD-10 depression scores ($\beta = 0.412$, 95% CI 0.322; 0.501, $p < 0.001$), but inversely with self-esteem ($\beta = -0.444$, 95% CI -0.533 ; -0.354 , $p < 0.001$), SF-12 mental health scores ($\beta = -0.159$, 95% CI -0.259 ; -0.060 , $p < 0.01$), and with SF-12 physical health scores ($\beta = -0.233$, 95% CI -0.330 ; -0.137 , $p < 0.01$).

0.001). Opioid-related “harm” was also associated significantly with a higher likelihood of wanting buprenorphine (RRR = 1.49, 95% CI 1.06; 2.08, $p < .05$) or ER-naltrexone (RRR = 1.44, 95% CI 1.06; 1.95, $p < .05$) aftercare OUD treatment after leaving the medically-assisted withdrawal program.

We also evaluated models in which all three stigma subscales were entered simultaneously in a common multivariable model (Table 4). We note that for “aware” and “harm”, the overall pattern of associations was generally consistent with those in which associations were adjusted only for sociodemographic variables, and that the substantive magnitude of these associations is somewhat attenuated after controlling for other stigma subscales. Only in the case of “agree” does some results shift; after controlling for other stigma subscales, “agree” has a small negative, significant effect with CESD-10 depression scores ($\beta = -0.122$, 95% CI -0.220 ; -0.025 , $p < 0.05$) and a small positive, significant effect with SF-12 mental health scores ($\beta = 0.112$, 95% CI 0.003 ; 0.222 , $p < 0.05$). “Harm” exhibits the strongest substantive associations with measures of psychosocial outcomes in particular.

4. Discussion

The current study builds on the theoretically-derived, multidimensional opioid-stigma measurement literature (Smith et al., 2016) by operationalizing theoretical frameworks of perceived opioid-stigma (“aware”) and internalized stigma (“agree” and “harm”) concerning opioid dependence, as perceived among individuals with OUD. An exploratory factor analysis showed support for our proposed three-factor structure, with each subscale showing generally acceptable internal consistencies (Cronbach’s Alpha = .68–.72). Study results indicated that a good majority (56–79%) of respondents agreed that the public held negative stereotypes towards individuals with OUD (i.e., “aware”), figures that are remarkably consistent with one nationally-representative U.S. study of public stigma towards individuals using opioids (56–78% endorsement of comparable stereotypes; Kennedy-Hendricks et al., 2017). Further, an intermediate proportion (27–65%) of respondents endorsed that negative opioid-related stereotypes caused loss of self-respect (i.e., “harm”), with the lowest proportion (17–44%) of respondents personally agreeing with negative stereotypes towards individuals with OUD (i.e., “agree”). That our “harm” scale was moderately highly endorsed was generally consistent with Smith et al.’s (2016) findings, whereby internalized stigma was highest among individuals with OUD, with other forms of stigma lower. When examining inter-relationships between the three opioid stigma subscales, our subscales’ intercorrelations are consistent with Schomerus et al. (2011) who used the same stigma subscales for alcohol abuse, except that their study found a higher association between “aware” and “agree” ($r = .69$) than noted in our study (.28), perhaps reflecting potentially inconsistent agreement with stereotypes among individuals with OUD due to heterogeneity in causes for opioid abuse (i.e., prescription opioid use from doctors vs. intentional abuse; Kennedy-Hendricks et al., 2017). Nonetheless, these subscale differences demonstrate the utility of our multi-dimensional, three-factor approach to conceptualizing and measuring opioid-related stigma.

Supporting our hypotheses and prior findings regarding opioid-related internalized stigma (Smith et al., 2016), greater opioid-related “harm” displayed the strongest associations

(small-to-moderate, $r's = .15-.43$) with all three negative psychological outcomes (i.e., higher levels of depression, lower self-esteem, as well as poorer social functioning [both mental and physical health]). Likewise, construct validity for opioid-related “aware” was demonstrated by smaller but mostly significant associations ($r's = .05-.27$) with higher depression levels, poorer self-esteem and lower social functioning (mental health only). Even after further controlling for the other two stigma scales in multivariable models, nearly all of these associations remained significant for “harm” and “aware”. These findings are consistent with previous studies suggesting that mere awareness of public stigma (i.e. via “symbolic interactionism” processes; Link et al., 2015, Luomo, 2010), as well as internalized stigma affecting one’s self-esteem (i.e., “harm”), can negatively impact psychosocial outcomes (Corrigan et al., 2006; Fung, Tsang, & Corrigan, 2008; Schomerus, 2011). Some evidence for construct validity existed for the opioid-related “agree” subscale, as “agree” was significantly associated with lower self-esteem and lower social functioning (physical health only). Yet these somewhat weaker range of associations were similar to those evidenced by the “agree” subscale in Corrigan et al.’s (2006) initial validation study, as well as that shown in an alcohol abuse study (Schomerus, 2011; see below), and may signify that mere agreement with stigmatizing opioid stereotypes does not necessarily lead to internalization of stigma and negative psychosocial outcomes (Corrigan, 2006). Further, after controlling for the effects of the other stigma subscales, two small, significant associations appeared in counterintuitive directions, showing that greater “agree” scores were associated with lower depression and better social functioning (mental health only). One possible explanation is that agreement with opioid-related stereotypes might show positive mental health effects in part due to typical reframing of addiction as a mental illness by managed withdrawal programs; i.e., those who agreed with opioid-related stereotypes may derive a small boost in mental health outcomes due to a reinterpretation of their addiction as a mental health problem (Kolodny et al., 2015). This finding merits further exploration.

We next compared patterns of association between the opioid stigma subscales and available constructs among other mental illness stigma studies that included the “aware”, “agree”, and “harm” subscales (Corrigan et al., 2006; Fung et al., 2007), thus enabling comparisons with the SSMIS (the Stigma of Severe Mental Illness Scale; self-esteem and depression comparisons) and the CSSMI (the Chinese version of the SSMI scale; self-esteem comparison only). For the opioid stigma subscales, “aware” was (1) significantly and inversely related to self-esteem, as it was in the SSMIS and CSSMI, and (2) positively related to depression for opioid stigma and the SSMIS, but only reached significance for opioid stigma. For the opioid stigma subscales, “agree” was (1) inversely related to self-esteem, as it was in the SSMIS and CSSMI, but only reached statistical significance for opioid stigma and the CSSMI, and (2) was not significantly associated with depression for opioid stigma or the SSMIS. Lastly, for the opioid stigma subscales, “harm” was (1) significantly and inversely related to self-esteem, as it was in the SSMIS and CSSMI and (2) significantly and positively associated with depression for opioid stigma and in the SSMIS. Accordingly, the Brief Opioid Stigma Scale showed similar overall patterns of associations with other mental illness stigma measures that used the same multidimensional scale structure.

Whereas several substance abuse stigma scales with good psychometric properties exist (see Smith et al., 2016, Luoma et al., 2013 for examples), to avoid conflating comparison of stigma constructs that are theoretically distinct (Earnshaw et al, 2009), we limit comparisons of our opioid-stigma scale with substance abuse studies of measures that assess identical or near-identical stigma constructs (i.e., Perceived Stigma of Addiction Scale [PSAS] which assesses perceived stigma [or “aware”], Luoma et al. 2010; Self-Stigma in Alcohol Dependence Scale [SSAD] which assesses “aware”, “agree”, and “harm”, Schomerus et al., 2011). Our opioid stigma scale showed mostly similar patterns when compared with these other studies. “Agree” was marginally but not significantly related to depression in either our Brief Opioid Stigma Scale ($r=.06$) or the SSAD ($r=.05$). Further, “harm” was negatively and moderately related to depression in both our opioid stigma scale ($r=-.43$) and the SSAD ($r=-.38$). Likewise, our opioid-related “aware” subscale was positively and significantly related to depression with our opioid stigma scale ($r=.26$) and the PSAS ($r=.20$) (although “aware” was not significantly related to depression with the SSAD [$r=.04$]). The only discrepant finding was that our opioid-related “aware” subscale showed a somewhat stronger significant and inverse relation to self-esteem ($r=-.27$), whereas “aware” was positively but not significantly related to self-esteem in the PSAS ($r=.15$). This may be explained by our sample consisting of individuals who have recently entered inpatient managed withdrawal services (where awareness of negative opioid-related stereotypes may be quite salient) compared with Luoma et al.’s (2010) sample which primarily consisted of individuals using outpatient substance abuse services. Given the generally consistent associations between our opioid stigma measure’s subscales and these theoretically similar substance abuse stigma scales (and mental illness stigma scales above), these findings suggest initial construct validity for our opioid stigma scale.

While use of any long-term aftercare OUD medication treatment following discharge from a managed opioid withdrawal program comprises evidence of an addiction and is therefore potentially stigmatizing, we expected certain forms of aftercare OUD treatment that are located in specialty opioid treatment settings (i.e., methadone) to have stronger associations with “aware” scores. This is because deciding to continue future medication treatment at such specialty settings may exacerbate awareness of being “labeled” as being in specialized opioid treatment, thus increasing awareness of community stereotypes. This is supported by research indicating that entrance into an inpatient opioid managed withdrawal program is associated with higher levels of general stigma (a heterogeneous measure of stigma) and treatment stigma (Bozinoff et al., 2017). This hypothesis was confirmed in our study, in that desire for aftercare methadone and ER-naltrexone, but not buprenorphine (which can be prescribed in a non-specialty setting by any medical provider who completes additional training and obtains a license and waiver; Substance Abuse and Mental Health Services Administration, 2015) both showed associations with “aware” in multivariable analyses when other stigma subscales were accounted for. Further, preference for aftercare buprenorphine use, perhaps through “label avoidance” of specialized opioid treatment (Corrigan, 2004), was not significantly associated with “aware”. Rather, aftercare buprenorphine use was significantly associated with greater “harm”, possibly because individuals with OUD who show particularly high internalized stigma would prefer buprenorphine in a desire to avoid the stigma associated with methadone clinics, and/or the

stigma associated with individuals who obtain services at these clinics (Yarborough et al., 2016). By differentiating between various forms of OUD medication treatment, our findings build upon a prior study of individuals who use opioids showing that lifetime substance use treatment was significantly associated with greater internalized and anticipated stigma (Smith et al., 2016). Possible interventions to decrease stigma for aftercare methadone and ER-naltrexone use thus include recommendations for current systems of care to less directly exhibit their status as specialized opioid treatment through co-location of treatment with general medical services (Korthuis et al., 2017). Moreover, decreasing stigma for aftercare buprenorphine use may require addressing internalization of negative stereotypes (possibly through stigma reduction programs for substance abuse; Luoma, Kohlenberg, Hayes, Bunting, & Rye, 2008) because individuals with greater internalized stigma might specifically seek out this type of medication treatment. Future research is needed to replicate and extend these findings.

To our knowledge, the newly-developed Brief Opioid Stigma Scale is currently the only opioid-specific stigma measure to use a multidimensional assessment of perceived opioid-related stigma (“aware”), as well as internalized opioid-related stigma (“agree” and “harm”), among individuals with OUD. Yet study findings should be considered in light of several limitations. First, while we carefully consulted the literature and experts for opioid-related stereotypes, we recognize that item content validity could have been further enhanced by directly consulting with, and evaluating interpretability of items with, people who use opioids. Further, our decision to shorten the response set for stigma items may constrain comparability of our stigma scale to the original SSMIS (Corrigan et al., 2006). While our scale offers the advantage of brevity, more detailed substance-use related scales are in development (Nieweglowski, 2018). Second, our sample consists of a majority of non-Hispanic white males with OUD, which may limit the generalizability of our findings to women and racial/ethnic minorities. Third, the sample was recruited from a cohort of individuals who use opioids in a short-term inpatient managed withdrawal program at one treatment center (many of whom [80.8%] had experienced prior detoxification), which serves communities in the Northeastern U.S. and is therefore not representative of individuals with less severe OUD’s, those at outpatient treatment centers, or from other geographical regions. Fourth, this is a cross-sectional study and all measures were conducted at the time of the participant’s entry (i.e., within 24 hours of admission) into SSTAR’s program, thus precluding interpretations of causality. Future research may utilize longitudinal study designs to identify factors that may temporally strengthen or weaken opioid-related stigma, and to establish stigma’s association with longitudinal outcomes. Future research should continue to assess the reliability, and validity of this new brief scale, particularly within outpatient groups.

4.1 Conclusion

Developing a theoretically-derived, multidimensional scale of opioid-related stigma advances understanding of the effects of stigma on psychosocial outcomes and treatment preference and has significant implications for developing interventions that effectively target specific aspects of stigma that are most detrimental to individuals with OUD. Given the emerging area of opioid-related stigma and the lack of a brief and validated measure for

this construct, the current study developed and provided initial validation for a brief, theoretically-based measure to fill this gap. This research reflects priorities outlined in the Department of Health and Human Services' strategy for addressing the opioid crises by measuring stigma at the individual level, which is essential to improving access to treatment and recovery services.

Moving forward, these findings will help inform identification of how systems of care for individuals with OUD could exacerbate stigma and impact psychosocial and treatment outcomes. Moreover, these findings have implications for tailoring interventions aimed at breaking the cycle of stigma among individuals with OUD. Given that awareness of stereotypes should diminish as societal levels of stigma decrease, interventions to address awareness of stereotypes among individuals with OUD could be complemented by anti-stigma campaigns to reduce societal stigma. State-wide campaigns that raise awareness of OUD, including Indiana's Family and Social Services Administration (FSSA) campaign to reduce opioid stigma and to highlight accessible routes to treatments and recovery for individuals with OUD, serves as an example (Walthall, 2018). Further, interventions have shown promise in targeting reduction of internalized stigma among individuals with substance abuse disorders (Livingston, Milne, Fang, & Amari, 2010). By addressing stigma from multiple vantage points, it may be possible to significantly reduce stigma surrounding opioid misuse and to ultimately improve treatment-seeking and outcomes for those with OUD.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1:

Background Characteristics (n = 387).

	N (%)	Mean ($\pm$ SD)	Median	Range
Age		33.1 ($\pm$ 8.40)	31	18–59
Gender (Male)	284 (73.8%)			
Hispanic	39 (10.1%)			
Race				
White	320 (82.7%)			
Black	12 (3.1%)			
Other	55 (14.2%)			
Years Education		11.7 ($\pm$ 1.83)	129	5–16
Age Opiate Initiation		21.0 ($\pm$ 6.69)	19	11–52
Recent IDU	280 (72.4%)			
Experienced Past Detoxification	311 (80.8%)			
CESD-10		17.0 ($\pm$ 7.36)	17	0–30
Self Esteem		25.8 ($\pm$ 3.37)	26	10–40
SF-12 Mental Health		34.5 ($\pm$ 8.16)	33.9	12.1–62.3
SF-12 Physical Health		48.2 ($\pm$ 10.0)	49.8	18.2–65.1
Aftercare OUD Medication				
Treatment Preference:				
Methadone	59 (15.3%)			
Buprenorphine	93 (24.0%)			
ER naltrexone	170 (43.9%)			
No MAT	65 (16.8%)			
Stereotype Awareness (Aware)		14.8 ($\pm$ 4.08)	16	4–20
Stereotype Agreement (Agree)		10.3 ($\pm$ 4.02)	10	4–20
Self-Esteem Decrement (Harm)		11.7 ($\pm$ 4.39)	12	4–20

Table 2.

Opioid Stigma Item Means, Percent Endorsing Each Response Category, Factor Loadings (3 Factor Maximum-Likelihood with Promax Rotation), and Internal Consistency Reliabilities of Subscale (n = 387).

ITEM	ITEM MEAN (SD)	% ENDORSING					FACTOR LOADING		
		SD	D	U	A	SA	I	II	III
Most people believe that a person who is addicted to opioids cannot be trusted.	4.0 (1.3)	10%	6%	6%	35%	44%	.53	.04	.02
Most people believe that a man who is addicted to opioids is dangerous.	3.7 (1.4)	13%	8%	8%	38%	34%	.61	.07	.05
Most people think that a person who is addicted to opioids is to blame for his problems.	3.8 (1.4)	13%	9%	5%	33%	41%	.63	.09	-.15
Most people believe that a person who is addicted to opioids is lazy.	3.3 (1.5)	21%	17%	7%	27%	29%	.68	-.12	.13
I believe that a person who is addicted to opioids cannot be trusted.	2.8 (1.5)	29%	22%	9%	24%	16%	-.03	.63	-.04
I believe that a man who is addicted to opioids is dangerous.	2.6 (1.4)	29%	28%	9%	19%	14%	.03	.80	-.08

Table 3.

Unadjusted Associations of Three Measures of Stigma with Demographic Characteristics, Psychosocial Outcomes, and Treatment Adherence. Coefficients are fully standardized for continuous correlates, and y-standardized for categorical correlates (n = 387).

	Stereotype Awareness (Aware)	Stereotype Agreement (Agree)	Self-Esteem Decrement (Harm)
	$\beta_{y,x}(p=)$	$\beta_{y,x}(p=)$	$\beta_{y,x}(p=)$
Age	-.094 (.065)	.044 (.392)	-.033 (.517)
Sex (Male)	-.309 (.007)	.225 (.052)	.178 (.078)
Race (White)	.068 (.613)	-.015 (.909)	.143 (.288)
Hispanic (Yes)	-.142 (.401)	.132 (.435)	-.201 (.235)
Yrs Education	.087 (.089)	-.158 (.002)	-.112 (.022)
CESD-10	.261 (<.001)	.067 (.197)	.393 (<.001)
Self Esteem	-.278 (<.001)	-.146 (.004)	-.432 (<.001)
SF-12 Mental Health	-.140 (.006)	.027 (.592)	-.153 (.003)
SF-12 Physical Health	-.051 (.315)	-.120 (.018)	-.211 (<.001)
Recent IDU	.024 (.836)	-.022 (.849)	.127 (.265)
Medication Preference			
Methadone	.581 (.001)	.098 (.585)	.267 (.137)
Buprenorphine	.120 (.449)	.205 (.206)	.388 (.016)
ER-naltrexone	.462 (.001)	.176 (.230)	.365 (.012)
No MAT [REF]	[0.000]	[0.000]	[0.000]

Adjusted^a Associations of Three Measures of Opioid-Related Stigma with Measures of Psychosocial Outcomes, and Desire for Medically Assisted Treatment (n = 387).

	MULTINOMIAL LOGIT MODEL FOR TREATMENT PREFERENCE						
	CESD-10	Self-Esteem	SF-12 Mental Health	SF-12 Physical Health	Methodone vs None	Buprenorphine vs None	ER naltrexone vs None
	β^b (95% CI)	β^b (95% CI)	β^b (95% CI)	β^b (95% CI)	RRR ^c (95% CI)	RRR ^c (95% CI)	RRR ^c (95% CI)
“Aware” ^d	0.242*** (0.146; 0.337)	-0.277*** (-0.373; -0.181)	-0.125* (-0.225; -0.025)	-0.061 (-0.160; 0.038)	1.79** (1.23; 2.62)	1.13 (0.83; 1.54)	1.54** (1.15; 2.05)
“Agree” ^d	0.077 (-0.022; 0.175)	-0.145** (-0.244; -0.046)	0.016 (-0.084; 0.117)	-0.015* (-0.214; -0.017)	1.12 (0.78; 1.62)	1.18 (0.85; 1.65)	1.23 (0.91; 1.66)
“Harm” ^d	0.412*** (0.322; 0.501)	0.444*** (-0.533; -0.354)	-0.159** (-0.259; -0.060)	-0.233*** (-0.330; -0.137)	1.29 (0.89; 1.87)	1.49* (1.06; 2.08)	1.44* (1.06; 1.95)
“Aware” ^e	0.141** (0.045; 0.238)	-0.155** (-0.251; -0.058)	-0.104 (-0.213; 0.004)	0.030 (-0.076; 0.135)	1.75** (1.17; 2.62)	1.02 (0.67; 1.37)	1.41* (1.02; 1.94)
“Agree” ^e	-0.122* (-0.220; -0.025)	0.060 (-0.038; 0.158)	0.112* (0.003; 0.222)	-0.038 (-0.145; 0.069)	0.90 (0.59; 1.36)	1.02 (0.69; 1.49)	0.99 (0.70; 1.40)
“Harm” ^e	0.401*** (0.310; 0.507)	-0.413*** (-0.512; -0.314)	-0.165** (-0.276; -0.055)	-0.229*** (-0.337; -0.122)	1.12 (0.74; 1.69)	1.51* (1.02; 2.23)	1.28 (0.90; 1.81)

^a All coefficients were adjusted for age, sex, race (White vs Other), ethnicity (Hispanic vs Other), and education.

^b Fully standardized coefficients estimated by ordinary least squares regression.

^c Relative Risk Ratios Estimated by multinomial logistic regression. Measures of stigma were standardized prior to estimation and give the expected change in the odds of the medical treatment versus no medical treatment, for a 1 standard deviation increase in stigma.

^d Each measure of stigma was entered individually in separate models.

^e All three measures of stigma were entered simultaneously in a single model.