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The Development and Psychometric Evaluation of the Trans Discrimination Scale: TDS-21

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To date, researchers assessing the role of discrimination in trans peoples' lives have relied upon measures that were developed and normed on LGB populations, culled specific items from large-scale survey data, or used more generalized measures of discrimination that do not specifically assess the unique forms of discrimination that trans people may encounter. Thus, the purpose of this three-part study was to develop and provide psychometric support for a measure of trans peoples' discrimination. In Study 1, a five-factor model emerged, which included: Microaggressions and Harassment, Restricted Career and Work Opportunities, Maltreatment in Health Care Settings, Harassment by Law Enforcement, and Bullying and Harassment in Educational Settings. Internal consistency estimates for subscale and total scale scores ranged from acceptable to excellent. Results from Study 2 revealed that a bifactor model provided the best fit to the data, revealing that the scale is essentially unidimensional. In addition, convergent and concurrent validity was supported, demonstrating significant positive correlations with another measure of trans discrimination, internalized transphobia, nondisclosure, negative expectations for the future, psychological distress, and perceived stress. In Study 3, results revealed excellent test–retest reliability up to a three-week period. Collectively, results suggested that the Transgender Discrimination Scale-21 (TDS-21) is a psychometrically sound measure that may be used to advance research on the role of discrimination in trans peoples' lives.

Public Significance Statement
This study describes the development of a measure of trans discrimination, named the Transgender Discrimination Scale-21 (TDS-21). Our findings suggest that the TDS-21 is a reliable and valid measure that may be used by researchers, practitioners, advocates, and policymakers to better understand the influence of trans discrimination on trans peoples' lives.

Keywords: discrimination, minority stress, scale development, transgender

Although research on lesbian, gay, bisexual, transgender, and queer (LGBTQ) populations and minority stress (Meyer, 2003) has flourished over the past decade, fewer studies to date have examined minority stressors, including experiences of discrimination, among trans[1] populations specifically (Moradi et al., 2016). In a recent content analysis of literature on trans people spanning between 2002 and 2012, Moradi and colleagues (2016) found that, of 1,592 published articles, almost 40% of these were predominantly focused on LGB people and minimally included trans people. In addition, of the 442 empirical articles included in the content analysis, only 58 examined discriminatory experiences and hate crimes. This finding is surprising, given that trans individuals report experiencing disproportionate rates of discrimination across a variety of contexts (James et al., 2016). In an effort to advance scholarship on discrimination and minority stressors among trans people, we sought to develop a measure that assesses the unique forms of discrimination encountered by trans people. In doing so, we are hopeful that this future research will shape practice and

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Data from Studies 1 and 2 of this article were presented at the 2017 American Psychological Association Convention in Washington, DC. However, findings from Study 3 were not presented at that time.

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[1] Consistent with prior scholarship (Stryker & Bettcher, 2016; Tebbe & Budge, 2016), we use the term *trans* throughout to encompass a variety of gender identities and expressions among people whose gender identities and expressions do not align with their sex assigned at birth. We use the term *cisgender* to denote people whose gender identities and expressions align with the sex they were assigned at birth.

advocacy efforts that address the socially unjust conditions disproportionately affecting trans people.

Trans Prejudice and Discrimination

In 1954, Allport explained that prejudice consists of negative attitudes and beliefs that are targeted toward a particular group of people, other than one's own, who are viewed as morally, intellectually, physically, and psychologically inferior (Allport, 1954). Such prejudicial attitudes and beliefs may manifest behaviorally in acts of discrimination (Hill & Willoughby, 2005; Utsey, Ponterotto, & Porter, 2008). In recent years, scholars have examined cisgender peoples' prejudicial beliefs that may precipitate discriminatory behaviors toward trans people (Hill & Willoughby, 2005; Tebbe, Moradi, & Ege, 2014). For example, Hill and Willoughby (2005) differentiated between three forms of prejudice that may precipitate trans discrimination: transphobia, genderism, and gender bashing. *Transphobia* refers to emotional disgust toward those who transgress societally imposed gender norms, whereas *genderism* is related to negative cognitions and perceptions that reify the negative evaluation of gender nonconformity. Last, *gender bashing* refers to the propensity to act violently toward trans and/or gender nonconforming people.

Notably, people with power and privilege may enact prejudice at cultural, structural, and interpersonal levels in an effort to marginalize those who transgress gender norms (Utsey et al., 2008; White Hughto, Reisner, & Pachankis, 2015). Trans prejudice at the cultural level may include beliefs that gender is a binary construct and that trans identities and gender nonconforming expressions are abnormal (White Hughto et al., 2015). Structural stigma includes societal norms and policies that restrict access to resources that may foster health for trans people; for example, when insurance companies fail to pay for gender affirmation procedures and when gender identity is not included in workplace antidiscrimination policies (White Hughto et al., 2015). Indeed, in a study on workplace discrimination, approximately 50% of trans people reported discriminatory experiences (Minter & Daley, 2003). This structural stigma can also be observed in the high rates of unemployment among trans people; that is, trans people are 15 times more likely to be unemployed than the rest of the U.S. population (James et al., 2016).

Interpersonal forms of discrimination include experiences such as harassment, rejection, and violence (White Hughto et al., 2015). Examples may include health care discrimination, harassment by law enforcement, family rejection, microaggressions, and hate crimes. For example, in 2014, more than half of the reported LGBTQ homicides were trans women, most of whom were trans Women of Color (National Coalition of Anti-Violence Programs [NCAVP], 2014), revealing the intersections among racism, sexism, and cissexism (Flores et al., 2018). Findings from the 2014 NCAVP survey on LGBTQ hate crimes revealed that trans people were 1.6 times more likely to experience physical violence, and 6.2 times more likely to experience police violence, than LGBQ survivors. Taken together, research suggests that prejudicial feelings and beliefs about trans people may give rise to discriminatory behaviors that occur across a variety of different social contexts.

Minority Stress Theory

Understanding trans individuals' experiences of discrimination is important because such experiences have been linked to adverse mental (Breslow et al., 2015; Budge, Adelson, & Howard, 2013) and physical health outcomes (Bradford, Reisner, Honnold, & Xavier, 2013). Indeed, trans individuals are at increased risk of depression and anxiety compared with the general population (Budge et al., 2013). In the minority stress framework, Meyer (2003) postulated that, in addition to everyday stressors, the stigma associated with possessing a sexual minority identity is related to the higher incidence of adverse mental and physical health outcomes among LGBQ individuals. This stigma may result in two forms of group-specific stressors: distal and proximal stressors. Distal stressors are those that are external and occur outside of an individual because of their identity (e.g., experiences of discrimination, harassment, victimization), whereas proximal stressors (i.e., internalized stigma, expectations of rejection, and identity concealment) rely upon more internal, subjective appraisals of discriminatory experiences (Meyer, 2003). Moreover, proximal stressors may mediate the links between distal stressors and adverse outcomes (Hatzenbuehler, 2009).

Recent research has generally upheld minority stress theory with trans populations. For example, Breslow et al. (2015) found that gender minority stressors, including trans discrimination, stigma awareness, and internalized transphobia, were positively correlated with psychological distress, and stigma awareness significantly mediated the positive link between trans discrimination and psychological distress. Similarly, trans discrimination was related to more self-stigma, identity concealment, expectations of rejection, and distress among a sample of trans participants (Timmins, Rimes, & Rahman, 2017). Together, these findings lend credence to the relevance of minority stress theory to trans people. However, the majority of these studies did not utilize measures that were developed and normed on trans populations specifically. Although scholars have called for researchers to develop and validate measures that specifically address the experiences of trans people, few have done so to date (Tebbe & Budge, 2016).

Assessment of Trans Discrimination

Although recent studies have bolstered understanding of the influence of minority stressors on mental and physical health outcomes among trans populations, researchers have often relied upon existing measures that were developed and normed on cisgender LGBQ populations (e.g., Breslow et al., 2015; Tebbe & Moradi, 2016; Velez, Breslow, Brewster, Cox, & Foster, 2016) to assess trans discrimination. For example, Breslow et al. (2015) and Velez et al. (2016) utilized the Heterosexist Harassment, Rejection, and Discrimination Scale (HHRDS; Szymanski, 2006), originally normed on lesbian, cisgender women, and modified the item wording to apply to trans individuals (e.g., "How many times have you been treated unfairly by a teacher because you are a lesbian?" was changed to "How many times have you been treated unfairly by a teacher because of transphobia?"). Similarly, items in the Workplace Heterosexist Experiences Questionnaire (WHEQ; Waldo, 1999) were modified to be more applicable to trans people (Brewster, Velez, DeBlaere, & Moradi, 2012). However, when cross-validating the factor structure with trans participants, the original factor structure was not upheld and items demonstrated

high cross-loadings and correlated residuals, resulting in a reconfiguration of the scale for trans participants (Brewster et al., 2012). These problems with measurement may be attributable to item wording that is less relevant to trans people (Tebbe & Budge, 2016). For example, measures that assess LGBQ discrimination in the workplace often include questions related to same-sex romantic relationships and emphasize sexual versus gender identity, potentially making these measures less applicable to trans people (Brewster et al., 2012; Tebbe & Budge, 2016).

Moreover, other studies have relied upon more generalized forms of discrimination when conducting research with trans populations. In assessing the link between discriminatory experiences and PTSD symptoms, Reisner and colleagues (2016) utilized the Everyday Discrimination Scale (Krieger, Smith, Naishadham, Hartman, & Barbeau, 2005; sample item: "You have been treated with less courtesy than other people.") and paired it with an attribution measure (e.g., attributing discrimination to gender, masculine/feminine physical appearance, sexual orientation, etc.). Other studies have culled items from large-scale survey data to assess specific aspects of trans discrimination. For example, one study selected items from the NTDS survey to assess discrimination across four different domains (i.e., discrimination in the workplace, family discrimination, discrimination in health care, and discrimination in public accommodations; Liu & Wilkinson, 2017). Similarly, another study assessed discrimination in three different contexts (i.e., health care, employment, and housing), utilizing two NTDS survey questions per context (Bradford et al., 2013). However, both studies provided limited or no psychometric support for their measures.

Although trans people may experience similar forms of discrimination as sexual minority communities, they also encounter unique forms of discrimination that may not be adequately captured by simply modifying item wording or using existing measures that were normed on LGBQ populations (Tebbe & Budge, 2016). Moreover, lack of appropriate norming and validation often leads researchers to incrementally accumulate evidence of reliability and validity over time to bolster support for the measure's psychometric properties. To date, most existing measures fail to assess unique forms of trans discrimination and/or were not originally normed on trans participants. One exception is the Gender Minority Stress and Resilience Measure (GMSR; Testa, Habarth, Peta, Balsam, & Bockting, 2015). Drawing items from large-scale Trans Health Survey data, this comprehensive measure examined and assessed nine dimensions of gender minority stress: Gender-Related Discrimination, Gender-Related Rejection, Gender-Related Victimization, Non-Affirmation of Gender Identity, Internalized Transphobia, Negative Expectations for Future Events, Nondisclosure, Community Connectedness, and Pride. Results from this measurement development study suggested adequate model fit and evidence of reliability and validity with related constructs. However, test–retest reliability was not established and different scaling per subscales may make this measure somewhat less user-friendly.

The Present Study

Despite advances in research on trans discrimination, additional measures that are developed and normed on trans populations are needed to further research in this area. Such a measure would ideally generate research that informs practice and advocacy initiatives that aim to dismantle the oppressive structure of cissexism. Thus, the purpose of this study was to develop and psychometrically evaluate a research instrument that assesses trans individuals' experiences of discrimination. This was a multistage study, consisting of three phases: (1) instrument development and initial psychometric evaluation; (2) confirmatory factor analysis and validity studies; and (3) an assessment of test–retest reliability. Study 1 examined the factor structure and reliability coefficients for the subscales and overall scale score. Study 2 examined whether the factor structure could be replicated in a separate sample and sought to provide evidence of validity. Study 3 examined the test–retest reliability.

Study 1: Scale Development and Initial Psychometric Evaluation

The purpose of Study 1 was to (a) develop items reflective of discriminatory experiences faced by trans individuals, (b) examine the initial factor structure of the scale utilizing exploratory factor analysis, and (c) examine reliability coefficients associated with each Trans Discrimination Scale (TDS) subscale and the overall scale score.

Method

Item development. Members of a research team conducted an extensive literature review, examining the types and forms of discriminatory experiences that trans individuals are likely to encounter. In doing so, several forms of discrimination across various contexts were identified. These domains included discrimination in educational (e.g., Kosciw, Greytak, Giga, Villenas, & Danischewski, 2016), career (e.g., Dispenza, Watson, Chung, & Brack, 2012; Minter & Daley, 2003), health care (e.g., Reisner, Gamarel, Dunham, Hopwood, & Hwahng, 2013), legal system (e.g., Nadal, Davidoff, & Fujii-Doe, 2014), and housing settings (e.g., James et al., 2016); interpersonal forms of discrimination, such as victimization, rejection, harassment, and microaggressions (e.g., James et al., 2016; Nadal, Skolnik, & Wong, 2012); and more systemic/administrative forms of discrimination (e.g., James et al., 2016; Nadal et al., 2012), such as lack of gender neutral restrooms or lack of available gender identity options when completing forms. Once identifying these domains, items were developed that assessed forms of discrimination across each of these contexts, which resulted in a total of 59 items. Specifically, nine items were developed for the educational domain, seven for career, eight for health care, nine for legal system, four for housing, 19 for interpersonal, and three for the structural/administrative domain.

Following the literature review and item development, the items were presented to a panel of experts to examine and provide feedback on item clarity, content validity, and redundancy. The panel included a total of five individuals, three of whom identified as trans. In addition, three expert panel members possessed expertise in trans discrimination and scale development—one of whom also identified as trans. Suggestions for expansion and collapsing of items were provided, as well as removing value-laden language from items (e.g., "Been fetishized or treated as a sexual object?" was changed to "Experienced unwanted sexual attention"). Experts suggested removal of certain items based on redundancy, their overly specific nature, potential lack of applicability to some participants (e.g., being denied admission into educational pro-

grams), and infrequency of some events (e.g., sexual abuse from law enforcement personnel). Moreover, several initial items were more characteristic of responses to discrimination as opposed to actual discriminatory events and were therefore removed.

A total of 35 items were retained as a result of the feedback. Participants were asked to reflect on their discriminatory experiences over their lifetime and report the frequency with which they have encountered the experience on a 1 (*never*) to 6 (*almost all of the time*) scale. Because some discriminatory experiences may be less common for some trans people (e.g., interactions with law enforcement), may not have occurred in some time (e.g., bullying in educational settings), and because we were seeking to develop a measure that can assess the more cumulative impact of discrimination on trans peoples' mental health, we inquired about events over the course of the lifetime as opposed to a shorter time frame, such as the past year. In an effort to attain variability in responses, this scale was modeled after similar measures assessing discriminatory experiences, which have been widely upheld in the psychological literature (e.g., General Ethnic Discrimination Scale; Landrine, Klonoff, Corral, Fernandez, & Roesch, 2006; Schedule of Sexist Events; Klonoff & Landrine, 1995).

Participants. Data from 220 participants were included in this study. Participants ranged in age from 18 to 77 years of age (M = 28.79, SD = 11.08). Participants were provided the opportunity to use their own words to describe their gender identity and responses were then recoded. For example, responses including MtF, FAAB, AFAB, woman, or trans woman were coded as trans women and trans feminine spectrum, whereas responses such as FtM, MAAB, AMAB, man, or trans man were coded as trans men and trans masculine spectrum. In addition, responses such as nonbinary, gender fluid, agender, and gender queer were coded as nonbinary trans identities. These same coding procedures were used for Studies 2 and 3. The majority of participants in this study identified as trans women and along a trans feminine spectrum, were assigned male at birth, White, had attained some college but no degree, and were employed full time. In addition, participants identified with a variety of sexual identities (see Table 1).

Procedure. Participants were recruited from a number of online sites, web communities, and social networking sites for trans and LGBTQ individuals, and sites for trans and LGBTQ People of Color. All participants identified as an individual of transgender experience (e.g., trans man, nonbinary, FTM, FAAB, gender queer), were 18+ years of age, and lived in the United States. Potential participants were informed that the purpose of the study was to gain an understanding of the frequency of discriminatory events experienced by trans individuals. For each participant, a $2 donation was made to a local organization serving trans People of Color (i.e., Kansas City Anti-Violence Program, Transgender People of Color Group), for a maximum of $650. If interested in taking part in the study, potential participants selected a link to a web-based survey, hosted by qualtrics.com. From there, participants reviewed a consent form and selected "next" to begin the study. Following the review of the consent form and inclusion criteria checks, participants were directed to the survey assessing discriminatory experiences and a demographics form (always presented last). Participants were also eligible to enter a raffle to win one of four $25.00 Amazon.com gift cards. The link to the raffle was disconnected from survey results, ensuring anonymity.

Results

Exploratory factor analysis. A total of 474 individuals accessed the survey. Nine people did not identify as trans, eight were not 18 years of age or older, and 65 did not live in the United States, reducing the sample to 392 participants. Of these participants, 144 were missing more than 20% of the data (Parent, 2013). Two additional participants were removed because they failed to answer four of five validity questions (e.g., "To make sure you are paying attention, please select '*Never*' for this response") correctly, reducing the sample to 246. No item was missing more than 2% of the data, and Little's MCAR test suggested that responses were missing completely at random (MCAR), $\chi^2(319) = 345.96$, $p = .14$. Thus, missing values were imputed with expectation maximization (EM; Graham, 2009). Univariate (item z-scores $\geq |3.29|$) and multivariate outliers (Mahalanobis distance, $p < .001$) were also examined. The outliers were assessed for potential inattentive responding (e.g., marking '1's across all items; Tabachnick & Fidell, 2007); however, no such cases were identified. The presence of influential cases was also examined via Cook's Distance criteria (>1.00; Field, 2013), although no cases were identified. Thus, the factor analysis was conducted with and without outliers. The outliers were ultimately deleted because a more stable and interpretable factor structure was upheld without their presence. The removal of these outliers resulted in a final sample size of 220 participants.

Principal axis factoring was conducted with the 35 items (Worthington & Whittaker, 2006). Sample size was adequate as indicated by the Kaiser-Meyer-Olkin criterion (.90). Moreover, Bartlett's test of sphericity was significant, $\chi^2[595] = 4013.52$, $p < .001$, suggesting significant correlations among variables (Field, 2013). Parallel analysis (O'Connor, 2000) was used to determine factor retention using 1,000 sets of random data. Factor retention was guided by eigenvalues from the raw data that exceeded corresponding values at the 95% percentile from the random data sets, and an examination of a scree plot. This analysis suggested retaining five factors. In addition, we also examined more conventional guidelines: (a) Eigenvalues greater than 1.00, (b) scree plots, (c) interpretability of factors, and (d) at least three items per subscale (Field, 2013; Tabachnick & Fidell, 2007). Again, a five-factor structure was suggested. Because factors were expected to correlate, we utilized an oblique (direct oblimin) rotation method (Field, 2013).

Item retention was guided by the following criteria: (a) factor loading of >.45 and (b) items with cross-loadings <.32 (Field, 2013; Tabachnick & Fidell, 2007). These criteria were utilized to foster stability and specificity of emergent factors (Kahn, 2006). A total of 21 of the original 35 items were retained and explained 56.42% of the variance. Notably, the housing items demonstrated low factor loadings and were removed. Moreover, an additional item was removed due to redundancy with another item (i.e., "Been intentionally misgendered by others" and "Had people in your life who refused to use your true gender pronouns").

Factor 1 was named Microaggressions and Harassment. This factor consisted of eight items and explained 36.62% of the variance. Factor 2 was labeled Restricted Career and Work Opportunities, consisted of three items, and explained 7.62% of the variance. Factor 3 was labeled Maltreatment in Health Care Settings, consisted of three items, and explained 5.24% of the variance. Factor 4 was named Harassment by Law Enforcement, consisted

Table 1
Demographic Characteristics and Descriptive Statistics for Participants in Study 1 (N = 220), Study 2 (N = 369), and Study 3 (N = 83)

Demographic characteristics	Study 1 *n* (%)	Study 2 *n* (%)	Study 3 *n* (%)
Gender identity			
Trans women/feminine spectrum	94 (42.7)	182 (49.3)	28 (33.7)
Trans men/masculine spectrum	72 (32.7)	101 (27.4)	22 (26.5)
Nonbinary	49 (22.4)	64 (17.3)	30 (36.1)
Other trans identities not listed	3 (1.4)	5 (1.3)	3 (3.6)
Identified as trans only	0 (0)	2 (.5)	0 (0)
Did not respond	2 (.9)	15 (4.1)	0 (0)
Birth assignment			
Assigned male at birth	105 (47.7)	202 (54.7)	36 (43.3)
Assigned female at birth	110 (50)	145 (39.3)	44 (53)
Difference of sex development/Intersex	2 (.9)	2 (.5)	1 (1.2)
Did not, or preferred not, to answer	3 (1.4)	9 (2.4)	2 (2.4)
Race/Ethnicity			
White	188 (85.5)	290 (78.6)	65 (78.3)
Biracial or multiracial	10 (4.5)	17 (4.6)	7 (8.4)
Latinx or Hispanic	5 (2.3)	11 (3)	2 (2.4)
Asian or Asian American/Pacific Islander	4 (1.8)	15 (4.1)	2 (2.4)
Black or African American	2 (.9)	6 (1.6)	2 (2.4)
Native American	1 (.4)	0 (0)	0 (0)
Other racial identities not listed	8 (3.6)	1 (.2)	4 (4.8)
Did not respond	2 (.9)	15 (4.1)	1 (1.2)
Sexual orientation[c]			
Queer	63 (28.6)	77 (20.9)	37 (44.6)
Bisexual	60 (27.3)	83 (22.5)	28 (33.7)
Pansexual	53 (24.1)	90 (24.4)	20 (24.1)
Lesbian	47 (21.4)	61 (16.5)	10 (12)
Gay	30 (13.6)	40 (10.8)	14 (16.9)
Asexual	29 (13.2)	33 (8.9)	9 (10.8)
Heterosexual	23 (10.5)	35 (9.5)	4 (4.8)
Questioning	17 (7.7)	24 (6.5)	3 (3.6)
Panromantic	13 (5.9)	28 (7.6)	3 (3.6)
Demisexual	10 (4.5)	24 (6.5)	6 (7.2)
Other terms not listed	16 (7.3)	47 (12.8)	8 (9.6)
Preferred not to share	0 (0)	3 (.8)	0 (0)
Educational attainment			
Some high school	1 (.5)	10 (2.7)	1 (1.2)
High school diploma or GED	27 (12.3)	43 (11.7)	4 (4.8)
Some college, but no degree	82 (37.3)	144 (39)	35 (42.2)
Vocational or trade school	4 (1.8)	3 (.8)	3 (3.6)
Associate degree	14 (6.4)	22 (6)	2 (2.4)
Bachelor's degree	50 (22.7)	95 (25.7)	26 (31.3)
Specialist degree	0 (0)	1 (.3)	0 (0)
Master's degree	26 (11.8)	22 (6)	9 (10.8)
Doctoral degree	14 (6.4)	14 (3.8)	3 (3.6)
Did not respond	2 (.9)	15 (4.1)	0 (0)
Employment status[d]			
Unemployed	37 (16.8)	59 (16)	10 (12)
Part-time	53 (24.1)	73 (19.8)	16 (19.3)
Student	67 (30.5)	118 (32)	36 (43.4)
Full time	84 (38.2)	140 (37.9)	31 (37.3)
Retired	7 (3.2)	3 (.8)	1 (1.2)
Homemaker	3 (1.4)	3 (.8)	2 (2.4)
Annual income			
$0–9,999	83 (37.7)	142 (38.5)	31 (37.3)
$10,000–19,999	34 (15.5)	64 (17.3)	13 (15.7)
$20,000–29,999	28 (12.7)	42 (11.4)	13 (15.7)
$30,000–39,999	14 (6.4)	22 (6.0)	6 (7.2)
$40,000–49,999	15 (6.5)	25 (6.8)	6 (7.2)

(*table continues*)

Table 1 (*continued*)

Demographic characteristics	Study 1 *n* (%)	Study 2 *n* (%)	Study 3 *n* (%)
$50,000–59,999	8 (3.6)	10 (2.7)	2 (2.4)
$60,000–69,999	5 (2.3)	13 (3.5)	5 (6)
$70,000–79,999	8 (3.6)	11 (3)	3 (3.6)
$80,000–89,999	4 (1.8)	2 (.5)	1 (1.2)
$90,000–99,999	1 (.5)	5 (1.4)	1 (1.2)
≥$100,000	17 (7.7)	17 (4.6)	2 (2.4)
Did not respond	3 (1.4)	15 (4.1)	0 (0)

[a] Additional terms used to describe their gender identities: "feeling comfortable in your own skin," questioning, "gender wibbly wobbly"). [b] Participants verified at the outset that they identified as transgender. [c] Additional terms to describe their sexual identities: polysexual, gynesexual, "low sex drive," and omnisexual. In addition, participants were allowed to select multiple options and therefore totals may exceed 100%. [d] Participants were allowed to select multiple options and therefore totals may exceed 100%.

of three items, and explained 3.68% of the variance. Factor 5 was named Bullying and Harassment in Educational Settings, consisted of four items, and explained 3.21% of the variance (see Appendix). Communalities ranged from .35 to .79, with the majority above .50. Items, factor loadings, communalities, and descriptive statistics are displayed in Table 2.

Reliability and correlations among subscales. Internal consistency among all subscales was adequate to good: Microaggressions and Harassment, α = .88; Restricted Career and Work Opportunities, α = .78; Bullying and Harassment in Educational Settings, α = .87; Harassment by Law Enforcement α = .72; and Maltreatment in Health Care Settings, α = .80. The internal consistency for the overall scale score was excellent, α = .92. Factor and total scale scores were achieved by averaging items. The correlations among all subscales were significant at $p < .001$ and positive, ranging from .32 to .61 (see Table 3).

Discussion

Results from an exploratory factor analysis revealed that a five-factor model of trans discrimination emerged as the most stable solution with this sample of participants. The subscales included Microaggressions and Harassment, Restricted Career and Work Opportunities, Bullying and Harassment in Educational Settings, Harassment by Law Enforcement, and Maltreatment in Health care Settings. All subscales demonstrated adequate to good

Table 2
Items, Factor Loadings, Communality Estimates, Means, and Standard Deviations

21 Items	1	2	3	4	5	h^2	*M*	*SD*
Factor 1: Microaggressions and harassment								
Had others deny or minimize your experiences of transgender discrimination?	**.75**	.06	.09	.01	−.02	.65	3.18	1.80
Experienced people in your life who refused to use your true gender pronouns?	**.74**	−.18	.02	.04	.02	.53	2.98	1.46
Been judged by others after they learned about your gender identity?	**.74**	−.00	−.06	.03	−.13	.65	3.22	1.43
Heard comments that all transgender persons are the same?	**.70**	.06	−.03	−.12	.05	.52	3.53	1.44
Received demeaning messages about your physical appearance?	**.62**	.00	.03	.06	.10	.51	2.93	1.28
Heard intrusive comments about your body?	**.62**	.12	.02	.09	−.01	.48	2.54	1.22
Been expected to be or act in gender-conforming ways?	**.55**	.06	−.04	−.03	.09	.35	4.38	1.46
Experienced harassment from family members?	**.46**	−.10	.11	.03	.13	.35	2.47	1.41
Factor 2: Restricted career and work opportunities								
Experienced limited mentorship in career settings?	.01	**.77**	.12	−.03	.01	.68	1.47	.96
Been denied opportunities in the workplace?	−.06	**.70**	.12	.09	.09	.67	1.49	.87
Been denied employment?	.10	**.53**	−.10	.05	.09	.36	1.48	.86
Factor 3: Maltreatment in health care settings								
Experienced maltreatment in healthcare settings?	.03	−.04	**.83**	−.06	.10	.73	1.86	1.25
Been discriminated against while trying to access health care?	.07	.01	**.74**	−.00	.05	.65	1.80	1.23
Had to educate doctors, nurses, or administrative staff about transgender-related healthcare?	.04	.11	**.61**	.10	−.05	.49	2.77	1.75
Factor 4: Harassment by law enforcement								
Experienced harassment by law enforcement?	.08	−.04	−.08	**.70**	.02	.48	1.49	.81
Been stopped by law enforcement and unfairly questioned?	−.14	.06	.04	**.70**	.09	.56	1.30	.65
Been unfairly questioned about your gender identity by law enforcement?	.13	.10	.19	**.52**	−.03	.50	1.38	.71
Factor 5: Bullying and harassment in educational settings								
Experienced harassment or bullying from peers in educational settings?	.01	−.04	−.00	.04	**.89**	.79	2.35	1.39
Had teachers or instructors refuse to stop abuse or bullying directed towards you?	−.00	.08	−.02	.07	**.70**	.59	1.69	1.17
Experienced social rejection in educational settings?	.18	.12	.02	−.09	**.65**	.65	2.26	1.45
Experienced harassment from faculty, staff, and administrators in educational settings?	.02	.05	.21	.09	**.64**	.67	1.63	.97

Note. $N = 220$. The values reported in this table are for the 21 retained TDS items obtained from the principal axis factoring of the original 35 TDS items. The highest factor loadings for each item are shown in boldface.

Table 3
Intercorrelations Among Factors of the Trans Discrimination Scale and Descriptive Statistics

Factor	1	2	3	4	5
1. TDS-MH	—				
2. TDS-Career	.39***	—			
3. TDS-Health Care	.53***	.43***	—		
4. TDS-Law Enforcement	.32***	.42***	.38***	—	
5. TDS-Educational	.61***	.51***	.44***	.40***	—
M	3.15	1.48	2.14	1.39	1.98
SD	1.06	.75	1.21	.58	1.07
α	.88	.78	.80	.72	.87

Note. $N = 220$. TDS-MH = Trans Discrimination Scale–Microaggressions and Harassment subscale; TDS-Career = Trans Discrimination Scale–Restricted Career and Work Opportunities Subscale; TDS-Law Enforcement = Trans Discrimination Scale–Harassment by Law Enforcement subscale; TDS-Educational = Trans Discrimination Scale–Bullying and Harassment in Educational Settings subscale; TDS-HC = Trans Discrimination Scale–Maltreatment in Health Care Settings subscale.
*** $p < .001$.

internal consistency, and the overall scale score demonstrated excellent internal consistency. In addition, all subscales were significantly positively correlated with one another, revealing the relations among different forms of trans discrimination.

Study 2

The purpose of Study 2 was to examine the factor structure in a separate sample of trans participants, as well as provide support for the scale's reliability and validity. Thus, via confirmatory factor analysis, we examined four different models: unidimensional, oblique five-factor, second-order, and bifactor. We also anticipated that the TDS-21 would demonstrate adequate reliability ($\alpha = .70$) and evidence of validity. In support of convergent validity, we expected that the TDS-21 would significantly positively correlate with another measure that has been used to assess trans discrimination—the modified Heterosexist Harassment, Rejection, and Discrimination Scale (HHRDS; Breslow et al., 2015; Szymanski, 2006; Velez et al., 2016). In support of concurrent validity, we expected that the TDS-21 would significantly positively correlate with proximal minority stressors (i.e., nondisclosure, negative expectations for the future, internalized transphobia), perceived stress, and psychological distress. In support of incremental validity, we expected that the TDS-21 would explain a significant proportion of the variance in psychological distress, above and beyond the effects of the modified HHRDS.

Method

Participants and procedure. A total of 369 trans-identified people took part in this study. Participants ranged in age from 18 to 65 ($M = 26.35$, $SD = 8.43$). Participants were predominantly trans women and aligned with the trans feminine spectrum, assigned male at birth, White, employed full time, and had attained some college but no degree. The exact same procedures in Study 1 were followed in Study 2.

Measures. The following measures were presented in a randomized order, except for the demographics questionnaire, which was always presented last.

Perceived stress. General life stress was measured via the four-item Perceived Stress Scale-Short Form (Cohen, Kamarck, & Mermelstein, 1983). Items (e.g., "In the last month, how often have you felt that you were unable to control the important things in your life") were rated on a 0 (*never*) to 4 (*very often*) scale and summed to achieve a total scale score. Among a college sample, responses demonstrated adequate internal consistency ($\alpha = .72$) and adequate test–retest reliability ($r = .55$) over a two-month period (Cohen et al., 1983). As evidence of validity, scores on the PSS were significantly positively correlated with cigarette smoking frequency (Cohen et al., 1983). Among a sample of older trans individuals, responses demonstrated adequate internal consistency ($\alpha = .78$) and significant positive correlations with identity concealment and internalized stigma (Fredriksen-Goldsen et al., 2014). In this study, responses demonstrated good internal consistency ($\alpha = .84$).

Proximal minority stressors. Proximal minority stressors were measured via three subscales of the Gender Minority Stress and Resilience Measure (Testa et al., 2015), which included Nondisclosure (five items), Negative Expectations for the Future (nine items), and Internalized Transphobia (eight items). All items were rated on a 0 (*strongly disagree*) to 4 (*strongly agree*) scale and summed to achieve subscale scores. Example items include, "Because I don't want others to know my gender identity/history, I don't talk about certain experiences from my past or change parts of what I will tell people" (Nondisclosure), "If I express my gender identity/history, others wouldn't accept me" (Negative Expectations for the Future), and "I resent my gender identity or expression" (Internalized Transphobia). Confirmatory factor analysis provided support for validity of these subscales with trans participants (Testa et al., 2015). Moreover, nondisclosure and negative expectations for the future were positively associated with discrimination, victimization, rejection, and nonaffirmation, whereas internalized transphobia was positively correlated with rejection, victimization, and nonaffirmation, providing further evidence of construct validity. Responses were consistent across items corresponding to the Nondisclosure, Negative Expectations for the Future, and Internalized Transphobia subscales: .80, .89, and .91, respectively (Testa et al., 2015). In this study, responses to the respective subscales were .80, .86, and .89, demonstrating good internal consistency.

Psychological distress. The 10-item Kessler Psychological Distress Scale (K-10; Kessler et al., 2002) was utilized to measure general psychological distress (Kessler et al., 2002). Items (e.g., "During the last 30 days, about how often did you feel depressed?") were rated on a 1 (*none of the time*) to 5 (*almost all of the time*) scale and summed to achieve total scores. Responses to items among a U.S. population have demonstrated excellent internal consistency ($\alpha = .93$; Kessler et al., 2002). Validity support was garnered via item response theory (Kessler et al., 2002). To our knowledge, this is the first study to use this measure with a trans population. In this study, responses demonstrated excellent internal consistency ($\alpha = .90$). In addition, significant positive correlations with minority stressors in this study provide additional evidence of validity with trans populations.

Trans discrimination. A modified version of the 14-item Heterosexist Harassment, Rejection, and Discrimination Scale (HHRDS; Szymanski, 2006) was utilized to assess trans discrimination and provide evidence of convergent validity with the TDS-21. Items were rated on a 1 (*the event has never happened to you*) to 6 (*the event happened almost all the time* [more than 70% of the time]) scale and averaged to achieve a total scale score. Consistent with prior studies (Breslow et al., 2015), items were modified to capture incidents of trans discrimination as opposed to heterosexist discrimination. For example, the item "In the past year, how many times have you been treated unfairly by teachers or professors because you are a lesbian, gay, or bisexual person" was modified to state, "Over your lifetime, how many times have you been treated unfairly by teachers or professors because of transphobia." Of note, the time frame was also changed to be consistent with our measure, which sought to explore discriminatory experiences over the lifetime. Among a sample of lesbian women, responses to the original HHRDS demonstrated excellent internal consistency ($\alpha = .90$) and significant positive correlations with psychological distress (Szymanski, 2006). Moreover, among a sample of trans individuals, responses demonstrated good internal consistency ($\alpha = .89$) and significant positive correlations with internalized transphobia, stigma awareness, and distress (Breslow et al., 2015), providing evidence of the scale's validity with this population. Responses in this study also revealed internal consistency, $\alpha = .90$.

Results

Data cleaning. A total of 835 people accessed the survey. Of these, 75 indicated that they did not identify as trans, 15 did not meet the age criterion, and 119 did not live in the United States. Similarly to Study 1, participants missing more than 20% of the data were removed ($n = 203$; Parent, 2013). Five validity questions were embedded in the survey, and participants who did not correctly respond to four out of five of these questions were removed ($n = 9$). The sample was thus reduced to 414. Next, missing data were examined. No item was missing more than 2% of the data, and Little's MCAR test suggested that responses were MCAR, $\chi^2(3, 898) = 3972.91$, $p = .20$. Thus, missing values were imputed with EM method (Graham, 2009). Univariate ($z \geq 3.29$, $n = 40$) and multivariate (i.e., high scores on Mahalanobis distance criterion, $n = 3$) outliers were examined. Analyses were conducted with and without these outliers. The outliers were ultimately removed because of their undue influence on the results, which reduced the final sample to 369 participants. This sample size exceeded general guidelines for conducting CFAs (Weston & Gore, 2006). In addition, skewness and kurtosis (skew ≥3, kurtosis ≥10) statistics and histograms were examined to assess univariate normality among the TDS-21 scale items and additional measures. All measures met normality assumptions; however, several of the items on the TDS-21 demonstrated severe positive skew. Because deviations from normality may affect model fit and maximum likelihood estimation (Byrne, 2010), these items were transformed utilizing a logarithmic (i.e., log10) function; these transformations brought skew and kurtosis to more acceptable limits. These transformed items were only used for the purpose of the CFA and were not used in subscale or total score calculations.

Confirmatory factor analysis. Amos v.23.0 was utilized to conduct the CFA. A variety of fit indices were utilized to examine model fit, including comparative fit index (CFI), root mean square error of approximation (RMSEA), and the standardized root-mean-square residual (SRMR). With fewer than 500 participants, Weston and Gore (2006) suggested that criteria for acceptable fit includes CFI ≥ .90 and RMSEA and SRMR ≤ .10. In addition, given concerns regarding non-normality, 1,000 90% bias-corrected bootstrap samples were taken from the data to provide more robust estimates. We tested four separate models: (1) a single factor (e.g., unidimensional) model; (2) a five-factor oblique model in which all items loaded onto their respective factor; (3) a second-order factor, whereby all factors were predicted by a higher-order discrimination factor; and (4) a bifactor model, in which items load onto their respective factor and a general factor.

Results of the unidimensional model suggested poor model fit, $\chi^2(189) = 1{,}155.52$, $p < .001$, CFI = .66, SRMR = .09, RMSEA = .12 (90% CI [.11 to .12]). Results from the oblique model suggested acceptable model fit, $\chi^2(179) = 428.41$, $p < .001$, CFI = .91, SRMR = .06, RMSEA = .06 (90% CI [.05–.07]). All items loaded significantly onto their respective factor. Standardized factor loadings for the Microaggressions and Harassment subscale ranged from .44 to .80, .56 to .83 for the Restricted Career and Work Opportunities subscale, .71 to .83 for the Maltreatment in Health care Settings subscale, .62 to .71 for the Harassment by Law Enforcement subscale, and .63 to .82 for the Bullying and Harassment in Educational Settings subscale. All factor loadings were significant at $p < .001$.

A second-order CFA was also examined and demonstrated acceptable model fit, $\chi^2(184) = 453.12$, $p < .001$, CFI = .91, SRMR = .06, RMSEA = .06 (90% CI [.06 to .07]). All factors were significantly predicted by the higher-order factor: Microaggressions and Harassment, $r = .79$, $p < .001$, Restricted Career and Work Opportunities, $r = .73$, $p < .001$, Maltreatment in Health care Settings, $r = .73$, $p < .001$, Harassment by Law Enforcement, $r = .67$, $p < .001$, and Bullying and Harassment in Educational Settings, $r = .64$, $p < .001$. Although the second-order factor also fit well, the oblique factor demonstrated significantly better fit, $\Delta\chi^2(5) = 24.71$, $p < .001$. The second-order factor explained 63% of the variance in Microaggressions and Harassment, 53% of the variance in Restricted Career and Work Opportunities, 54% of the variance in Maltreatment in Health Care Settings, 45% of the variance in Harassment by Law Enforcement, and 40% of the variance in Bullying and Harassment in Educational Settings.

To determine the degree to which specific factors explained item variance above and beyond the effects of a general factor, a bifactor model was evaluated and demonstrated slightly better fit than the oblique model, $\chi^2(170) = 390.50$, $p < .001$, CFI = .92, SRMR = .05, RMSEA = .06 (90% CI [.05 to .07]), and this difference was significant $\Delta\chi^2(9) = 37.91$, $p < .001$. Thus, the bifactor model was retained as the best fitting model (see Figure 1). Statistical indices were calculated, including omega, omega hierarchical, explained common variance (ECV), and percentage of uncontaminated correlations (PUC). Omega is a model-based estimate of internal reliability of the multidimensional model, and estimates the proportion of variance in the total score that is attributed to all sources of common variance (Rodriguez, Reise, & Haviland, 2016). The omega for the total score was .92, suggesting

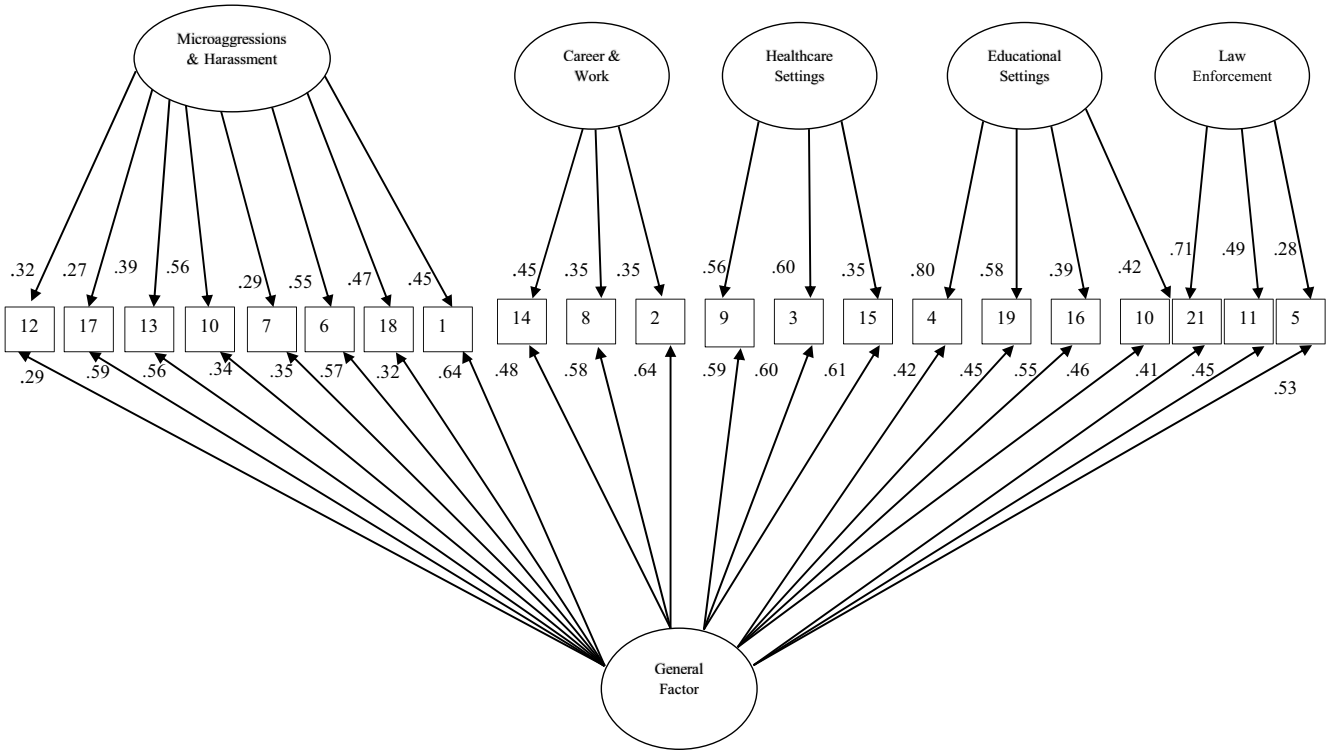

Figure 1. Standardized coefficients of the bifactor model. All paths were significant at $p < .001$.

that 92% of the reliable variance is due to factors and 8% is due to error (Dueber, 2017). Omega values for the subscales were as follows: Microaggressions and Harassment, $\omega = .84$; Restricted Career and Work Opportunities, $\omega = .73$; Maltreatment in Health care Settings, $\omega = .83$; Harassment by Law Enforcement, $\omega = .73$; and Bullying and Harassment in Educational Settings, $\omega = .82$ (Dueber, 2017).

Omega hierarchical (omegaH) estimates the proportion of variance in an observed total score that is related to the general factor as opposed to the subscales (Rodriguez et al., 2016). OmegaH for trans discrimination was .77. When comparing omega (.92) and omegaH (.77), it is evident that approximately 84% (.77/.92) = .84) of the reliable variance in the trans discrimination total score is attributable to the general factor, whereas 16% (.15/.92 = .16) is attributable to the subscale factors. The omega hierarchical estimates can also be extended to subscales, which provide the reliability of a subscale score after controlling for the general factor (Rodriguez et al., 2016). OmegaH values for the subscales were as follows: Microaggressions & Harassment, $\omega_H = .38$; Restricted Career & Work Opportunities, $\omega_H = .23$; Maltreatment in Health care Settings, $\omega_H = .35$; Harassment by Law Enforcement, $\omega_H = .39$; and Bullying & Harassment in Educational Settings, $\omega_H = .48$ (Dueber, 2017).

Last, we calculated ECV and PUC to determine whether the bifactor data are "unidimensional enough" (Rodriguez et al., 2016). ECV reflects the proportion of common variance explained by the general factor as opposed to the subscales (Rodriguez et al., 2016). ECV was .53, suggesting 53% of the variance is attributable to the general factor, whereas 47% of the remaining variance was spread among the five specific factors (Dueber, 2017). However, PUC is often examined in conjunction with the ECV estimate, and as PUC increases (PUC $\geq .80$), the magnitude of ECV "becomes less and less important in determining the potential for bias when a unidimensional model is fit to multidimensional data with bifactor structure" (Rodriguez et al., 2016, pp. 144–145). PUC was .80, suggesting modest bias and that the common variance in the total score can be regarded as essentially unidimensional (Rodriguez et al., 2016).

Validity. Based on results from the bifactor model, we examined the TDS-21 overall scale score in relation to several variables of interest. We expected that the TDS-21 overall scale score would significantly positively correlate with the modified version of the HHRDS. Cohen's (1992) benchmarks were utilized to describe the strength of the correlations: small ($r = .10$), medium ($r = .30$), and large ($r = .50$). Indeed, the full-scale score was significantly positively correlated with the modified HHRDS, demonstrating a large effect size, $r = .83$, $p < .001$.

In addition, we examined the TDS-21 overall scale score in relation to proximal minority stressors and mental health outcomes (i.e., perceived stress and psychological distress). The TDS-21 full-scale score was significantly positively correlated with all measures of interest (i.e., internalized transphobia, negative expectations for the future, nondisclosure, perceived stress, psychological distress), demonstrating small to medium effect sizes (see Table 4).

To assess incremental validity, we conducted a hierarchical regression to examine the explained variance in psychological distress by the TDS-21 total scale score, above and beyond the

Table 4
Intercorrelations Among TDS-21 and Variables of Interest

Variable	1	2	3	4	5	6	7
1. TDS-21	—						
2. HHRDS	.83***	—					
3. Nondisclosure	.19***	.20***	—				
4. NegExp	.32***	.32***	.38***	—			
5. Intern	.13*	.11*	.41***	.46***	—		
6. Distress	.29***	.33***	.19***	.36***	.46***	—	
7. Perceived Stress	.26***	.28***	.12*	.36***	.35***	.72***	—
M	2.12	2.13	13.98	23.57	16.32	27.97	8.62
SD	.66	.76	4.87	6.86	8.50	8.49	3.43
Possible range	1–6	1–6	1–20	0–36	0–32	10–50	0–16
α	.89	.90	.80	.86	.89	.90	.84

Note. TDS-21 = Trans Discrimination Scale–21; HHRDS = modified version of the Heterosexist, Harassment, Rejection, and Discrimination scale; Nondisclosure = Nondisclosure subscale of the Gender Minority Stress and Resilience scale; NegExp = Negative Expectations subscale of the Gender Minority Stress and Resilience scale; Intern = Internalized Transphobia subscale of the Gender Minority Stress and Resilience scale; Distress = psychological distress measured by the Kessler-10 scale; Perceived Stress = perceived stress as measured by the Perceived Stress Scale.
* $p < .05$. *** $p < .001$.

effects of the modified HHRDS. The first block, in which the modified HHRDS was entered as the predictor, was statistically significant, $t = 6.74$, $p < .001$, $r = .33$, $SE = .55$; $F(1, 367) = 45.39$, $p < .001$, explaining 11% of the variance in psychological distress. The second block was not statistically significant, $r = .33$, $SE = 1.16$; $F(2, 366) = 22.75$, $p = .65$, still only explaining 11% of the variance in psychological distress (see Table 5). Notably, the modified HHRDS and TDS-21 were highly correlated with one another ($r = .83$, $p < .001$), suggesting multicollinearity and potentially explaining the nonsignificant amount of variance explained in distress by the TDS-21, after accounting for the effects of the modified HHRDS.[2]

Discussion

Results from this study suggested that a bifactor model provided the best fit to the data; that is, an overall discrimination factor explained reliable item variance above and beyond the effects of the subscales. Based on these findings, we examined the overall TDS-21 scale score in relation to several variables of interest. In support of convergent validity, results suggested that the TDS-21 was significantly positively correlated with a modified version of the HHRDS, demonstrating a large effect size. In addition, the TDS-21 was significantly positively correlated with minority stressors (i.e., nondisclosure, negative expectations for the future, and internalized transphobia) and mental health outcomes (i.e., psychological distress and perceived stress), providing evidence of concurrent validity. However, the TDS-21 did not predict a statistically significant portion of the variance in psychological distress, above and beyond the effects of the modified HHRDS, failing to provide evidence of incremental validity. One reason for these findings may be multicollinearity. Multicollinearity occurs when two measures are so highly correlated that they are considered conceptually redundant (Tabachnick & Fidell, 2007). Because multicollinearity violates an important assumption of regression analyses and potentially results in Type II error, these nonsignificant findings are likely an artifact of model multicollinearity.

Table 5
Summary of Hierarchical Regression Analysis Predicting Psychological Distress

Predictor	β	R^2	ΔR^2	ΔF	*df*
Step 1		.11	.11	45.39***	1, 367
Modified HHRDS	.33***				
Step 2		.11	.00	.20	1, 366
TDS-21	.04				

Note. Modified HHRDS = Modified Heterosexist Harassment, Rejection, and Discrimination Scale; TDS-21 = Trans Discrimination Scale–21.
*** $p < .001$.

Study 3

The purpose of Study 3 was to examine stability of the TDS-21 over a two- to three-week period, providing further evidence of reliability.

Method

Participants. A total of 83 participants took part in this study, with a mean age of 26.52 ($SD = 8.92$, 18 to 73 years of age). The majority of participants identified as trans women and along the trans feminine spectrum, were assigned female at birth, White, had attained some college but no degree, and were students.

Procedure. The procedure for Study 3 was roughly similar to Studies 1 and 2; however, in Study 3, participants must also have agreed to take part in two phases of the study to assess for test–retest reliability. To maintain anonymity and match partici-

[2] To account for the high correlations among subscales, we also conducted a SEM with latent variables predicting psychological distress; however, neither the modified HHRDS nor the TDS-21 statistically significantly predicted psychological distress. Therefore, we retained the results of the hierarchical regression analysis for brevity and ease of interpretation.

pant responses across times one and two, participants provided a unique code. After their participation in phase one of this study, researchers contacted participants two weeks following their initial enrollment in the study, providing them with a link to the second phase of the study (i.e., Time 2). Reminder e-mails were also sent the following week. Following their completion of this second phase, participants were eligible to enter a raffle to win one of two $25 Amazon.com gift cards; the link was disconnected from survey responses.

Results and Discussion

Data cleaning. A total of 394 people accessed the first part of the study; however, 77 indicated that they did not identify as trans, nine did not meet the age cutoff, 18 were not living in the United States, and 17 were unwilling to participate in the second phase of the study, reducing the sample size to 272. In addition, 59 participants did not provide a unique id, which would not allow us to match responses during the second phase of the study, and 19 were missing 20% or more of the data (Parent, 2013). An analysis of the pattern of missingness revealed that data were MCAR: Little's test: $\chi^2(105) = 122.90$, $p = .11$. In addition, no item was missing more than one participant, and no person was missing more than one item. Thus, missing values were imputed using EM procedures. In addition, two validity questions were embedded in the survey. Participants missing one or both of these items were removed from the data set, resulting in the removal of two participants. The final sample size for the first phase of the study was 192.

A total of 160 participants began the second phase of the study; however, 26 did not correctly answer the inclusion criteria and were unable to continue in the study. The reason behind this was unclear because all participants had to meet the inclusion criteria previously to participate in the first phase of the study. However, it is possible that some participants were simply moving through the study quickly, with disregard for the inclusion criteria checks. Of these remaining participants, 13 did not provide a unique code and 13 did not correctly answer the validity item. In addition, one participant was missing more than 20% of the data, bringing the sample to 107 participants. Of these 107 participants, 83 were matched to their unique code provided during the first phase of this study. Data were MCAR, $\chi^2[154] = 149.62$, $p = .56$; no case was missing more than one item, and no item was missing more than two responses. Again, the EM method was used to impute any remaining missing values.

Reliability. The test–retest reliability coefficient for the TDS-21 was, $r = .91$, $p < .001$. In addition, the internal coefficient estimate for the total scale score was .90. Thus, findings from Study 3 provided further support for the measure's reliability, including temporal and internal consistency.

General Discussion

The purpose of this study was to develop a psychometrically sound measure of trans discrimination that may be used to advance research on the effects of discrimination on trans peoples' lives, and to support advocacy and critical praxis initiatives that dismantle cissexism as a system of oppression (Moradi & Grzanka, 2017). In Study 1, a five-factor model emerged via exploratory factor analysis. Consistent with extant literature on trans discrimination, these factors included Microaggressions and Harassment, Restricted Career and Work Opportunities, Maltreatment in Health care Settings, Harassment by Law Enforcement, and Bullying and Harassment in Educational Settings (Dispenza et al., 2012; Kosciw et al., 2016; Minter & Daley, 2003; Nadal et al., 2012; Nadal, Davidoff, & Fujii-Doe, 2014; Reisner et al., 2013).

Notably, several initial items failed to load onto a factor, namely the victimization and discrimination in housing settings items. The reason for this is unclear, although these items demonstrated low communalities, suggesting that they were not substantially correlated with the other items. The factor structure that emerged may have been attributable to sampling characteristics. That is, the majority of participants were younger, White, and employed. Given these demographic characteristics, it is possible that some participants had not experienced these forms of discrimination perhaps owing to some of the more privileged aspects of their identities. Indeed, research has suggested that trans People of Color are inordinately exposed to victimization experiences compared with White trans people (James et al., 2016). Researchers seeking to assess victimization experiences, specifically, may wish to supplement this measure with items or measures that explicitly assess victimization experiences, such as the gender-related victimization subscale of the Gender Minority Stress and Resilience Measure (Testa et al., 2015).

To investigate the structural stability of the TDS-21, unidimensional, oblique, higher order, and bifactor models were examined. The bifactor model exhibited the best fit, suggesting that items share a common, underlying factor and also load onto their respective subscales. More specifically, the majority of the reliable variance (84%) in the total trans discrimination score was attributed to the general factor, whereas the remaining 16% was attributed to subscale scores (Rodriguez et al., 2016). These findings suggest that researchers should utilize an overall scale score—rather than relying on subscale scores—when examining trans peoples' experiences of discrimination.

In support of convergent validity, the TDS-21 yielded a significant positive correlation with the modified HHRDS (Breslow et al., 2015; Szymanski, 2006). Although this scale was originally developed and normed on lesbian, cisgender women (Szymanski, 2006), recent research has suggested that the modified version is related to minority stress variables among trans people (Breslow et al., 2015; Velez et al., 2016). These findings demonstrate that our measure—developed specifically for and normed on trans people—may advance research on the effects of trans discrimination on mental health outcomes.

Moreover, we examined the links among the TDS-21, minority stressors (i.e., internalized transphobia, nondisclosure, and negative expectations for the future), perceived stress, and psychological distress. The TDS-21 overall scale score was significantly positively correlated with each of these variables, providing evidence of concurrent validity and suggesting that higher levels of trans discrimination are related to more minority stress and harmful mental health outcomes. We also sought to provide evidence of incremental validity by examining the proportion of variance in psychological distress explained by the TDS-21 subscales, after controlling for the modified HHRDS. Results suggested that the TDS-21 did not explain a significant proportion of variance in psychological distress, after controlling for the modified HHRDS.

These findings are likely an artifact of multicollinearity (i.e., high correlations among measures that may result in Type II error; Tabachnick & Fidell, 2007) and should not be taken to mean that responses to the TDS-21 were not, in fact, related to psychological distress. Indeed, bivariate correlations revealed a significant positive correlation between the TDS-21 and psychological distress. Thus, it is more likely that the results from the regression model were unreliable because the modified HHRDS and TDS-21 were conceptually redundant.

Last, we sought to provide evidence of temporal reliability over a period of up to three weeks. Given that the measure asks participants about their experiences over the course of their lifetime, we expected stability of responses. Indeed, responses to the TDS-21 were significantly positively correlated with one another at times one and two ($r = .91$), suggesting excellent test–retest reliability. Taken together, results from this study provide evidence of psychometrically sound measure of trans discrimination.

Clinical and Social Justice Implications

Findings from this study suggest several counseling and social justice implications. For one, mental health professionals are urged to assess and explore trans clients' experiences of discrimination, including microaggressions and harassment, and their impact on mental health in counseling (American Psychological Association [APA], 2015). In doing so, such experiences must be placed in a cissexist and transphobic sociocultural context in an effort to resist internalization and other adverse outcomes.

Mental health providers should also acknowledge that trans people face discrimination in employment settings and that such experiences are related to psychological distress. With their clients, mental health providers should investigate whether workplace antidiscrimination policies include gender identity. Moreover, psychologists may consult with employers on developing antidiscrimination policies that include gender identity, and fostering a supportive workplace climate for trans employees who may seek a social and medical transition (APA, 2015).

Mental health professionals should recognize that trans people often face discrimination in educational settings, which may result in school truancy, poorer academic performance, dropouts, and lower intentions of pursuing higher education (Kosciw et al., 2016). Mental health providers in schools are encouraged to work with school administrators to provide trainings on ways to create safe and affirming environments for trans and gender nonconforming youth, which may include use of true gender pronouns, developing gender-inclusive antidiscrimination policies, providing inclusive restrooms, and developing a gay-straight alliance. Gay-straight alliances, for example, are associated with more affirming school climates and less discrimination for sexual minority, trans, and gender nonconforming youth (Kosciw et al., 2016). Because trans people may encounter discrimination in health care settings (James et al., 2016), mental health providers are also encouraged to have knowledge of affirming and competent health care professionals to whom they may refer their trans clients.

Limitations, Strengths, and Future Directions

As with all research, there are a number of limitations of this study, one of which is the demographics of our participants. That is, although all participants in our study identified as trans, the majority of participants were White, younger in age, employed, and relatively educated. It is possible that the emergent factor structure may not fully reflect the experiences of trans People of Color, older trans individuals, or those who may be unemployed and less educated. In addition, given sample size limitations in each study, we were unable to assess potential differences between specific trans groups. Thus, a potential area of future research would be to examine model invariance among those who identify as trans women, trans men, nonbinary trans individuals, and those with multiple marginalized identities. Black trans men, for example, may have more frequent encounters with law enforcement because of racial profiling of Black drivers (i.e., "Driving While Black"), resulting in potentially different experiences than our participants.

Indeed, a limitation to this research is the single-axis approach adopted in our study (i.e., frameworks that focus on a single social identity, and in this case, trans identities; Moradi & Grzanka, 2017; Shin et al., 2017). Intersectional frameworks acknowledge the interlocking systems of privilege and oppression that result in unique experiences for all people (Collins, 1990/2000; Crenshaw, 1989; Moradi & Grzanka, 2017). For example, transgender scholars have noted the importance of centralizing trans People of Color's experiences in transgender discourse and advocacy, recognizing extant racism within trans circles (Koyama, 2006). Moreover, although trans individuals may experience discrimination in hetero- and cisnormative contexts, they may also experience discrimination in subcultural groups, particularly trans-exclusionary communities that police gender and sexual expression through a cissexist lens that denies trans peoples' diverse experiences of gender and gender identity (Serano, 2013; Stryker & Bettcher, 2016). For example, trans-exclusionary radical feminists (i.e., TERFs) argue that trans women are not "real women," demand "[cisgender] women-only spaces" (e.g., Michigan Womyn's Festival; Koyama, 2006; Stryker & Bettcher, 2016; Serano, 2013), and accuse trans women of appropriating cisgender women's experiences (e.g., Raymond, 1979). Therefore, an important avenue of future research would be to investigate experiences of discrimination in specific communities. Interdisciplinary collaboration with scholars in transgender studies would inevitably facilitate more critical work on trans communities that is grounded in trans individuals' lives and cultures.

Relatedly, we encourage additional measurement development that integrates multiaxis frameworks. For example, recent qualitative research on trans People of Color's sexual objectification experiences found that Muslim trans feminine people who wear a hijab may encounter expectations of submissiveness in romantic and/or sexual relationships, while also being exotified because of their trans identity (Flores et al., 2018). In other words, Muslim trans women may experience intersections of discrimination based on cissexist, racist, and sexist stereotypes. Future measures that investigate these unique experiences based on racialized transphobia are needed to advance this line of research. However, we caution researchers against engaging in "weak intersectionality research," or research that only examines multiple identities without acknowledging the contextual systems of privilege and oppression that engender unique experiences based on these identities (Moradi & Grzanka, 2017; Shin et al., 2017). Rather, such experiences and associated findings should be firmly grounded in

broader interlocking social structures and institutions. We also encourage research (e.g., participatory action research in which trans individuals come together to attempt to reduce violence against trans people) that addresses the original aim of intersectionality as a method of critical praxis and social transformation (Collins, 1990/2000; Crenshaw, 1989; Moradi & Grzanka, 2017; Shin et al., 2017).

An additional limitation is that the majority of our participants were recruited via the Internet. Although there are a number of benefits associated with online recruitment (e.g., greater access to stigmatized population, not requiring participants to disclose their identities to researchers with whom they might not otherwise feel uncomfortable), those who did not have computers or Internet access were less capable of participating (Meyer & Wilson, 2009). Again, these findings may not be generalizable to those of lower socioeconomic backgrounds and/or those who may not have access to a computer and Internet (Meyer & Wilson, 2009). In addition, online studies may run the risk of including compromised data (e.g., people only participating to receive compensation; Riggle, Rostosky, & Reedy, 2005), although we employed several methods to ensure data quality. For one, we included inclusion criteria checks for each study, examined univariate and multivariate outliers for inattentive responding, embedded validity check items throughout each of our studies, offered modest compensation (some of which was a donation to a local agency serving trans people of color), and allowed participants to enter the raffles after viewing all survey items. Despite these safeguards (Riggle et al., 2005), it is possible that some participants were less thoughtful in their responses and/or falsified data. Last, although we found evidence of structural stability and convergent and concurrent validity, we did not provide support for discriminant validity and therefore additional research in this area may be useful. Despite these limitations, we believe that the TDS-21 will be a useful measure in advancing research on the effects of discrimination on trans peoples' lives.

There are a number of strengths to this study. To our knowledge, this study is one of the few in existence that has sought to develop a measure of discrimination faced by trans people specifically. A significant strength of this study is that the measure was developed and normed on trans people. Findings from this study also provide general support for the scale's reliability and validity, which will enable further research in this area.

Furthermore, this measure assessed participants' perceptions of having experienced discrimination as a result of others' transphobia. In other words, this measure is unable to differentiate between actual and perceived discriminatory experiences. We believe it is important to assess the subjective appraisals of discrimination, as such appraisals are related to psychological outcomes and proximal minority stressors (e.g., Breslow et al., 2015; Velez et al., 2016). Additional research that examines variables that may mediate or moderate the links between perceived trans discrimination and distress may also be useful. For example, gender identity salience may intensify the link between discriminatory experiences and distress because those whose identities are more salient may be more attuned to such discrimination (e.g., Szymanski & Lewis, 2016).

An additional strength of this study is that the TDS-21 assessed a variety of forms of discrimination across multiple contexts. Although a total scale score should be used for research purposes, practitioners may find it useful to explore with their trans clients the types of discriminatory experiences they have encountered and the associated effects. For example, our study revealed that microaggressions and harassment were relatively common experiences. Although trans people continue to face substantial hardships, research has suggested that the social climate is moving toward more acceptance (James et al., 2016). Thus, practitioners may find it useful to assess more subtle and persistent forms of discrimination that may be more likely in today's sociocultural context (Nadal, Davidoff, Davis, & Wong, 2014).

Conclusion

To date, most studies examining trans discrimination have relied upon measures of discrimination that were not originally intended for trans populations. Thus, the goal of this study was to develop a measure of trans peoples' experiences with discrimination to better understand the linkages among trans discrimination, minority stressors, and mental and physical health outcomes. Results from this study provide support for the measure's reliability and validity. We call upon future researchers, practitioners, advocates, and policymakers to utilize this measure to shape critical praxis and advocacy initiatives that transform the institutional structures that engender trans discrimination, while also assisting trans people with coping with and resisting discrimination that threatens their well-being.

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Appendix

Trans Discrimination Scale

Please think carefully about your life as you answer the questions below. For each question, read the question and then answer it twice: answer once for what your ENTIRE LIFE (from when you were a child to now) has been like, and then once for what the PAST YEAR has been like. Circle the number that best describes events in YOUR ENTIRE LIFE, and in the PAST YEAR, using these rules:

Circle 1 = If the event has NEVER happened to you.

Circle 2 = If the event happened ONCE IN A WHILE (less than 10% of the time)

Circle 3 = If the event happened SOMETIMES (10–25% of the time)

Circle 4 = If the event happened A LOT (26–49% of the time)

Circle 5 = If the event happened MOST OF THE TIME (50–70% of the time)

Circle 6 = If the event happened ALMOST ALL OF THE TIME (more than 70% of the time)

BECAUSE OF OTHERS' TRANSGENDER PREJUDICE, HOW OFTEN HAVE YOU . . .

1. Had others deny or minimize your experiences of transgender discrimination?
2. Been denied opportunities in the workplace (e.g., promotion, raise, opportunities to work with customers, work on certain project, not offered professional development opportunities)?
3. Experienced maltreatment in health care settings?
4. Experienced harassment or bullying from peers in educational settings?
5. Experienced harassment (e.g., slurs, physical harm, prolonged "pat downs") from law enforcement (e.g., police officers, security officials, transportation security administration)?
6. Been judged by others after they learned about your gender identity?

(*Appendix follows*)

7. Heard comments that all transgender persons are the same (e.g., assumptions that all transgender people undergo or wish to undergo gender affirming surgeries)?
8. Experienced limited mentorship in career settings?
9. Been discriminated against while trying to access health care (e.g., gynecological exams, shots, prostate exams, etc.)?
10. Had teachers or instructors refuse to stop abuse or bullying directed toward you?
11. Been unfairly questioned about your gender identity by law enforcement (e.g., police officers, security officials, transportation security administration)?
12. Experienced people in your life who refused to use your true gender pronouns (e.g., he, her, they, zir)?
13. Received demeaning messages about your physical appearance (e.g., you do not look "enough" like your true gender identity, comments about your attire, "I never would have known that you're trans")?
14. Been denied employment?
15. Had to educate doctors, nurses, or administrative staff about transgender-related health care?
16. Experienced harassment from faculty, staff, and administrators in educational settings?
17. Heard intrusive comments about your body (e.g., "what's between your legs?")?
18. Been expected to be or act in gender-conforming ways?
19. Experienced social rejection in educational settings?
20. Experienced harassment from family members?
21. Been stopped by law enforcement (e.g., police officers, security officials, transportation security administration) and unfairly questioned?

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