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Genital herpes stigma: Toward the Measurement and Validation of a highly prevalent yet hidden public health problem

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Abstract

Despite its highly prevalent and stigmatizing nature, genital herpes has received little attention from stigma researchers relative to other sexually transmitted infections. This limitation is of great relevance to researchers and practitioners in both clinical and healthcare settings, given that stigma can cause psychological distress and hinder disclosure to sexual partners, hence contributing to the spread of genital herpes. The present research developed and examined the psychometric properties of a quantitative measure of genital herpes stigma. Two hundred individuals diagnosed with genital herpes recruited through online genital herpes support groups completed a survey containing 37 items adapted from the HIV Stigma Scale, questions about demographic and herpes-related characteristics, and measures of relevant psychosocial variables. A confirmatory factor analysis yielded an 18-item scale with four factors: personalized stigma, disclosure concerns, negative self-image, and concern with public attitudes. All subscales demonstrated good internal consistency, with Cronbach alphas ranging from 0.74 to 0.87. Construct validity was supported by correlations with relevant psychosocial variables, including negative affect, rumination, and perceived social support. As a psychometrically sound assessment tool, the Genital Herpes Stigma Scale can be used in both clinical and research settings to facilitate future efforts to alleviate the negative psychological consequences of this incurable viral infection.

Keywords

genital herpes; stigma; psychological distress; measurement; sexual health

Genital herpes, one of the most common sexually transmitted infections (STIs) causing genital ulcers, affects approximately 15.5% of adults in the United States (CDC, 2010). The majority of those with genital herpes are asymptomatic at any given time or are unaware of their serological status, leading to a significant number of under-reported and undiagnosed

cases (Schiffer & Corey, 2009). Although genital herpes is most contagious during active outbreaks, transmission can occur in the absence of physical symptoms through asymptomatic viral shedding. While antiviral medications have been shown to shorten outbreaks, suppress recurrences when taken continuously, and shorten periods of asymptomatic viral shedding (Cernik et al., 2008), genital herpes remains an incurable disease, with recurring genital lesions alternating with asymptomatic periods in a largely unpredictable pattern. As such, the disease can lead to significant short- and long-term emotional and psychosocial consequences for infected individuals, including heightened psychological distress, anxiety about telling current and future sexual partners about the diagnosis, and reluctance to engage in future romantic relationships for fears of transmitting the disease to others (Melville et al., 2003; Myers et al., in press; Newton & McCabe, 2008).

Stigma due to genital herpes infection significantly contributes to the adverse psychological consequences stemming from this otherwise relatively medically innocuous viral infection. Though much research has examined the stigmatizing effects of STIs, especially HIV/AIDS and more recently the human papillomavirus (HPV; Parker & Aggleton, 2003; Waller, Marlow, & Wardle, 2007), the stigma associated with genital herpes has received relatively little empirical attention (Barnack-Tavlaris, Reedy, & Ports, 2011; Merin & Pachankis, 2011). Given that perceived stigma relating to sexually transmitted infections has been identified as a reliable predictor of poor sexual well-being, as well as a significant source of anxiety and general distress, genital herpes stigma represents a necessary, untapped research focus (Foster & Byers, 2016; Newton & McCabe, 2005, 2008). Furthermore, psychological distress has been prospectively linked to recurrence frequency in genital herpes (Dalkvist, Wahlin, Bartsch, & Forsbeck, 1995; Faulkner & Smith, 2009), suggesting that stigma might indirectly influence the course of the disease. The present research aimed to fill this gap in the literature by providing preliminary evidence for the reliability and construct validity of a theoretically-driven measure of genital herpes stigma. Understanding stigma-related psychosocial mechanisms, as well as developing and evaluating effective stigma reduction interventions, hinges on adequate assessment of stigma (Earnshaw & Chaudoir, 2009). As such, the present research contributes to the existing literature by providing future researchers with a psychometrically sound tool to quantitatively document the role of stigma in the health and well-being of individuals with genital herpes.

As reviewed by Earnshaw and Chaudoir (2009), much research has been devoted to the conceptualization and measurement of HIV stigma. While genital herpes and HIV differ in terms of their associated morbidity, public perception, and historical treatment, both are sexually transmitted infections that are concealable under most circumstances. Thus, the rich body of HIV-related literature provides an initial foundation on which to build a genital herpes stigma measure. In particular, the HIV Stigma Scale developed by Berger, Ferrans, and Lashley (2001), which is comprised of four subscales (disclosure concerns, personalized stigma, negative self-image, and concern with public attitudes towards HIV), captures the influence of stigma on self-perceptions as well as anticipated outcomes when HIV is introduced into a social interaction. This conceptualization of HIV stigma as a multifaceted construct is consistent with other theoretical frameworks on the management of concealable stigmatized identities (e.g., Pachankis, 2007; Quinn & Chaudoir, 2009), which suggest that researchers should consider different components of the stigmatizing process (e.g.,

anticipation of rejection, internalized negative stereotypes, perceived discrimination) when assessing the experiences of stigmatized individuals.

To our knowledge, only two previous studies have quantitatively assessed genital herpes stigma (Barnack-Tavlaris et al., 2011; Myers et al., in press). Myers and colleagues assessed genital herpes stigma by adapting an abbreviated version of the HIV Stigma Scale modified for youths (Wright, Naar-King, Lam, Templin, & Frey, 2007), though they provided little information about the psychometric properties of the adapted scale given that stigma was not a central focus of their study. Barnack-Tavlaris and colleagues used an adaptation of the full HIV Stigma Scale. However, while the authors performed a principal components analysis revealing four factors, they did not report in detail whether any items loaded onto more than one factor or the degree of between-factor overlap. Building on this work, the present research utilized confirmatory factor analysis to refine as well as examine the underlying structure of the Genital Herpes Stigma Scale. Although the HIV Stigma Scale (Berger et al., 2001) has been refined by other researchers since its original publication (Bunn, Solomon, Miller, & Forehand, 2007), the non-adapted pool of items continues to constitute one of the most popular stigma measures in the HIV literature and serve as the basis for scale adaptation efforts across various populations and cultural contexts (Jeyaseelan et al., 2013; Jimenez et al., 2010; Wright et al., 2007). Given our aim of conducting a preliminary examination of the psychometric properties of this scale as adapted to genital herpes stigma, we opted to base our scale adaptation efforts on the complete pool of the original HIV Stigma Scale items in order to capture the maximum information possible for informing this particular adaptation. This decision is further supported by the possibility that some of the omitted items from previous adaptations of the HIV Stigma Scale might remain relevant (e.g., non-redundant) when applied in our herpes stigma adaptation.

In the current study, we explored how genital herpes stigma might vary as a function of demographic (i.e., gender, race/ethnicity, relationship status, age) and herpes-related characteristics (i.e., time since diagnosis, antiviral medication status). Additionally, we sought to establish the construct validity of the adapted stigma measure by examining its correlations with other variables relevant to the psychosocial experiences of individuals with genital herpes. Specifically, drawing from previous work on the psychological consequences of genital herpes (Barnack-Tavlaris et al., 2011; Merin & Pachankis, 2011), we expected that levels of genital herpes stigma would positively correlate with negative affect. Consistent with the general literature on concealable stigmatized identities, we further hypothesized that levels of genital herpes stigma would positively correlate with rumination, which is defined as the tendency to passively and repetitively focus on one's problems and their causes and has been identified as an important mechanism underlying the association between stigma-related experiences and psychological distress (Hatzenbuehler, Nolen-Hoeksema, & Dovidio, 2009; Pachankis, 2007). Lastly, given that exposure to stigma-related stress, along with stigma concealment, has been linked to lower perceived social support (Beals, Pellau, & Gable, 2009; Hatzenbuehler et al., 2009), we predicted that levels of genital herpes stigma would negatively correlate with perceived social support.

Method

Participants and Procedures

A total of 204 adults with a self-report diagnosis of genital herpes participated in the study. A recruitment email, which described the study as a 30-minute web-based, anonymous questionnaire concerning the lived experiences of individuals dealing with genital herpes and contained a link to the study survey, was sent to moderators of 43 on-line genital herpes support groups for distribution to their members. All participants were unpaid volunteers. Four individuals were missing data on key demographic variables of interest and were excluded from analyses, leaving a final analytic sample of 200 participants. The sample demographics, along with relevant genital herpes background information (recurrence frequency, medication status, and time since diagnosis), are summarized in the left-hand side of Table 1. Most of the participants were female and Caucasian; slightly more than half of all participants were on antiviral medication. The mean age of the sample was 38.76 years ($SD = 11.96$). After reviewing the consent form and indicating their agreement to participate, participants were asked to complete a series of demographics and psychosocial measures, including the Genital Herpes Stigma Scale as well as measures of negative affect, rumination, and perceived social support. All study materials and procedures were approved by the Institutional Review Board of the authors' institution (blinded for masked review).

Measures

Genital Herpes Stigma Scale—Drawing from the work of Barnack-Tavlaris and colleagues (2011), we adapted the HIV Stigma Scale (Berger et al., 2001) by replacing “HIV” with “genital herpes” where applicable; also following the recommendation of these authors, we omitted three items that they deemed as extreme and irrelevant to those with genital herpes: “Some people who are close to me are afraid they will be rejected if it becomes known that I have HIV,” “People don't want me around their children once they know I have HIV,” and “People seem afraid of me because I have HIV.” Scored on a 4-point scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*), this measure consists of two major sections. The first section (23 items) assesses how participants feel and how they are treated as individuals with genital herpes. Example items from this section include: “I have been hurt by how people reacted to learning I have genital herpes” and “Some people who know I have genital herpes have grown more distant.” The second section (14 items) assesses participants' experiences surrounding the disclosure of genital herpes. In the event that participants had not disclosed their genital herpes to others ($n = 10$ in the current sample), they were encouraged to imagine how they think or feel others would react. Example items from this section include: “I regret having told some people that I have genital herpes” and “As a rule, telling others that I have genital herpes has been a mistake.”

Negative affect—Negative affect was assessed using the 10-item Negative Affect subscale of the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). This scale consists of 10 words describing negative affective states (e.g., distressed, upset). Participants rated the extent to which they generally experienced the feeling indicated by each word on a 5-point scale ranging from 1 (*slightly or not at all*) to 5 (*extremely*). The internal consistency in the current sample was good, $\alpha = .92$.

Rumination—Rumination was assessed using the 22-item Ruminative Responses Scale (RRS; Treynor, Gonzalez, & Nolen-Hoeksema, 2003). Participants were asked to indicate what they generally do when feeling sad, down, or depressed using a 4-point scale, ranging from 1 (*almost never*) to 4 (*almost always*). Sample items include “Think about a recent situation, wishing it had gone better” and “Think about how angry you are with yourself.” The internal consistency for the current sample was good, $\alpha = .93$.

Perceived social support—Perceived social support was assessed using the 12-item Multidimensional Scale of Perceived social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988). Participants rated their perceptions of support from family (e.g., “My family really tries to help me”; in the current sample, $\alpha = .92$), friends (e.g., “I can count on my friends when things go wrong”; in the current sample, $\alpha = .95$), and significant others (e.g., “There is a special person who is around when I am in need”; in the current sample, $\alpha = .91$) using a 5-point scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Data Analysis Plan

We began by examining the underlying structure of the Genital Herpes Stigma Scale using confirmatory factor analysis (CFA). Using Mplus 7.3 with robust maximum likelihood (MLR) estimation, we tested the adapted measure against the structure of the original HIV Stigma Scale. Based on theoretical and statistical criteria from these analyses, we then refined the adapted measure by identifying a second model to reflect the best fitting structure. Across all models, we used standard indicators of model fit (Hu & Bentler, 1999), which included a root mean square error of approximation (RMSEA) at or below 0.06, a comparative fit index (CFI) at or above 0.95, and a standardized root mean square residual (SRMR) at or below 0.08.

Following factor analyses, we computed subscale scores by averaging the items that loaded onto each factor within the best-fitting CFA model (items with negative factor loadings were first reverse scored), and examined the internal consistency of each subscale using Cronbach's alpha. We next tested for differences across demographic (i.e., gender, race/ethnicity, and relationship status) and herpes-specific (i.e., time since diagnosis, antiviral medication status, and number of outbreaks during the past six months) characteristics with respect to each subscale using ANOVAs. In the case of significant omnibus tests, we followed them with post-hoc tests with LSD adjustment. Lastly, we correlated the subscale scores with variables relevant to the psychosocial experiences of individuals with genital herpes stigma, including negative affect, rumination, and perceived social support.

Results

The original HIV Stigma Scale contains four subscales: personalized stigma, disclosure concerns, negative self-image, and concern with public attitudes. Testing the 37 items adapted for genital herpes stigma against this structure (not shown), we found only evidence of moderate model fit on only the SRMR, $\chi^2(605) = 1130.15$, $p < 0.001$, RMSEA = 0.07, CFI = 0.85, SRMR = 0.08. Given that 14 of the 37 items cross-loaded onto multiple subscales in the original analysis of the HIV Stigma Scale (Berger et al., 2001), we sought to refine the adapted measure by including only those items that loaded onto a single subscale

in the original analysis ($n = 23$ items). This second model, displayed on the left-hand side of Table 2, demonstrated similar fit as the original model of the full scale, $\chi^2(224) = 474.70$, $p < 0.001$, RMSEA = 0.08, CFI = 0.86, SRMR = 0.08. After consulting modification indices, we found that items 3, 5, 8, 25, and 26 cross-loaded onto multiple factors or shared residual correlation with other items and thus were removed, resulting in a total of 18 items retained. The final model based on these 18 items, displayed on the right-hand side of Table 2, demonstrated adequate fit, $\chi^2(129) = 205.59$, $p < 0.001$, RMSEA = 0.05, CFI = 0.94, SRMR = 0.06. As such, this final model was used to create subscale scores for further analyses. Each of the newly created subscales demonstrated good internal consistency: personalized stigma ($\alpha = 0.84$), disclosure concerns ($\alpha = 0.74$), negative self-image ($\alpha = 0.87$), and concern with public attitudes ($\alpha = 0.81$).

The comparisons across demographic and herpes-specific characteristics for each subscale are presented on the right-hand side of Table 1. As can be seen, there were no significant differences with respect to the personalized stigma or disclosure concerns subscales. We found differences by relationship status and time since initial herpes diagnosis on the negative self-image subscale. Post-hoc analyses revealed that single individuals had significantly higher negative self-image scores than did individuals who were casually dating; those individuals who were diagnosed within the prior two years had significantly higher negative self-image scores than all three other groups. With regard to concern with public attitudes, post-hoc analyses indicated that individuals diagnosed within the past four years had significantly higher scores than those diagnosed 10 or more years ago; individuals currently taking antiviral medications had significantly higher scores than did those not on medications. As seen in Table 3, higher scores on disclosure concerns, negative self-image, and concern with public attitudes were associated with younger age.

In the final set of analyses, we examined the correlations among each of the four subscales and other psychosocial variables relevant to the experience of genital herpes stigma. As can be seen in Table 3, the four subscales were all significantly, positively correlated with one another. All three subscales other than personalized stigma were positively associated with negative affect and all four subscales were positively associated with rumination. Personalized stigma, negative self-image, and concern with public attitudes were all negatively correlated with perceived social support from both family and significant others, while only personalized stigma and concern with public attitudes were negatively correlated with social support from friends. Most of the significant correlations range from $r = .20$ to $r = .60$, indicating medium to large effect sizes (Cohen, 1992).

Discussion

Despite its prevalent and highly stigmatizing nature, genital herpes has received little empirical attention from stigma researchers relative to other STIs. Thus, the present research developed and examined the psychometric properties of a quantitative measure of genital herpes stigma, with the goal of facilitating its assessment in future research. Using a pool of items adapted from the HIV Stigma Scale (Berger et al., 2001) and drawing from the work of Barnack-Tavlaris and colleagues (2011), we conducted a confirmatory factor analysis to develop and refine a measure that captures different components of genital herpes stigma

(e.g., internalized stigmatizing beliefs, anticipated rejection from others). After removing items with overlapping factor loadings, the resulting Genital Herpes Stigma Scale (GHSS), which contains 18 items and four subscales, demonstrated good internal consistency and sound factor structure.

To examine the construct validity of the scale, we examined correlations between each of the GHSS subscales and a number of psychosocial variables. In line with our hypotheses, all GHSS subscales correlated with rumination; most were positively correlated with negative affect and negatively correlated with perceived social support. Because these psychosocial variables are relevant to the experiences of those living with genital herpes and other concealable stigmatized identities (Hatzenbuehler et al., 2009; Merin & Pachankis, 2011; Pachankis, 2007), the significant associations provide empirical support for the construct validity of GHSS as a quantitative measure of genital herpes stigma.

It is worth noting that Some GHSS subscales (e.g., negative self-image) were more consistently associated with certain psychosocial variables than other subscales (e.g., concern with public attitudes). This finding is consistent with the idea that the experience of stigma is characterized by multiple distinct processes, among which internalized stigma tends to be most predictive of outcomes related to psychological distress and well-being (Earnshaw & Chaudoir, 2009). We further note that the disclosure concerns subscale was not significantly associated with perceived social support. Theoretically, individuals who perceive their social networks as more supportive would be expected to have fewer concerns regarding the disclosure of their genital herpes diagnosis, and vice versa (Beals et al., 2009). However, as noted by Merin and Pachankis (2011), interacting with individuals who are unaware of one's genital herpes diagnosis, even when these individuals are perceived to be generally supportive, can exacerbate the negative psychological consequences of stigma concealment. We also recognize that individuals with genital herpes might face distinct disclosure concerns from those living with HIV given the divergent medical implications of these conditions, which, along with the fact that a small subset of our participants (5% of the current sample) had not disclosed their genital herpes diagnosis to anyone, might have explained why this subscale emerged as somewhat less reliable than the others. It is therefore important for future research to further examine the robustness and validity of this subscale among individuals with genital herpes.

Stigma causes significant psychological distress for individuals living with a wide range of devalued identities (e.g., Pachankis, 2007; Quinn & Chaudoir, 2009). Among those diagnosed with genital herpes, stigma may hinder disclosure to current and future sexual partners (Myers et al., in press), thus contributing to the spread of the illness. Stigma can also increase psychological distress, which has been associated with more frequent recurrences, both prospectively and retrospectively (Dalkvist et al., 1995; Faulkner & Smith, 2009). In light of these findings, a clearer understanding of genital herpes stigma, especially in the context of clinical research, can help reduce the spread of this incurable disease and improve the physical and psychological health and well-being of diagnosed individuals. To this end, the present study contributes to the existing literature by providing researchers with a psychometrically sound tool to assess the genital herpes stigma construct, which can be implemented across various contexts, such as quantitative survey studies and evaluation of

specific stigma reduction interventions. Practitioners at STI clinics may also incorporate this measure into their assessment of patients to identify those experiencing significant stigma-related stress stemming from their genital herpes diagnosis and provide referrals to support groups or counseling as needed.

The present investigation has several limitations. First, given that all of our participants were recruited through anonymous online genital herpes support groups, our sample might not be representative of the general population of individuals who are diagnosed with genital herpes. Indeed, as noted by Barnack-Tavlaris and colleagues (2011), individuals who seek support online might experience more genital herpes-related distress than those who do not. Future research could examine the generalizability of the GHSS by recruiting participants through alternative venues, such as STI clinics, community health centers, and offices of primary care providers.

Second, although our utilization of the HIV Stigma Scale as a model for GHSS is consistent with the approach used by Barnack-Tavlaris and colleagues (2011), we acknowledge that these items might not fully capture the experiences of individuals with genital herpes. In particular, whereas our data provided initial support for the reliability and convergent validity of GHSS, its content validity remains unexamined due to lack of cognitive interview or pilot data. Evidence for other forms of validity, such as predictive and discriminant validity, is also lacking. Future research could further strengthen and refine the GHSS by collecting qualitative feedback from participants through open-ended written prompts or follow-up interviews as well as examining the utility of GHSS as a predictor of psychological well-being and overall quality of life for individuals with genital herpes over time.

Third, the present investigation examined the associations of genital herpes stigma with a number of psychosocial variables, including negative affect, rumination, and perceived social support. Our choice to focus on these correlates is well-grounded in the empirical literature. Despite some evidence suggesting that, among individuals diagnosed with genital herpes, psychological distress tends to decrease over time post-diagnosis (Carney, Ross, Bunker, Ikkos, & Mindel, 1994), the stigma associated with one's herpes diagnosis has been consistently linked with global negative affect in previous research (Barnack-Tavlaris et al., 2011; Newton & McCabe, 2005, 2008). Furthermore, both rumination and perceived social support have been implicated in the general literature of concealable stigmatized identities (Beals et al., 2009; Hatzenbuehler et al., 2009) as well as the specific literature on coping with herpes-related distress (Manne & Sandler, 1984). Nevertheless, we recognize that stigma associated with genital herpes, a sexually-transmitted infection, might have an even stronger association with measures of sexual well-being and adjustment (Foster & Byers, 2016). Thus, future research could further evaluate the construct validity of GHSS by examining its correlation with psychosocial variables specific to the sexual context, such as sexual anxiety and sexual satisfaction.

Lastly, our current sample included significantly more women than men. Because women with genital herpes tend to experience more severe symptoms and more disease-related complications than men, they are more likely to seek treatment and support, leading to an

over-representation of women in the present sample (Barnack-Tavlaris et al., 2011; Newton & McCabe, 2005, 2008). However, because men tend to experience more frequent recurrences than women, they might experience heightened negative affect and feelings of stigma, which can exacerbate the course of the disease and negatively impact intimate relationships (Merin & Pachankis, 2011). To explore gender differences in genital herpes stigma and their implications for psychological adjustment, future studies could stratify recruitment by gender, with the goal of including similar numbers of male and female participants.

In sum, as a highly prevalent sexually-transmitted infection with significant psychosocial consequences, genital herpes deserves more empirical attention from stigma researchers. By developing and presenting the psychometric properties of a stigma measure specifically adapted for use with this population, the present research provided a starting point for future work in this important area of inquiry.

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References

- Barnack-Tavlaris JL, Reddy DM, Ports K. Psychological adjustment among women living with genital herpes. *Journal of Health Psychology*. 2011; 16:12–21. DOI: 10.1177/1359105310367527 [PubMed: 20709880]
- Beals KP, Peplau LA, Gable SL. Stigma management and well-being: The role of perceived social support, emotional processing, and suppression. *Personality and Social Psychology Bulletin*. 2009; 35:867–879. DOI: 10.1177/0146167209334783 [PubMed: 19403792]
- Berger B, Ferrans C, Lashley F. Measuring stigma in people with HIV: Psychometric assessment of the HIV stigma scale. *Research in Nursing and Health*. 2001; 24:518–529. DOI: 10.1002/nur.10011 [PubMed: 11746080]
- Carney O, Ross E, Bunker C, Ikkos G, Mindel A. A prospective study of the psychological impact on patients with a first episode of genital herpes. *Genitourinary Medicine*. 1994; 70:40–45. DOI: 10.1258/0956462011923877 [PubMed: 8300099]
- Centers for Disease Control and Prevention. Seroprevalence of Herpes Simplex Virus Type 2 among persons aged 14-49 years - United States, 2005-2008. *Morbidity and Mortality Weekly Report*. 2010; 59:456–459. [PubMed: 20414188]
- Cohen J. A power primer. *Psychology Bulletin*. 1992; 112:155–159. DOI: 10.1037/0033-2909.112.1.155
- Dalkvist J, Wahlin T, Bartsch E, Forsbeck M. Herpes simplex and mood: A prospective study. *Psychosomatic Medicine*. 1995; 57:127–137. DOI: 10.1097/00006842-199503000-00005 [PubMed: 7792371]
- Earnshaw VA, Chaudoir SR. From conceptualizing to measuring HIV stigma: A review of HIV stigma mechanism measures. *AIDS and Behavior*. 2009; 13:1160–1177. DOI: 10.1007/s10461-009-9593-3 [PubMed: 19636699]
- Faulkner S, Smith A. A prospective diary study of the role of psychological stress and negative mood in the recurrence of herpes simplex virus (HSV1). *Stress and Health*. 2009; 25:179–187. DOI: 10.1002/smi.1235

- Foster LR, Byers ES. Predictors of the sexual well-being of individuals diagnosed with Herpes and Human Papillomavirus. *Archives of Sexual Behavior*. 2016; 45:403–414. DOI: 10.1007/s10508-014-0388-x [PubMed: 25408498]
- Hatzenbuehler ML, Nolen-Hoeksema S, Dovidio JF. How does stigma “get under the skin?”: The mediating role of emotion regulation. *Psychological Science*. 2009; 20:1282–1289. DOI: 10.1111/j.1467-9280.2009.02441.x [PubMed: 19765237]
- Hu LT, Bentler PM. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*. 1999; 6:1–55. DOI: 10.1080/10705519909540118
- Jeyaseelan L, Kumar S, Mohanraj R, Rebekah G, Rao D, Manhart LE. Assessing HIV/AIDS stigma in south India: validation and abridgement of the Berger HIV Stigma scale. *AIDS & Behavior*. 2013; 17:434–443. DOI: 10.1007/s10461-011-0128-3 [PubMed: 22246514]
- Jimenez JC, Puig M, Ramos JC, Morales M, Asencio G, Sala AC, et al. Zorrilla C. Measuring HIV felt stigma: a culturally adapted scale targeting PLWHA in Puerto Rico. *AIDS Care*. 2010; 22:1314–1322. DOI: 10.1080/09540121003758481 [PubMed: 20665283]
- Melville J, Sniffen S, Crosby R, Salazar L, Whittington W, Dithmer-Schreck D, DiClemente R, Wald A. Psychosocial impact of serological diagnosis of herpes simplex virus type 2: A qualitative assessment. *Sexually Transmitted Infections*. 2003; 79:280–285. DOI: 10.1136/sti.79.4.280 [PubMed: 12902574]
- Manne S, Sandler I. Coping and adjustment to genital herpes. *Journal of Behavioral Medicine*. 1984; 7:391–410. DOI: 10.1007/BF00845272 [PubMed: 6542939]
- Merin A, Pachankis JE. The psychological impact of genital herpes stigma. *Journal of Health Psychology*. 2011; 16:80–90. DOI: 10.1177/1359105310367528 [PubMed: 20656766]
- Myers JL, Buhi ER, Marhefka S, Daley E, Dedrick R. Associations between individual and relationship characteristics and genital herpes disclosure. *Journal of Health Psychology*. in press.
- Newton DC, McCabe MP. A theoretical discussion of the impact of stigma on psychological adjustment to having a sexually transmissible infection. *Sexual Health*. 2005; 2:63–69. DOI: 10.1071/SH04015 [PubMed: 16335743]
- Newton D, McCabe M. Sexually transmitted infections: Impact on individuals and their relationships. *Journal of Health Psychology*. 2008; 13:864–869. DOI: 10.1177/1359105308095058 [PubMed: 18809636]
- Pachankis JE. The psychological implications of concealing a stigma: A cognitive-affective-behavioral model. *Psychological Bulletin*. 2007; 133:328–345. DOI: 10.1037/0033-2909.133.2.328 [PubMed: 17338603]
- Parker R, Aggleton P. HIV/AIDS-related stigma and discrimination: A conceptual framework and an agenda for action. *Social Science and Medicine*. 2003; 57(02):13–24. 00304–0. DOI: 10.1016/S0277-9536 [PubMed: 12753813]
- Quinn DM, Chaudoir SR. Living with a concealable stigmatized identity: The impact of anticipated stigma, centrality, salience, and cultural stigma on psychological distress and health. *Journal of Personality and Social Psychology*. 2009; 97:634–651. DOI: 10.1037/a0015815 [PubMed: 19785483]
- Rintamaki LS, Davis TC, Skripkauskas S, Bennett CL, Wolf MS. Social stigma concerns and HIV medication adherence. *AIDS Patient Care and STDs*. 2006; 20:359–368. DOI: 10.1089/apc.2006.20.359. [PubMed: 16706710]
- Schiffer JT, Corey L. New concepts in understanding genital herpes. *Current Infectious Disease Reports*. 2009; 11:457–464. DOI: 10.1007/s11908-009-0066-7 [PubMed: 19857385]
- Treynor W, Gonzalez R, Nolen-Hoeksema S. Rumination reconsidered: A psychometric analysis. *Cognitive Therapy and Research*. 2003; 27(3):247–259. DOI: 10.1023/A:1023910315561
- Waller J, Marlow LAV, Wardle J. The association between knowledge of HPV and feelings of stigma, shame, and anxiety. *Sexually Transmitted Infections*. 2007; 83:155–159. DOI: 10.1136/sti.2006.023333 [PubMed: 17098767]
- Watson D, Clark L, Tellegen A. Development and validation of brief measures of positive and negative affect: the PANAS scales. *Journal of Personality and Social Psychology*. 1988; 54:1063–1070. DOI: 10.1037//0022-3514.54.6.1063 [PubMed: 3397865]

Wright K, Naar-King S, Lam P, Templin T, Frey M. Stigma scale revised: reliability and validity of a brief measure of stigma for HIV+ youth. *Journal of Adolescent Health*. 2007; 40:96–98. DOI: 10.1016/j.jadohealth.2006.08.001 [PubMed: 17185215]

Zimet GD, Dahlem NW, Zimet SG, Farley GK. The Multidimensional Scale of Perceived Social Support. *Journal of Personality Assessment*. 1988; 52:30–41. DOI: 10.1207/s15327752jpa5201_2

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Table 1
Demographic and Behavioral Characteristics of the Full Sample ($n = 200$) and Differences in Newly Developed Subscales

	<i>n</i>	%	Comparison of Subscale Means											
			Personalized Stigma			Disclosure Concerns			Negative Self-Image			Concern with Public Attitudes		
			<i>M</i>	<i>SD</i>	<i>F</i> (1, 198) = 0.45	<i>M</i>	<i>SD</i>	<i>F</i> (1, 198) = 0.19	<i>M</i>	<i>SD</i>	<i>F</i> (1, 198) = 1.27	<i>M</i>	<i>SD</i>	<i>F</i> (1, 198) = 2.17
Gender														
Male	41	20.5	2.32	0.81	3.51	0.53	2.36	0.91	2.94	3.11	0.66			
Female	159	79.5	2.23	0.75	3.46	0.64	2.53	0.88	3.11	3.11	0.66			
Race/Ethnicity														
Black	13	6.5	2.31	0.71	3.33	0.62	2.45	0.94	3.35	3.35	0.55			
Latino	10	5.0	2.13	0.58	3.35	0.82	2.91	0.78	3.15	3.15	0.49			
White	166	83.0	2.26	0.78	3.52	0.57	2.49	0.88	3.06	3.06	0.67			
Other/Multiracial	11	5.5	2.20	0.77	3.07	0.92	2.33	1.05	2.89	2.89	0.74			
Relationship Status														
Long-term relationship	58	29.0	2.17	0.77	3.53	0.58	2.46	1.01	3.04	3.04	0.71			
Short-term relationship	22	11.0	2.25	0.81	3.25	0.79	2.42	0.89	3.08	3.08	0.60			
Casually dating	45	22.5	2.21	0.69	3.46	0.67	2.24	0.77	2.96	2.96	0.71			
Single	75	37.5	2.34	0.79	3.51	0.54	2.70	0.82	3.18	3.18	0.59			
Time since herpes diagnosis														
Less than 2 years	64	32.0	2.23	0.82	3.60	0.54	2.92	0.82	3.25	3.25	0.60			
2 to 4 years	40	20.0	2.25	0.70	3.48	0.66	2.47	0.87	3.21	3.21	0.69			
5 to 10 years	37	18.5	2.16	0.63	3.49	0.52	2.34	0.85	3.01	3.01	0.58			
More than 10 years	59	29.5	2.33	0.82	3.32	0.69	2.15	0.81	2.84	2.84	0.68			
Currently taking antivirals														
No	89	44.5	2.26	0.71	3.50	0.50	2.42	0.87	2.97	2.97	0.64			
Yes	111	55.5	2.24	0.80	3.45	0.69	2.55	0.90	3.16	3.16	0.66			

Comparison of Subscale Means										
	<i>n</i>	%	Personalized Stigma		Disclosure Concerns		Negative Self-Image		Concern with Public Attitudes	
			<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Number of recent outbreaks										
None	66	33.0	2.21	0.82	3.49	0.62	2.36	0.90	3.00	0.77
1-3	101	50.5	2.21	0.72	3.44	0.58	2.52	0.86	3.09	0.60
4 or more	33	16.5	2.46	0.74	3.54	0.72	2.70	0.93	3.20	0.58
			<i>F</i> (1, 198) = 1.54		<i>F</i> (1, 198) = 0.34		<i>F</i> (1, 198) = 1.66		<i>F</i> (1, 198) = 1.08	
			<i>F</i> (1, 198) = 0.03		<i>F</i> (1, 198) = 0.34		<i>F</i> (1, 198) = 1.06		<i>F</i> (1, 198) = 3.99*	

Note:

* *p* .05.

** *p* .01.

*** *p* .001.

Table 2

Results of Two Confirmatory Factor Analyses

Item	Second CFA: Original Scale Structure with Non-Cross-Loading Items				Third CFA: Modified Scale Structure based on Second CFA			
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 1	Factor 2	Factor 3	Factor 4
1. In many areas of my life, no one knows	--	0.50	--	--	--	0.53	--	--
2. I feel guilty	--	--	0.77	--	--	--	0.75	--
3. People's attitudes make me feel worse about myself	--	--	0.78	--	--	--	--	--
5. People lose their jobs	--	--	--	0.39	--	--	--	--
7. I feel I am not as good a person as others	--	--	0.74	--	--	--	0.69	--
8. I never feel ashamed	--	--	-0.53	--	--	--	--	--
9. People are treated like outcasts	--	--	--	0.72	--	--	--	0.71
10. Most people believe a person is dirty	--	--	--	0.79	--	--	--	0.79
12. Makes me feel unclean	--	--	0.76	--	--	--	0.80	--
14. People think a person is disgusting	--	--	--	0.88	--	--	--	0.90
15. Makes me feel I'm a bad person	--	--	0.73	--	--	--	0.77	--
17. I am very careful who I tell	--	0.69	--	--	--	0.71	--	--
18. Some people who know have grown distant	0.67	--	--	--	0.67	--	--	--
20. Most people are uncomfortable around someone	--	--	--	0.54	--	--	--	0.53
21. I never feel the need to hide it	--	-0.70	--	--	--	-0.75	--	--
23. Having it in my body is disgusting to me	--	--	0.71	--	--	--	0.75	--
24. I have been hurt by how people have reacted	0.59	--	--	--	0.56	--	--	--
25. I worry people will tell others	--	0.68	--	--	--	--	--	--
26. I regret having told some people	0.56	--	--	--	--	--	--	--
29. People I care about stopped calling	0.78	--	--	--	0.78	--	--	--
33. I have stopped socializing with some people because of their reactions	0.82	--	--	--	0.84	--	--	--
34. I have lost friends by telling them	0.74	--	--	--	0.76	--	--	--
35. I have told people close to me to keep it a secret	--	0.69	--	--	--	0.66	--	--

Note: Item content is paraphrased. Scale instructions were: "This study asks about some of the social and emotional aspects of having genital herpes. For most of the questions, just circle the letters or numbers that go with your answer. There are no right or wrong answers." Values represent standardized factor loadings from confirmatory factor analysis. Factor 1 = Personalized stigma; Factor 2 = Disclosure concerns; Factor 3 = Negative self-image; Factor 4 = Concern with public attitudes.

Correlations between herpes stigma and relevant convergent validity measures and scale descriptives.

Table 3

Variable	1	2	3	4	5	6	7	8	9	10
1. GHSS: Personalized Stigma	--									
2. GHSS: Disclosure Concerns	0.17*	--								
3. GHSS: Impact on Negative Self-image	0.27***	0.43***	--							
4. GHSS: Concern with Public Attitudes	0.41***	0.39***	0.55***	--						
5. Negative Affect	0.11	0.28***	0.57***	0.30***	--					
6. Ruminative Response Scale	0.17*	0.24**	0.59***	0.30***	0.64***	--				
7. MSPSS: Family	-0.27***	-0.03	-0.20**	-0.21**	-0.08	-0.16*	--			
8. MSPSS: Significant Other	-0.30***	0.02	-0.24**	-0.25***	-0.12	-0.10	0.32***	--		
9. MSPSS: Friend	-0.38***	-0.05	-0.13	-0.17*	-0.15*	-0.20**	0.39***	0.41***	--	
10. Age	0.09	-0.19**	-0.30***	-0.20**	-0.30***	-0.25***	-0.19**	-0.12	-0.11	--
<i>M</i>	2.25	3.47	2.50	3.08	23.60	47.08	12.62	14.66	13.60	38.76
<i>SD</i>	0.76	0.61	0.89	0.66	8.95	12.82	4.43	3.76	4.88	11.96
Cronbach's α	0.84	0.74	0.87	0.81	0.92	0.93	0.92	0.95	0.91	--