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Stigma's Effect on Social Interaction and Social Media Activity

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Stigmatized topics, such as HIV/STD, likely constrain related information sharing in ways that should be apparent in social interactions both on and off the Internet. Specifically, the authors predicted that the more people perceive an issue as stigmatized, the less likely they are to talk about the issue both privately (with sexual partners and peers) and publicly (on Twitter). Study 1 tested the effect of stigma on conversations at the individual level: The authors asked a group of participants ($N = 138$) about perceived STD-testing stigma, interactions with a sexual partner, and conversations with peers about STD testing. Study 2 assessed whether health conditions, in the aggregate, were less likely to generate social media activity as a function of current stigmatization. Using 259,758 archived Twitter posts mentioning 13 medical conditions, the authors tested whether level of stigma predicted the volume of relevant social media conversation, controlling for each condition's amount of advocacy and Google search popularity from a user's perspective. Findings supported our hypotheses. Individuals who reported perceiving a given health conditions in more stigmatic ways also reported interacting less with others about that topic; Twitter results showed a similar pattern. Results also suggest a more complex story of influence, as funding from the National Institutes of Health (i.e., each conditions amount of advocacy) associated with the examined health conditions also predicted Twitter activity. Overall, these results indicated that stigma had a similar, dampening effect on face-to-face and Twitter interactions. Findings hold theoretical and practical implications, which are discussed.

Health promotion campaign scholars increasingly recognize the importance of peer-to-peer information sharing as an alternative, complement, or even threat to conventional mass media campaigns (Southwell, 2013; Southwell & Yzer, 2009). At the same time, social norms and personal inhibitions that constrain face-to-face interactions may also restrain computer-mediated interaction through social media, particularly when online connections mirror offline relations. The nature of a topic may affect the volume of social exchanges that surround it.

Interpersonal interaction is often governed by considerations of face-saving, taboo, and politeness (Brown & Levinson, 1987; Cegala, 1981), meaning that stigmatized topics likely introduce challenges in information sharing. Sexually transmitted diseases (STDs), for example, represent a stigmatized conversation topic for many people in the United States. Consider HIV. Shame and stigma related to HIV are important barriers to HIV-relevant behavior, including testing and treatment. Because of fears of stigmatization, people avoid learning their HIV status, disclosing their status, accessing medical care, or accepting illness-related information and support (Mahajan

et al., 2008; UNAIDS, 2000). In addition, perceived HIV/AIDS stigma negatively predicts condom use, level of social support solicited and received, adherence to HIV medications, and quality of health care provided to HIV-positive patients, among other variables (e.g., Kinsler, Wong, Sayles, Davis, & Cunningham, 2007; Leary & Schreindorfer, 1998; Rintamaki, Davis, Skripkauskas, Bennett, & Wolf, 2006). All of this suggests that stigma likely dampens the likelihood of social interaction with regard to HIV.

This article aimed to examine the extent to which stigmatization of a health condition will diminish the likelihood of interpersonal conversation about the topic, if it does so at all. A brief look at conceptual efforts to define stigma will underscore why such a pattern should emerge, all else being equal.

Stigma Defined

Stigma is a multifaceted concept whose essence centers on the issue of deviance (Alonzo & Reynolds, 1995). According to Goffman (1963), *stigma* is a powerful discrediting and social label that radically changes the way individuals see themselves and are viewed as persons. Stigma, it is argued, is both produced and reified through social interaction and other social processes that enable the construction of “in”

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and “out” groups (Goffman, 1963). There are different manifestations or categories of stigma. Most relevant to STD/HIV-testing and treatment is *felt*, or *anticipated*, stigma (for a review, see Alonzo & Reynolds, 1995). Felt stigma refers to fear of societal attitudes and potential discrimination arising from a particular undesirable attribute (e.g., being promiscuous), disease (e.g., HIV), or association with a particular group or behavior (e.g., homosexuality).

Theoretical Perspectives on Stigma and Its Effects

Medical sociologists have recognized that certain health conditions are associated with stigma (Ablon, 1981). Mahajan and colleagues (2008) described some common characteristics of stigmatized diseases: (a) the person with the disease is seen as responsible for the illness; (b) the disease is progressive and incurable; (c) the disease is not well understood among the public, causing the public to feel threatened by the mere presence of the disease; and (d) the symptoms cannot be concealed. One aspect that plays a particularly strong role in forming stigma is perceived responsibility, which is linked to the perception that people chose their stigmatized condition. For example, Yoo and Yang (2012) found that participants in an experimental study associated significantly more shame and stigma with a hypothetical virus that was described as being sexually transmitted than with the same hypothetical virus that was described as being a type of cancer (with no mention of the mode of transmission). Waller, Marlow, and Wardle (2007) found that women who knew that HPV is sexually transmitted expected to experience higher levels of shame, stigma, and anxiety if they were to test positive for the virus than women who did not know the mode of transmission.

Responses to Stigma

According to Meisenbach's (2010) theory of stigma management communication, there are certain strategies that people use to avoid or minimize stigma. How a person manages this risk is of utmost concern. Denial, secrecy, deception, and social withdrawal are some coping strategies that people engage in to avoid stigma and discrimination. For example, people may avoid getting tested for STDs because they fear being labeled as promiscuous or deviant; even just admitting they are at risk might seem to bring them one step closer to association with stigmatized behavior (Chesney & Smith, 1999; Young, Nussbaum, & Moni, 2007). The effects of stigma can be felt across intrapersonal, interpersonal, community, and national levels. Drawing from the modified labeling theory (Link, Mirotznik, & Cullen, 1991), Smith and Baker (2012) asserted that stigmas are powerful social forces that likely shape interpersonal interactions as people either attempt to enforce stigmas or to avoid stigmatization themselves. Fear of stigma creates an atmosphere of silence and denial, in which openly talking about the stigmatized disease becomes difficult. For example, many young people are embarrassed to discuss sexual matters, worried about what their partners will think, or simply do not know how to bring up a topic such as testing for STDs (Kaiser Family Foundation, 2011).

Although there are conceptual frameworks that explicate the far-reaching effects of stigma (e.g., Frost, 2011), empirical research on how perceived stigma affects one's communication behaviors is limited. Considering that high perceived stigma is often associated with secrecy and social withdrawal, it seems plausible to argue that the more perceived stigma surrounding a topic, the less likely that topic will be discussed with others. In communication privacy management, Petronio (2002) argued that revealing information to another person entails risk. For example, if people ask for, or offer, information about STD testing, they run the risk of exposing themselves to stigmatization from the listener. Simply talking about STDs can suggest that the stigmatized health condition is either relevant or important to the speaker.

Researchers with the U.S. Centers for Disease Control and Prevention conducted qualitative research to explore girls' and women's conversations about STDs with providers, parents, peers, and partners (Friedman & Bloodgood, 2010). Findings from this study indicate that STDs, and getting tested for STDs, are associated in many people's minds with stigma, fear, embarrassment and carry moral connotations. Importantly, although most respondents said they would support their friend or partner if he or she were to get tested, their reactions during the interviews revealed judgment and implied that testing was associated with “irresponsible or unfaithful behavior” (Friedman & Bloodgood, 2010, p. 1828). In terms of communication topics with friends and sexual partners, the authors found that sex and sex-related gossip were common topics of conversation, but STDs were rarely discussed with partners or among close friends.

In line with modified labeling theory, it is possible that the mere act of talking about a stigmatized health condition may bring a person closer to a stigmatized designation. Expecting or fearing rejection from talking about a taboo topic may cause some people to avoid the topic altogether. This relates to stigma management communication's stigma-reduction strategy of secrecy (Meisenbach, 2010). In addition, discussing a stigmatized, or taboo, topic can be uncomfortable either because of societal or personal values. Certainly, there are norms related to sharing and hiding information about STDs that may affect whether someone feels comfortable talking about STDs. According to Cates (2008), the prevailing norm in the United States is that sex is a relatively taboo topic. Society is both permissive about sexual activity and restrictive about discussing safe sex and STDs. Parents are reluctant to talk to their children, healthcare providers often neglect to talk about STDs in routine exams, and the restraints on sex education in public schools further highlight society's reluctance to be candid about sex (Cates, 2008).

It follows, then, that the more people perceive an issue as stigmatized, the less likely they would be to talk about the issue both privately (i.e., with family, friends, and healthcare providers) and publicly (i.e., on social media). However, it is possible that people may feel comfortable talking about a stigmatized issue if they know that others in their social network are also comfortable talking about the issue. Here, the strategy is to withdraw. People surround themselves with

peers that either accept the person despite the stigma or reject the stigma (Smith & Baker, 2012). This usually results in shrinking the stigmatized person's social network. Smaller networks also make it easier to maintain secrecy. In the face of potential stigmatization, people may restrict their social network by either reducing their general activity in social groups, or by only including those that are likely to be supportive (Smith & Baker, 2012).

Health Talk, Stigmas, and Social Media

Social media, as with many other Internet-based platforms, allows individual users to freely interact with one another and with a range of formal and informal social actors, such as traditional news organizations, governments and health professionals. According to a 2012 report by the Pew Internet and American Life Project (2013), 63% of U.S. adults look online for health information. Previous reports (Pew Internet and American Life Project, 2009) showed that 41% consulted user-generated content, through news groups, websites or blogs. The past decade has witnessed a growth of academic and professional interest in the use of the Internet and social media in particular in health care. For illustration, Vance, Howe, and Dellavalle (2009) examined the pros and cons of using social media as sources of health information for teens and young adults. Greene, Choudhry, Kilabuk, and Shrank (2011) studied how patients with diabetes use Facebook as a new source of knowledge, support, and engagement.

However, social media have not only expanded the availability of and access to public health information, they also appear to change the way medical information is disseminated and obtained (Villagran, 2011). Health care professionals are traditionally considered the originators of health information, but social media have expanded the source of health messages, including but not limited to doctors, nurses, journalists, friends and family, celebrities, patient communities, traditional and online media, and government agencies.

In examining health conversations about issues associated with social stigmas, anonymity is a key characteristic of the online interaction. Anonymity affords some protection against bias and stereotypes, as people can hide behind false identities. Furthermore, individuals can choose to interact with some people, and not others, about a health condition they have, by joining discussions focused on a given health topic. Early forms of online interactions, such as Newsgroups, facilitated discussions of stigmatized illnesses with their topic-focused, anonymous structure (Marx, 1999). More recently, Rains (2014) examined the implications of anonymity for stigma and self-disclosure in the context of health blogging (where bloggers can choose strategically to either conceal or reveal their identity). Consistent with theorizing about anonymous communication, Rains found that the more people felt embarrassed about an illness, the more likely they were to seek out anonymity. Moreover, anonymity moderated the relation between illness-related embarrassment and self-disclosure. Rains asserts that at least some degree of anonymity may have made it possible for health

bloggers to acknowledge stigma surrounding a topic but to keep that from disrupting their online interactions.

Twitter, the micro-blogging social media platform, is very different from earlier platforms for online interactions. First, as with other popular social media sites such as Facebook, social interaction takes place with the same group of people, across issues and topics. Even if users discuss niche topics (e.g., through hashtags on Twitter or groups on Facebook), their interactions with those groups are typically visible to the rest of their social network. Second, connections on social networking sites, including Facebook and Twitter, are often based on existing offline relationships (Ellison, Steinfield, & Lampe, 2007). We are expected to be truthful about our real identity, reducing anonymity. Third, while Twitter supports private messaging among users, by default messages are public. Twitter, in this respect, is fundamentally different than Facebook, where posted messages are typically private and primarily restricted only to one's Facebook friends.

These differences between earlier online discussion forums and Twitter are important to recognize when examining the online discussion about issues with stigmas. Indeed, discussions of stigmatized illnesses on Twitter and Facebook may be more similar to face-to-face interactions than prior discussion forums that were topic-oriented, semi-private, and anonymous. If this is the case, the theories outlined in the prior section suggest that the effects of stigmas on social conversations and interactions outside the Internet will also manifest on Twitter.

In summary, prior literature has provided theoretical arguments that suggest that stigmatized illnesses will be discussed less in face-to-face conversations and non-anonymous, public settings such as Twitter. However, there is a dearth of empirical evidence that directly supports these arguments, or provides context as to the magnitude of the effects. This study aims to address these limitations by addressing the 3 hypotheses outlined below. The first two hypotheses are addressed in Study 1, while the final hypothesis is addressed in Study 2.

Hypotheses

We proposed the following hypotheses:

- Hypothesis 1: Greater perceived stigma regarding STDs will be negatively associated with self-reported conversations with a sexual partner about their STD status.
- Hypothesis 2: Greater perceived stigma regarding STDs will be negatively associated with self-reported conversations with peers about STD testing.
- Hypothesis 3: Those illnesses that are relatively more stigmatized will be associated with less public posting online, all else being equal.

Study 1

Study 1 focused on testing the effect of stigma on conversations at the individual level with a group of participants who

was asked about perceived stigma, interactions with a partner, and conversations with others. Specifically, the study focused on the topic of getting tested for STDs amongst a population of sexually active undergraduates.

Method

Participants and Procedure

Data for this study were collected in 2008 in a Midwestern U.S. city, and the study was approved by the institutional review board at the university. The measures used in this study were a subset of a larger survey on college students' beliefs about getting tested for STDs (Boudewyns & Paquin, 2011). Only measures pertinent to this investigation are reported here.

Participants ($N = 138$) were recruited from an introductory journalism course. Men represented a smaller proportion of the sample ($n = 41$, 30%) than did women ($n = 97$, 70%), reflecting the ratio of men to women enrolled in the department at the time the study was conducted. The respondent's ages ranged from 18 to 26 years ($M = 20.25$, $SD = 1.34$). The majority of respondents were Caucasian (87%), followed by Asian (8%), other (2.2%), Hispanic (1.4%), and African American (1.4%).

All participants received course credit for their involvement in the study. Participants that signed up for the study completed an online survey that took approximately 30 minutes to complete. Participants were instructed that they could skip any questions that they did not wish to answer. Participants were instructed that the topic of the survey was getting tested for STDs.

Measures

Stigma

Stigma was measured using nine items adapted from Fortenberry and colleagues (2002). Example questions include the following: (a) "Most people I know think that getting tested for STDs is a sign of weak character," (b) "I would feel dirty if a doctor tested me for STDs," and (c) "My getting tested for a STDs would make people think I have poor morals." Response were reported on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The mean value of the four items was used in the analysis ($\alpha = .89$; $M = 2.28$, $SD = 1.11$), with high scores reflecting stronger perceptions of stigma.

Interactions With a Partner

Partner interaction was measured with one item: "Have you asked your current sexual partner(s) about his/her STD status (i.e., if they have tested negative for STDs)?" Participants responded either *yes* (62%) or *no* (38%).

Conversations With Others

Levels of social interaction was measured with two items on scales ranging from 1 (*never*) to 5 (*often*). The two items asked how often people in the participants' environment offered them information or support aids with respect to getting tested for STDs, and discussed getting tested for STDs.

The mean value of the two items was used in the analysis ($\alpha = .54$; $M = 1.83$, $SD = 0.74$), with high scores reflecting more social interaction with peers.

Control Variables

In addition to the aforementioned psychological variables, basic demographic information including age and gender were measured. These variables were selected to control for potential demographic differences in STD testing.

Analysis

We analyzed data using a combination of bivariate correlations, ordinary least squares regression, and logistic regression. We used ordinary least squares regression to examine the effects of stigma on social interactions, controlling for demographic variables (age and gender). The analysis proceeded in two steps. Demographic variables were entered in Step 1, and stigma was entered in Step 2. The dependent variable was the social interaction index. Logistic regression (with 95% confidence intervals for each odds ratio) was used in conducting statistical analysis for the partner interaction variable. As with the previous analysis, demographic variables were entered in Step 1 and stigma was entered in Step 2. Evidence for Hypotheses 1 and 2 lies at the second step of the equation in the respective regression analyses.

Results

Table 1 presents zero-order correlations between measured variables. As anticipated, these correlations offer general support for Hypothesis 1 and 2. Stigma exhibited significant negative relations with both conversation variables: Stigma and partner interaction were significantly negatively correlated, $r(113) = -.22$, $p < .05$, two-tailed; and stigma and level of social interaction were significantly negatively correlated, $r(135) = -.21$, $p < .05$, two-tailed. As hypothesized, as perceptions of stigma increase, conversations (with both sexual partners and peers) on the topic of STDs decrease.

Table 2 shows the results of the logistic regression. Entering age and gender in Step 1 did not significantly improve model fit compared with the null model. However, the overall model (after adding stigma in the second step) was significant, $-2LL = 140.37$, Nagelkerke's $R^2 = .11$, $\chi^2(3, 113) = 9.772$, $p = .02$. Stigma was the only significant predictor of partner interaction ($OR = 0.66$, $p = .04$). As predicted,

Table 1. Zero-order correlations for measured variables

	1	2	3	4	5
1. Stigma	—				
2. Partner interaction	-.22*	—			
3. Social interaction	-.21*	.06	—		
4. Gender	-.19*	.17	.18*	—	
5. Age	-.04	.13	-.17	-.09	—

Note. Gender was coded as 0 (*male*) and 1 (*female*).

* $p < .05$.

Table 2. Hierarchical logistic regression analysis predicting partner interaction ($N = 113$)

	β	Wald χ^2	p	OR	95% CI
Step 1					
Female (vs. male)	.26	1.906	.17	1.85	[0.77, 4.40]
Age (in years)	.61	2.607	.11	1.30	[0.95, 1.80]
Step 2					
Stigma	-.41	4.084	.04	0.66	[0.44, 0.99]

Note. All statistics are from the final model. Step 1: $\chi^2(2, 113) = 5.609$, $p = .06$; Step 2: $\Delta\chi^2(1, 113) = 4.163$, $p = .04$.

Table 3. Hierarchical multiple regression analysis predicting social interactions ($N = 135$)

Step and variable	β	B	SE	t	R^2	ΔR^2	ΔF
Step 1							
Age	-.15	-.08	.05	-1.806	.06	.06	3.964*
Gender	.17	.27	.14	1.978 [†]			
Step 2							
Age	-.16	-.09	.05	-1.922	.09	.03	4.802*
Gender	.13	.22	.14	1.552			
Stigma	-.19	-.14	.06	-2.191*			

Note. Gender was coded as 0 (*male*) and 1 (*female*).
* $p < .05$. [†] $p = .05$.

stigma was shown to significantly decrease partner interaction in the multivariate model. All else being equal, every one unit increase in stigma increased the odds of participants not talking about STD status with their sexual partners by a factor of 1.52. Thus, results support Hypothesis 1.

Table 3 shows the results of the hierarchical regression analysis. The final model was significant, $F(3, 134) = 4.320$, $p = .006$, $R^2 = .09$. As predicted, greater perceptions of stigma was related to less social interactions ($\beta = -.19$, $p = .03$). Gender and age were not significant predictors of partner interaction in either step. These results support Hypothesis 2.

Study 2

Study 2 examined whether health conditions, in the aggregate, were less likely to generate social media activity as a function of current stigmatization. The goal of this study was to test whether level of stigma associated with a health condition can predict the volume of social media conversation about that condition.

Method

Procedure and Sample

Between October 24 and September 25, 2012, we captured the number of tweets, Google searches, and funding levels for 13 diseases, 6 of which were classified as stigmatized illnesses. Low-stigma illnesses included *bronchitis*, *high blood pressure*, *hypertension*, *pneumonia*, *breast cancer*, *colon*

cancer, and *prostate cancer*. High-stigma illnesses included the following STDs: *chlamydia*, *gonorrhea*, *HIV*, *HPV*, *herpes*, and *syphilis*.

Measures

Recent National Institutes of Health Funding

Gillum and colleagues (2011) reported recent National Institutes of Health (NIH) funding levels for a series of prominent diseases. We included the proportion of total funding allocated to the specific disease in question, or in some cases, the disease class where a perfect match did not exist. This control measure helps capture the amount of advocacy associated with an illness. For example, HIV and breast cancer, two diseases with high amounts of advocacy, have much higher scores than the other illnesses.

Tweets

The total number of tweets between October 24 and September 25, 2012, was captured using Twitter searches of the disease name. Comparisons to data captured in June and July showed that the September numbers were not unexpectedly high or low. This resulted in 259,758 Twitter posts.

Stigma

All authors assessed each of the 13 diseases as having a high or low level of stigma. A dummy indicator of stigma was created for inclusion in the final model, where 0 indicated low stigma.

Google Search Tendency

Google Trends was used to identify how often each illness name was searched for on Google for October 24 through September 25, 2012. Absolute numbers were not provided by Google, but ratios were available. We used *hypertension* as a baseline because it is a popular health topic with a stable rate of searches during our month of data collection. This control measure helps capture the popularity of an illness from a user's perspective irrespective of stigma (given that Google searches are private).

Analysis

To reduce the likelihood of spuriousness in any discovered stigma–Twitter activity association, we included a number of other predictors in the final model, as outlined below. We predicted total number of tweets as a function of three variables: recent NIH funding, stigma, and Google search tendency. We used ordinary least squares regression and entered each of the three predictors into the final model.

Results

Table 4 summarizes relevant descriptive data for the 13 medical conditions. Table 5 highlights the results of the regression analysis. Despite the low number of illnesses analyzed ($n = 13$), the effect of stigma on number of tweets was significant ($\beta = -.41$, $p = .04$) after controlling for the amount of funding and number of Google searches. In line with Hypothesis 3, the high-stigma group had less public

Table 4. Total number of tweets, Google search strategy, recent NIH funding, and stigma designation (low, high) for 13 illnesses

Keyword	Tweets	Google search tendency ^a	Recent NIH funding ^b
Low stigma			
Breast cancer	74,864	3.5	0.06
Bronchitis	4,309	1.0	0.01
Colon cancer	4,010	0.8	0.02
High blood pressure	10,640	1.6	0.03
Hypertension	6,656	1.0	0.03
Pneumonia	6,038	1.9	0.03
Prostate cancer	13,199	0.8	0.03
High stigma			
Chlamydia	6,515	1.2	0.02
Gonorrhea	3,008	0.6	0.02
Herpes	31,001	4.2	0.02
HIV	89,548	3.1	0.24
HPV	5,511	1.6	0.02
Syphilis	4,459	0.7	0.02

Note. NIH = National Institutes of Health.

^aUses the term *hypertension* as a baseline (e.g., *chlamydia* is searched for 1.2 times as often as *hypertension*).

^bProportion of research funding for disease category in 2006.

Table 5. Regression analysis predicting tweet total ($n = 12$)

Predictor	β (t)	R^2
NIH funding	.73 (4.0)**	.77
Google search ratio	.27 (1.5)	
Stigma	-.41 (-2.5)*	
Constant	(7.5)**	

Note. Coefficient values are standardized regression coefficients with t values in parentheses. High stigma = 1. NIH = National Institutes of Health.

* $p < .05$. ** $p < .01$.

posting online than did the low-stigma group, controlling for all other predictors.

Discussion

The Internet allows individuals, within the privacy of their homes and under the shield of online anonymity, to freely interact, exchange and consume information about medical conditions that are socially stigmatized (Cline & Haynes, 2001). At the same time, literature suggests that interpersonal interaction is often governed by taboo and fears of stigmatization (Brown & Levinson, 1987; Cegala, 1981; Link et al, 1991; Meisenbach, 2010). Furthermore, current popular social spaces, such as Facebook and Twitter, somewhat resemble face-to-face interactions, as users often know their social networking peers outside the realm of the Internet and anonymity is less prevalent (Ellison, Steinfield, & Lampe, 2007). This study shed light on interpersonal sharing of information related to stigmatized illnesses in both online and offline

settings. Not only are our findings consistent with previously cited theories (e.g., stigma management communication and modified labeling theory) the results also suggest that those theories may apply more broadly to online contexts that are nonanonymous and public.

In addition, findings indicated similarity between face-to-face and Twitter interactions. Surveying individuals, we learned that those who perceived STDs as stigmatized were less likely to report talking with their sexual partners about the topic or engaging with others in a conversation about it. Examining Twitter volume of activity, similar patterns emerged: More stigmatized issues were talked about less than issues with less social stigmas. These findings highlight changes that have occurred in the nature of online social interaction around stigmatized illnesses. Early studies of newsgroups and discussion forums emphasized the ways in which anonymity (or at least partial anonymity using pseudonyms) promoted the open discussion of stigmatized topics (Cline & Haynes, 2001). Our study, in contrast, suggests that the lack of interpersonal exchanges around stigmatized illnesses that we observe offline are mirrored in online spaces such as Twitter, where our online and offline identities are one and the same.

A closer examination of the control variables used in Study 2 yields some interesting insights. The NIH funding levels were strong, significant predictors ($\beta = .73$) of the volume of tweets for the illnesses, even when taking out the effect of topic popularity (as measured by number of Google searches on a topic). This may be because some topics, such as breast cancer and HIV, have strong advocacy groups that likely help generate NIH funding, as well as an increased social media presence. HIV is particularly interesting, because it is discussed heavily on Twitter, yet it still has social stigmas associated with it as outlined in the literature review section. In contrast, most other STDs have few patient-based constituent groups who advocate publicly or lobby for STD-related programs. Eng and Butler (1997) argued that this is because having an STD is still seen as socially unacceptable, in contrast with cancer and other common diseases, which have advocacy groups and successfully lobby for additional funding for their causes. So, although there are consumer-based political lobbies and support groups for almost every disease and health problem, “there are few individuals who are willing to admit publicly to having an STD” (Eng & Butler, 1997, p. 86).

Advocacy groups can reduce stigma and “structural discrimination” by means of monitoring, challenging, participating, and influencing the formation of policies and programs (Grosser & Vine, 1991). It is possible that the decades of active advocacy for HIV by health, political, and gay, lesbian, bisexual, and transgender-related organizations has made it acceptable to talk about HIV in public without the assumption that those discussing the disease have the disease. It is also possible that the Twitter conversation is primarily conducted by advocacy organizations and their supporters, as opposed to the general public.

Computer-mediated social interactions offer new possibilities for disseminating information about stigmatized illnesses.

For example, Hansen and Johnson (2012) proposed a strategy called “veiled viral marketing” that combined the trust inherent in interpersonal relationships with the anonymity that is often needed to share information about stigmatized illnesses. Specifically, their Facebook application allowed a person to disseminate information about a stigmatized illness (e.g., HPV) anonymously to their social network contacts. Recipients were told that the information being referred was from a friend who wished to remain anonymous. They found that anonymity encouraged sharing and that recipients were more likely to accept veiled invitations to download the application than unveiled invitations, with nearly half of those receiving veiled invitations accepting them. Other novel approaches may not only help disseminate information about stigmatized illnesses, but also encourage people to break down stigmas. For example, systems may allow people to show support for a stigmatized illness (e.g., chlamydia) in private initially, but once a sufficient number of their friends also show support for the illness they all become known to one another.

Technology interventions also can facilitate conversations about stigmatized illnesses with health professionals. For example, Labacher and Mitchel (2003) cited perceived social stigma as one reason young adults might prefer computer-mediated communication to face-to-face interactions when discussing sensitive topics with doctors and nurses. However, they found that young adults preferred to receive their STI test results, postresults counseling, and STI-related information face to face rather than through computers or mobile phones. Although outside of the scope of the current study, better understanding how stigma can be reduced through various strategies has both theoretical and practical importance and offers a promising direction for future research (for a review of strategies to reduce public and private stigma, see Corrigan & Kosyluk, 2013, and Mittal, Sullivan, Chekuri, Allee, & Corrigan, 2012).

Limitations and Future Research

Although the two studies presented in this paper addressed the three key hypotheses, evidence here is just the beginning of what future work in this area could yield. Both studies had relatively low sample sizes, though they were sufficient to find significant results. Some readers might also note generalizability limits on these results. Future work could expand the demographic range of the Study 1 survey as well as the range of illnesses and keywords used in Study 2.

This article focused on stigma as a factor that shapes interpersonal interactions. What was not explored was the creation, perpetuation, and maintenance of stigma through interpersonal communication. More research is needed to explore how interpersonal interactions can potentially engender the formation of perceived stigma or shape subsequent information sharing behaviors. For example, the model of stigma communication (Smith, 2007) describes four types of communication content that are likely to “encourage the activation of stereotypes, induce affective reactions (disgust, anger, and fear), and associated action

tendencies, which all foster the formation of stigma attitudes” (p. 523). On the basis of this theorizing, future research should explore not only whether information is shared, but what information is shared (e.g., Kang & An, 2013). It is possible that perceptions of stigma surrounding a health topic are actually provoked, perhaps even inadvertently, by health messages bearing the attributes explicated by Smith. In sum, there is a need for research that examines the potential reciprocal relations between the different manifestations of stigma. For example, future studies should explore the exact nature of the conversations occurring on social media channels about stigmatized illnesses. Are people talking about stigmatized illnesses in jest? Are they sharing news stories about them? Are they talking to friends about them? Are they discussing health or social aspects of them? Conducting a content analysis to explore these questions was beyond the scope of the current research; however, such an analysis would be an important next step in this line of work.

In this study, we found Twitter to be a space for individuals to express not only supportive and informational content, but also derogatory tweets, which can possibly enhance the stigma surrounding the already stigmatized medical conditions. Chlamydia, gonorrhea, herpes, and syphilis were frequently used in manners that are either derogatory to individuals who have that condition (e.g., “You did by calling me a whore with herpes!”; “I don’t think a porn star is for me anymore”; “I want a pornstar girlfriend just minus the syphilis;” “If you talking about having sex with me and you don’t even know my last name, I immediately assume you have gonorrhea. I’m done.”) or as a wish for negative consequences (e.g., “Whoever stole my iPod I hope you contract super gonorrhea;” “I swear on my red flag she’s a b[****]. . . I loved her but I’m starting to hate her and what she stands on . . . Hope she c[a]tch gonorrhea”). It is interesting that HIV and HPV were rarely used in a derogatory or stigmatized ways, which may be related to the advocacy campaigns and the media coverage.

In addition to the content itself (e.g., tweet messages), future studies also may look at structural properties of the social networks discussing stigmatized illnesses (for a discussion of this point, see Southwell, 2013). For example, it may be that networks of people discussing highly stigmatized conditions are denser than networks of people discussing nonstigmatized illnesses. This would suggest that rather than freely spreading from group to group, communication regarding stigmatized conditions tends to remain insular. For example, those willing to talk about HIV may be advocates and their strong supporters, not the general public. Smith and Baker (2012) showed the potential value of using a social network analysis approach to better understand HIV/AIDS within a community setting. Similar approaches could be applied to online network data generated on social media sites such as Twitter.

These results suggest that online versus face-to-face interactions are not always as different as people think. Southwell (2013) noted that “information sharing behaviors differ in at least two theoretically important ways: the extent of physical

interaction permitted or encouraged and the affordance of social presence” (p. 27). With respect to the latter, it is conceivable that the online environment might provide a sense of anonymity that, if anything, should facilitate discussion of stigmatized disease. From that standpoint, it is even more noteworthy that we found what we did. Future research should explore other online communications with differing levels of social presence, or where anonymity is more or less likely. As mentioned, although Twitter affords the opportunity for anonymity, people are often more truthful about their identity as social connections are often based on existing offline. Therefore, exploring other online platforms where it is more appropriate for one’s identity to be concealed might uncover differences in interpersonal exchanges on stigmatized topics. Recent security breaches of confidential online information may also lead to a reduced desire to share information about stigmatized illnesses, even when the site assures anonymity or confidentiality.

Researchers also should focus on stigmatized illnesses beyond STDs and even stigmatized conditions beyond health. For example, many mental health conditions have high stigmatization associated with them (Markowitz, 1998). It may be that STDs and mental health are engaged differently on social media, or it may be that the patterns of interpersonal communication and social media usage mirror one another.

Aside from these considerations, we also should acknowledge that the absolute volume or amount of conversation or exchanges related to general categories varies and might constrain the ability to see the effect of stigma under some circumstances. That consideration might help to explain why some recent studies on stigma and health information sharing have not found an effect of stigma. For example, Boiarsky and colleagues (2013) examined whether the topic of a blog (or online magazine story) would affect participants’ intentions to communicate about preventive health behaviors and found that whether the story was about a stigmatized health condition (i.e., HPV) as compared to a nonstigmatized health condition (i.e., skin cancer) had no effect on communication intentions. In such studies, if people’s general inclination to talk with others about preventive health behaviors overall is low, whether or not they are considering a stigmatized disease might matter less given that there would be less conversation variation for which to account.

Conclusion

Social media sites have become common spaces for individuals to interact and exchange information in the United States and elsewhere and yet there is reason to believe that some enduring aspects of human interaction shape exchanges offline and online. Our two studies highlight important considerations as to how perceptions of stigma constrain information sharing in general and suggest that public health officials and communication professionals should heed stigma in forecasting possibilities for peer-to-peer information spread. In our two studies, there are some consistent situational characteristics that suggest public display guidelines affect people in multiple spaces. Lack of

anonymity and interpersonal familiarity among users often characterize both Twitter and face-to-face interactions, for example, and may have resulted in similar findings in these two social environments. Our first study found evidence that those who perceived STDs as stigmatized were less likely to report talking with their sexual partners or others about the topic. Study 2 found that discussions of stigmatized STDs were less prevalent on social media channels than nonstigmatized illnesses. In light of our results, future intervention developers might fruitfully seek to design computer-mediated interventions to promote the sharing of information by lessening the burdens of stigma. Absolute reduction in stigma perceptions might prove difficult in the short term, but strategies to provide greater anonymity for exchange might help to loosen the ties currently constraining discourse on important health conditions.

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