

***NO ESTAS SOLA: SOCIAL COHESION, HIV STIGMA, AND HIV/STI PREVENTION
AMONG FEMALE SEX WORKERS LIVING WITH HIV IN SANTO DOMINGO***

by

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Abstract

Background: Research on HIV/STI prevention interventions for female sex workers (FSW) living with HIV is limited, with almost no studies that have analyzed the role of social cohesion as a potential strategy to prevent HIV re-infection, STI infection, and onward HIV transmission in this specific population.

Methods: This study examined whether social cohesion influences HIV/STI prevention behaviors among FSW living with HIV in the Dominican Republic and, if so, what may explain this relationship. We used an explanatory sequential mixed methods design with quantitative data from the cross-sectional endline survey of *Abriendo Puertas* (opening doors) and qualitative data from a group of 34 FSW. *Abriendo Puertas* was a multi-level intervention for FSW living with HIV in Santo Domingo, Dominican Republic (DR).

Results: Manuscript one found that social cohesion was associated with CCU with clients and STI prevalence among the study participants. Manuscript two found that social cohesion may reduce the negative impact of stigma on CCU with clients. Additionally, results indicate the limitations of current measurement tools in assessing layered stigma related to HIV outcomes among sex workers. Finally, manuscript 3 indicated that social cohesion provided a safe psychosocial space for de-stigmatized narratives to emerge and be practiced, leading to the reconstruction of identity in positive terms and the uptake of positive health behaviors.

Conclusions: Promoting social cohesion may be an important HIV/STI prevention strategy among FSW living with HIV that should be included in multi-level HIV/STI prevention, treatment, and care interventions. Findings also indicate the importance of analyzing social cohesion and various HIV/STI prevention behaviors and outcomes from

multiple perspectives to develop a more holistic understanding of the social dynamics underlying health behaviors.

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Dedication

*To women who one day awaken and find themselves discriminated, marginalized, treated
unequally,
Honoring their courage and their efforts to fight for liberation,
In solidarity with their reclaiming of their right to be
To them, with love.*

*A las mujeres que un día despiertan y se encuentran discriminadas, marginalizadas, tratadas con
desigualdad,
En apreciación a su valor y a sus esfuerzos de lucha para su liberación,
En solidaridad con su reconquista de su derecho de ser
A ellas, con amor.*

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Introduction

Epidemiological information indicates that on a global scale female sex workers (FSW) have a higher burden of HIV than females of reproductive age (15-49 years) overall. A recent meta-analysis revealed that FSW have 13.5 higher odds of having HIV than adult women in the general population (Baral et al., 2012). In Latin America, HIV prevalence among FSW is 6.1% compared to a background prevalence of 0.38% among females of reproductive age (15-49 years) (Baral et al., 2012). Even though sex workers are a high risk group, according to a 2009 UNAIDS report, to date there have not been sufficient resources or attention devoted to HIV and sex work, with less than 1% of global funding for HIV prevention being spent on HIV and sex work (UNAIDS, 2009). Indeed, it is telling that out of 186 UN member states reporting HIV data, only 58 countries report surveillance data on HIV and sex work (UNAIDS, 2012b).

The Dominican Republic is not an exception to these trends. While HIV prevalence stabilized in the mid-nineties and decreased since 2001, the most recent estimates indicate that the median national prevalence among FSW (4.4%) continues to be significantly higher than among the general population (0.7%) (Conavihsida, 2012; UNAIDS, 2015b).

The UNAIDS 2012 Global Report highlights the importance of targeted programs for sex workers, including those living with HIV, as a critical element of combination prevention (UNAIDS, 2012a). In this dissertation data from one such intervention, *Abriendo Puertas*, is used to examine if social cohesion is associated with HIV preventions

behaviors and, if so, the pathways of this association. The focus on social cohesion is based on evidence from community mobilization interventions which have successfully promoted consistent condom use (CCU) among FSW without regard to their HIV status (Armstrong et al., 2013; Jana, Basu, Rotheram-Borus, & Newman, 2004; D. Kerrigan, Telles, Torres, Overs, & Castle, 2008). In these interventions social cohesion was an essential element to the success of the intervention. The added layer of stigma and discrimination faced by FSW living with HIV (because of their HIV status) adds a level of complexity to the formation of social cohesion and calls into question whether social cohesion might be possible to achieve with this group and, if so, whether it would positively influence consistent condom use (CCU). This dissertation seeks to answer this question and explore pathways that may explain the association found between social cohesion and HIV/STI prevention behaviors.

HIV in the Dominican Republic

At 1%, adult HIV prevalence in the Caribbean is the second region with the highest HIV prevalence in the World after Sub-Saharan Africa (UNAIDS, 2012b). According to UNAIDS unprotected heterosexual sex—especially paid sex—is the main mode of HIV transmission in the region (UNAIDS, 2012b). The largest number of PLHIV in the region (approximately 75% of the total of 226,900) live in Hispaniola island, which is home to Haiti and the Dominican Republic (UNAIDS, 2010). UNAIDS estimates that in 2014 there were approximately 69,000 (52,000-100,000) PLHIV in the Dominican Republic and there were 3,100 deaths attributable to AIDS (UNAIDS, 2015a).

The first HIV case in the Dominican Republic was documented in 1983 and by 1990 HIV prevalence had increased to 0.4% (UNAIDS, 2012b). The increasing trend continued through the late nineties, when prevalence stabilized at 1%, and it started to decline in 2004 decreasing to 0.7% in 2012 (UNAIDS, 2012b). The most recent estimate by the UNAIDS indicates that the estimated prevalence in 2014 was 1%, indicating a slight increase (UNAIDS, 2015a). According to UNAIDS, the number of newly reported infections in the DR decreased by more than 50% from 2001 until 2011, placing the DR among 25 countries which experienced a significant decline in the incidence of HIV infections among adults (15-49 years) during that decade (UNAIDS, 2012b). Current prevalence is lower than the expected estimates based on mathematical modeling from the early 1990s which indicated that the DR was headed towards a generalized HIV epidemic (D. L. Kerrigan et al., 2012). In a 2009 study, researchers concluded that the decrease in HIV prevalence was the result of “increased condom use, especially for sex work, and partner reduction in men” (pp. S52) (Halperin, de Moya, Perez-Then, Pappas, & Garcia Calleja, 2009), pointing to the success of HIV prevention efforts in the DR. Self-reported condom use at last sex with non-spouse/non-cohabitating partners increased from 51% to 68% among men and from 25% to 40% among women, as reported by the 2002 and the 2007 DHS surveys (Halperin et al., 2009). Similarly, reported condom use at last commercial sex act increased from 75% reported in the 2002 DHS survey to 83% in the 2007 DHS survey (Halperin et al., 2009) and the percentage of men who reported having two or more sexual partners in the previous 12 months decreased from 30% to 24% (CEDESM & MACRO, 2002, 2007). In the case of women the percentage

reporting multiple partnerships in the previous 12 months remained low at 3% (CEDESM & MACRO, 2002, 2007).

FSW in the DR bear a large burden of the HIV epidemic. The most recent bio-behavioral surveillance survey, conducted in 2012 in five provinces, revealed that the HIV prevalence among FSW varies widely across provinces, ranging from 1.7% in Santo Domingo (Center), to 6.3% in La Alta Gracia (East) (Conavihsida, 2012). Prevalence of sexually transmitted infections (STIs) among FSW in the DR is also high, with a median national chlamydia prevalence of 20.1%, 7.8% for trichomoniasis, and 6.2% for gonorrhea based on the most recent bio-behavioral survey (Conavihsida, 2012).

Female sex workers in the DR: general profile and typology

Based on country data UNAIDS reported in 2002 that there were approximately 42,000 FSW (range from 14,000 to 70,000) in the DR, comprising 1.8% of the adult female population (UNAIDS, 2002). More recent estimates indicate that currently there are approximately 70,000 FSW in the DR (D. L. Kerrigan et al., 2012). While it is hard to determine (based on these estimates) if the number of sex workers has increased in the last decade, qualitative evidence indicates that since the mid-nineties the DR has become an international sex tourism destination (Brennan, 2004). This coupled with continued economic and gender inequality and lack of substantive and well-paid job opportunities for women may have resulted in an increase of the number of FSW in the DR.

The sex industry primarily caters to two types of clients: Dominican men and foreign clients (Cabezas, 2009). The market is segmented across nationalities given that foreign clients tend to pay more than local clients. The segment catering to Dominican men is highly stratified and it primarily includes sex work in direct sex establishments such as brothels (*casas de citas*), bars, and massage parlors as well as “dating” services (D. L. Kerrigan et al., 2012). The majority of FSW are under 30, from rural areas and with less than eight years of schooling (Cabezas, 2009).

Direct sex work establishments such as brothels and *casas de citas*, where women sell sexual services, have become less common (D. L. Kerrigan et al., 2012). Most establishment-based FSW work in indirect establishments such as discos, pubs and restaurants where they sell sexual services in addition to performing other work such as waitressing or performing as exotic dancers (D. L. Kerrigan et al., 2012). The majority of sex workers (60%) work independently in public places such as parks, beaches, and streets (D. L. Kerrigan et al., 2012). Among these women, those who work the streets constitute the “lowest echelons of the sex industry” (pp. 98). These women are of the lowest social status, less literate, poorer, and less attractive than their counterparts (Cabezas, 2009). Many of them are Haitian and highly vulnerable because they are often undocumented migrants with little protection under the law (Cabezas, 2009).

The women working with foreign clients are most likely the best paid in the industry as their clients have more money than working-class Dominican men. Additionally, most women working with tourists work on a freelance basis and have more control over their

earnings and working conditions (Brennan, 2004). Some of these FSW try to improve their livelihoods by procuring relationships that will provide remittances after the tourist has left the DR (Brennan, 2004; Cabezas, 2009). Some FSW have ongoing relationships with a few men abroad who send them remittances and also with local men who are their regular clients or their boyfriends.

Qualitative and quantitative evidence indicates that FSW tend to be women with low levels of education, limited economic opportunity, and at least one child (D. L. Kerrigan et al., 2012). They are often the main breadwinners in their households and their husbands, boyfriends or fathers of their children do not contribute much, if anything, to the household economy (L. R. Murray, Lippman, Donini, & Kerrigan, 2010). Indeed the DHS survey revealed that the total number of female headed households in the DR increased from 28% in 2002 to 35% in 2007 (CEDESM & MACRO, 2002, 2007). The fact that an average of 74% of FSW from a recent study in four provinces are separated, widowed or divorced (COPRESIDA, 2009) and that most of them have at least one child (D. L. Kerrigan et al., 2012) may indicate that a large proportion of FSW are heads of households. Ethnographic research indicates that many FSW enter the sex trade due to lack of economic and advancements opportunities and their need to provide for themselves and their families (Brennan, 2004).

Given their financial responsibilities and lack of economic opportunity, FSW living with HIV are likely to continue working in the sex industry after they are diagnosed with HIV. Furthermore, in face of widespread structural discrimination (Kennedy et al., 2013) some

women who are diagnosed with HIV may start sex work after being diagnosed with HIV, finding sex work one of the few or maybe the only viable source of income.

Theoretical frameworks and conceptual development

Social cohesion in public health

The concept of social cohesion and its application in public health originated with the work of Emile Durkheim, one of the fathers of modern sociology (Collins, 1985). In his book *Suicide* Durkheim analyzed differences in suicide rates between Protestants and Catholics in various countries in Europe. He found that suicide was more prevalent in Protestant than Catholic societies, which according to Durkheim exhibited weaker integration or cohesion (Durkheim, 1951). Thus, Durkheim argued that “social facts” can explain societal patterns related to suicide, which had been primarily understood as an individual act. Durkheim’s work has served as the foundation to explore the effect of group dynamics and cohesion on health (L. Berkman, T. Glass, I. Brissette, & T. Seeman, 2000). The Durkheimian perspective on social integration has become very relevant in public health since the 1990s when researchers started focusing on “upstream” or sociological determinants of health (Berkmana, Glass, Brissette, & Seeman, 2000).

Social cohesion has been thoroughly explored in the sociology and social psychology literature with different authors providing slightly different definitions (J. Chan, To, & Chan, 2006). Sociologists tend to focus their analysis of social cohesion on studying the presence or absence of social bonds which constitute the very fabric of society.

Sociologists typically incorporate notions of solidarity, reciprocity and trust as well as

notions of equity and social inclusion into their analysis of social cohesion (J. Chan et al., 2006). Social psychologists, on the other hand, tend to consider social cohesion as a “characteristic and a process operating among small groups” (pp. 31) (Bruhn, 2009) rather than the bond that holds society together. Social psychologists typically analyze social cohesion as an objective and perceived attribute of a group that is based on each member’s self-reported closeness to others and their perceptions of their own standing in the group. The later depends on the individual’s sense of belonging and morale which are derived based on their group membership (J. Chan et al., 2006).

The study of social cohesion has expanded to other social sciences including psychology, criminology, political science, economics, and public health (Ichiro Kawachi & Lisa Berkman, 2000). Criminologists, for example, have focused on studying the absence or presence of harmful social conflict (violence, murder, delinquency, etc.) and its relation to social cohesion. In a well-known study in 21 cities in the United States (U.S.) in 1942, criminologists Clifford Shaw and Henry McKay analyzed the effect of social cohesion on criminal activity and concluded that cohesive communities were better able to control youth behaviors that could lead to criminal activity (Ichiro Kawachi & Lisa Berkman, 2000).

The analysis of social cohesion by social scientists from various disciplines indicates that social cohesion does not come to the field of public health in a vacuum but was preceded by a rich literature and strong interest. Social epidemiologists Ichiro Kawachi and Lisa Berkman define social cohesion as the “extent of connectedness and solidarity among

groups in a society” (Ichiro Kawachi & Lisa Berkman, 2000). In public health social cohesion is understood as a group characteristic that influences health at the individual and group levels and that is evidenced by the level of trust, reciprocity and solidarity in society (C. Muntaner, G. Oates, & J. Lynch, 2006). Researchers have primarily analyzed social cohesion as part of the social and environmental context that influences health risks and predisposing factors for disease (Bruhn, 2009). The concept is often included in eco-social models as part of the community or macro-level context influencing health. These models present the individual nested within levels (interpersonal, organizational, community, government) and social cohesion is considered an upstream or distal factor at the outer levels of the ecology influencing health (L. F. Berkman, T. Glass, I. Brissette, & T. E. Seeman, 2000).

Social cohesion and community-based HIV/STI prevention interventions with FSW

A substantive body of literature from various countries indicates that social cohesion is positively related to various health outcomes and behaviors. Social cohesion has been found to facilitate smoking cessation among a group of African American men in the USA (Reitzel et al., 2013), and be related to higher odds of coronary calcification among younger asymptomatic men in deprived neighborhoods with low neighborhood cohesion (Kim, Diez Roux, Kiefe, Kawachi, & Liu, 2010); improved self-reported physical and mental health among Hispanic and non-Hispanic residents in Phoenix, Arizona (Rios, Aiken, & Zautra, 2012); decreased frailty among older adults in Rotterdam (Cramm &

Nieboer, 2012); and mental health status among adults in the United Kingdom (Fone et al., 2007).

The literature assessing the relationship between social cohesion and HIV/STI prevention behaviors and outcomes is centered primarily around community mobilization interventions, particularly those targeting sex workers. Community mobilization interventions are a type of structural intervention (Blankenship, Friedman, Dworkin, & Mantell, 2006) that promote community participation in the intervention leading to changes in health outcomes and behaviors. Given the defining role and importance of community participation in this type of intervention, social cohesion has taken a central role as it facilitates participation.

A comparison of various community mobilization interventions that have succeeded (Galavotti et al., 2012; D. Kerrigan et al., 2006; S. A. Lippman et al., 2012) with a few that have failed (Asthana & Oostvogels, 1996; Campbell & Mzaidume, 2001) indicates that successful interventions have enjoyed a higher degree of participation and achieved more social cohesion among FSW than those that have failed. Indeed, some articles distinguish between *empowerment-based* and other community mobilization interventions for FSW with the former having higher degrees of FSW participation built into the intervention.

Empowerment-based interventions are defined as those that seek to *empower* FSW to address the social, political and economic marginalization that they have historically

faced (D. L. Kerrigan et al., 2014). “A community empowerment intervention seeks to effect community-wide change in health-related behaviors by organizing communities to *define* their health problems, to *identify* the determinants of those problems, and to *engage* in effective individual and collective action to change those determinants” (pp. 833) (Becker, Guenther-Grey, & Raj, 1998). This definition not only places participation but also social cohesion as essential elements of empowerment interventions since a sense of connectedness and solidarity are the foundation for FSW coming together to develop consensus on priorities and to take action. Indeed, empowerment-based interventions typically start from building social cohesion among FSW by providing them safe spaces to meet and discuss concerns (Evans & Lambert, 2008; D. Kerrigan et al., 2008). Empowerment-based interventions are underlined by the understanding that: sex work is work; sex workers have the right to identify and voice their priorities and challenges; and sex workers should have access to social, political and economic resources such as freedom of movement, health services, and education (Jana et al., 2004; Deanna L. Kerrigan, Fonner, Stromdahl, & Kennedy, 2013).

Social cohesion has been at the center of community empowerment-based interventions aiming to reduce HIV/STI prevalence among FSW (Deanna L. Kerrigan et al., 2013). The Sonagachi project, for example, actively promoted cohesion through helping FSW to build a sense of collective responsibility and a collective identity. Before the project was implemented (in the red-light district of Calcutta), FSW “lacked a sense of community,” and there was a steep competition among sex workers who considered each other as business competitors rather than cooperators (Mas de Xaxas et al., 2007). Lack of

cohesion resulted in little collective power to negotiate condom use as clients could engage somebody else's services if a FSW insisted on condom use (Mas de Xaxas et al., 2007). Qualitative evidence suggests that increased social cohesion among FSW helped to change prevailing norms around condom use by giving FSW the power to negotiate condom use without risking losing a client to another FSW (Mas de Xaxas et al., 2007) and it also led to increased collective and individual responsibility about safe sex practices (Jana et al., 2004). The experience with Sonagachi indicates that social cohesion can serve as a source of power to challenge oppressive social structures (such as gender inequity and norms around condom use).

The well-known Avahan project implemented in India also emphasized the creation of social cohesion among FSW. The project promoted active FSW participation in project activities as a way to develop identification and collectivization (Galavotti et al., 2012), which are constructs related to social cohesion. Finally, the Encontros program in Brazil promoted social cohesion among FSW through providing sex workers opportunities for dialogue about topics of interest such as discrimination, HIV/STI prevention, and sex work. Such opportunities were afforded through workshops to make soap, candles and chocolate, fashion design trainings, and theater sessions (S. A. Lippman et al., 2012). As indicated in the next section, quantitative assessments of Avahan and Encontros have revealed a positive effect of social cohesion and condom use.

Social cohesion and condom use

Various studies analyzing the relationship between social cohesion and consistent condom use (CCU) among FSW have revealed the existence of an association. A study analyzing a construct related to social cohesion, namely power with others, in the Avahan project found a significant association ($p < 0.001$) between condom use with clients and power with others (Blanchard et al., 2013). Researchers in this study defined power with others as a measure of collective identity and solidarity. As explained before, these two constructs are related to social cohesion. In another recent study in Swaziland, researchers found that social cohesion was associated with CCU in the last week (adjusted odds ratio [AOR] = 2.10, 95% confidence interval [CI]: 1.26-3.51) (Fonner et al., 2014). A study with data from an intervention implemented in Rio de Janeiro, Brazil, revealed that social cohesion was significantly associated with condom use after adjusting for age and people supported with income (AOR: 1.30 (1.02–1.66) (D. Kerrigan et al., 2008).

Some studies have analyzed the relationship between social cohesion and condom use in HIV/STI prevention interventions with FSW indirectly. Lippman et al. (2012), for example, found an association between social cohesion and participation in the Encontros program and between condom use and participation in the Encontros program (S. A. Lippman et al., 2012). While the existence of a direct association between social cohesion and condom use was not discussed, these results point to the potential existence of an association between condom use and social cohesion. A recent evaluation of the

Avahan project in Nagaland (Northeast India) revealed that exposure to the program was associated with improved condom use. FSW exposed to the program were twice as likely to use condoms with occasional clients as FSW who were not exposed (OR: 4.11, 95% Confidence Interval [CI] 3.47, 7.12) (Armstrong et al., 2013). Given that Avahan promoted social cohesion, one can infer that there may be an association between social cohesion and condom use.

The interventions reported in the literature have not addressed the relationship between social cohesion and condom use among FSW living with HIV. The dynamics around living with HIV and working in the sex industry bring complexities related to confidentiality, financial security, potential marginalization, and structural discrimination that are different for FSW living with HIV than for those who are not living with HIV in the DR. Thus, special attention is necessary to understand how the different dynamics faced by FSW living with HIV may affect the formation of social cohesion and its impact on condom use. Additionally, the pathways linking social cohesion to HIV/STI prevention are not well-understood and merit attention as they may offer points for intervention.

Conceptual Framework

The conceptual framework used in this study (depicted in Figure 1) was developed by the author of this dissertation based on the idea that “health-related behaviors are shaped and constrained by collectively negotiated social identities” (pp. 48) (Campbell, 2003) and qualitative evidence indicating the influence of social identity on health behaviors (L. R.

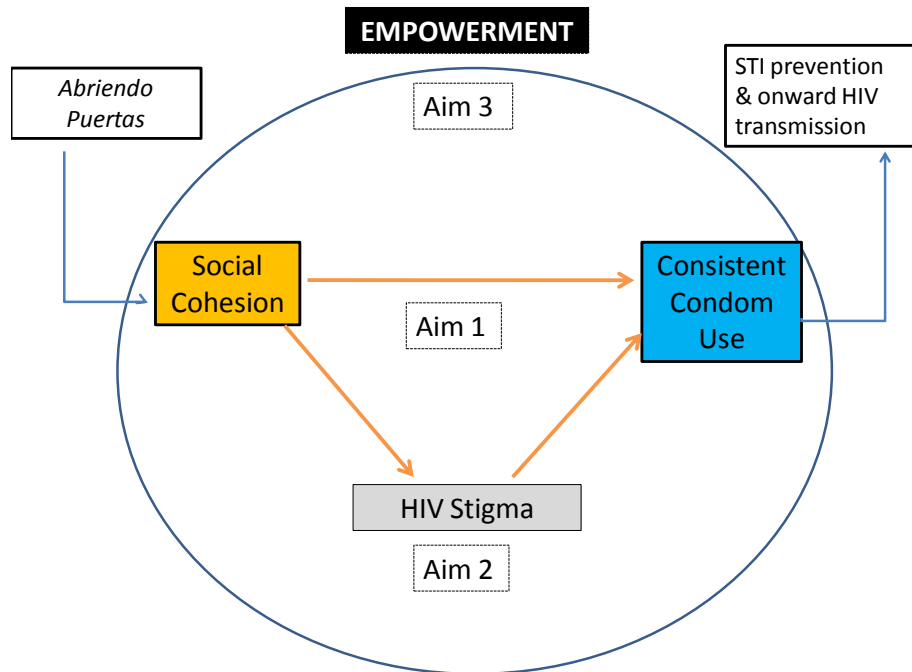
Murray et al., 2010). If this is the case, the negotiation and reconstruction of negatively defined (or stigmatized) identities becomes crucial for the uptake and sustainability of healthier behaviors such as consistent condom use. According to Henry Tajfel, the father of social identity theory, social identity “is a person’s knowledge that he or she belongs to a social category or group” (pp.225) (Stets & Burke, 2000). This conceptualization underlies the study’s conceptual framework, which proposes that the reconstruction of social identity requires *collective action*: An individual by herself may not be able to change her social identity. Indeed, for Tajfel, collective action toward social change was an impending possibility in cases in which people found themselves with identities negatively defined by other groups (Reicher, 1996).

Also underlying the conceptual framework of this study is the general conceptualization of stigma as a “spoiled” or damaged social identity (Goffman, 1963). Goffman, an American sociologist who conducted seminal theorizing about stigma, proposed that stigma was socially constructed by “othering” those with undesirable characteristics (Goffman, 1963). Researchers using Goffman’s conceptualization have primarily studied stigma from a socio-cognitive perspective, focusing on how stigma is experienced and enacted by individuals and how categories of stigmatized people are created and linked to stereotypes (Earnshaw & Chaudoir, 2009; Hatzenbuehler, 2009; Holzemer et al., 2007).

However, stigma can also be understood from a socio-political/structural perspective focusing on the power dynamics underlying the stigmatization process (Bruce G. Link & Phelan, 2001; Parker & Aggleton, 2003). Foucault’s conceptualization of the power over

life, disciplining, and resistance provides a comprehensive political framework that could be applied to better understand the power dynamics underlying stigmatization (Foucault, 1977, 1978). Using Foucault's ideas, stigmatization appears as a strategy of modern power to "disallow life" from those who have transgressed social norms. According to Foucault, the arms of modern power are ubiquitous, even within oneself. Thus, internalized stigmatization is the internalization of societal punishment, which is expressed through self-castigating behaviors such as suicidal ideation, anxiety, depression, and lowered self-esteem. From a socio-political perspective, the process of de-stigmatizing or reconstructing social identities of marginalized groups such as FSW can be understood as an empowerment process whereby those groups seek to change their standing in society by transforming their social identity to more positive terms. A socio-political perspective enables the conceptualization of social cohesion not just in terms of the individual benefits accrued from group, trust, solidarity and reciprocity, but also the potential effect of these on the power structure. From a socio-political perspective social cohesion can be understood as an empowerment strategy that brings marginalized groups together to promote social change. Such social change may entail reconstructing identity and taking up healthier behaviors such as consistent condom use.

Figure 1 – Conceptual Framework



Methods

This mixed methods study is an addition to the USAID-funded *Abriendo Puertas* intervention (PI: Deanna Kerrigan). The overarching research question asked was whether social cohesion influences HIV/STI prevention behaviors among FSW living with HIV and if so what may explain this. This question was addressed through three main aims developed in three manuscripts:

Aim 1: To examine the relationship between social cohesion and CCU and STI prevalence among FSW living with HIV in Santo Domingo, Dominican Republic

Aim 2: To assess HIV stigma and sex work stigma as pathways that may link social cohesion with CCU among FSW living with HIV in the DR.

Aim 3: To qualitatively explore social cohesion as a strategy to address layered HIV and sex work-related stigma among FSW living with HIV in Santo Domingo, Dominican Republic.

This dissertation used an explanatory sequential mixed methods design (Creswell & Plano Clark, 2011), which entailed a first phase collecting and analyzing the quantitative data (manuscripts 1 and 2), followed by a second qualitative phase designed to interpret how the qualitative results help to explain the quantitative results (manuscript 3). The rationale for using this design was to first determine if an association between social cohesion and various health behaviors and outcomes existed in this population and if so, determine quantitatively if stigma was a potential pathway. If this was established, qualitative data would help to provide a nuanced understanding and insights about these associations, providing a more clear identification of points for intervention.

***Abriendo Puertas* intervention**

This dissertation uses data from the *Abriendo Puertas* intervention, which was a multi-level HIV prevention and care intervention initially funded by the US Agency for International Development (USAID) under the Research to Prevention (R2P) Project led by the Johns Hopkins University. The intervention was designed based on findings from formative research which revealed that FSW living with HIV faced multiple barriers to maintaining good health. These barriers included various forms of stigma and discrimination based on being women in a male-dominated society, their occupation, living with HIV, and their socio-economic status. The intervention had five components: 1) individual counseling with trained psychologists following a curriculum; 2) peer support and navigation through FSW navigators; 3) clinical health care sensitivity training on service provision to FSW; 4) community mobilization through monthly

meetings; and 5) male partner engagement through voluntary HIV testing and counseling. It was initially piloted over a 10 month period, and continues to be implemented to date.

Each FSW was required to complete two study visits as part of the evaluation (face-to-face surveys at baseline and follow up). As part of the intervention, each participant received 6 individual counseling sessions over the study period focusing on acceptance of HIV, stigma reduction, adherence to care and ART, and condom use. Additionally, they received peer support (*navegadoras*) to improve access to health and social services. The intervention also included the regular partners of the FSW participating in the study. Male partners were surveyed to understand their HIV risk behaviors and how to effectively engage them in HIV/STI prevention efforts. The community mobilization component was implemented by MODEMU (Movimiento de Mujeres Unidas), a FSW-led civil society organization based in Santo Domingo. The *casas abiertas* (open houses) provided opportunities for women participating in the intervention to come together to discuss relevant topics or learn practical skills that could help them to earn an extra income. Participants discussed how to make nutritious soups, decorate candles and sandals, and make other home crafts for sale. The *casas abiertas* aimed to strengthen social cohesion and solidarity among the participants and help to address barriers to both prevention and engagement in HIV care and treatment. Lastly, a sensitivity training component with HIV care providers provided them information about the experiences and needs of FSW living with HIV including how to reduce stigma and discrimination.

Quantitative Research Methods

Characteristics of the quantitative study sample

The *Abriendo Puertas*, intervention recruited a cohort of 268 FSW living with HIV in Santo Domingo, Dominican Republic, who met the following criteria: being 18 years of age, HIV-positive, and having exchanged sex for money in the last month. HIV status was confirmed via testing of all sex workers included in the study. The sample for aims 1 and 2 was comprised of all the FSW who responded to the follow up survey of the *Abriendo Puertas* intervention (n=230).

Participant recruitment/sampling

Snowball sampling was used given that FSW living with HIV are a hard to reach population. Participants were recruited through referral by a FSW peer educator, through an existing relationship with the Unidad de Vacunas (HVTU) site in Santo Domingo, and through participant referral. In the case of FSW peer educator (*navegadora*) referral, recruitment occurred by asking the peer educators who were already working with the HVTU or with COIN, a local NGO working with FSW, to refer FSW who had disclosed HIV positive status. Peer educators approached colleagues whom they knew to be HIV positive and invited them to go to the HVTU site to learn more about the study. In the case of FSW referred by the HVTU site, HVTU staff approached FSW whom they knew were living with HIV. Given HVTU's HIV research portfolio which includes work with FSW, HVTU has maintained connections with many study participants whom they know to be HIV positive. Finally, participants in the study were asked to provide referrals to other FSW living with HIV. Participants received cards about the study with contact information to give to other potential study participants. From the 268 women recruited

and who responded to the baseline survey there were 253 women actively involved with the study as of July 2013 (Donastorg, Barrington, Perez, & Kerrigan, 2014). The follow up survey was completed by 230 women. Attrition was due to death, ill health, leaving sex work, distance between the intervention site and the participants' home being very far, and loss to follow up (Donastorg et al., 2014).

Quantitative measurement

Consistent condom use (CCU) with clients and partners: CCU was assessed by asking participants the frequency of condom use during vaginal sex in the last 30 days with new clients, regular clients and their fixed partners. CCU with new and regular clients was aggregated into a measure of CCU with clients. Thirty-day recall was used to avoid memory error. While some researchers prefer to ask about CCU in the last 2-3 months, 30 days were preferable in this study given that in the case of FSW the frequency of sexual activity is high and therefore recall in a period longer than 30 days might be harder. This measure has been used in other studies with FSW including an intervention effectiveness study in Brazil and a cross-sectional survey in Swaziland (Lippman et al., 2012; Fonner et al., 2013).

STI prevalence: Presence of STIs was assessed through laboratory examination of vaginal swabs. The STIs tested were gonorrhea, trichomoniasis, and chlamydia. The variable was dichotomized based on presence of any of the three STIs or absence of all three STIs.

Social cohesion: Social cohesion was assessed with a scale developed by Kerrigan (2008) and Lippman (2012) from studies among FSW in Brazil, and subsequently adapted by Fonner (2013) in Swaziland. An item specific to the realities of FSW living with HIV

was added to the scale (“You would feel comfortable sharing your HIV status with the sex workers you know). The questions were answered with a 4-point Likert-scale (1 = strongly disagree; 4 = strongly agree) assessing agreement with the statements in Box 1. Participants were provided the option to indicate that they do not know the answer, which was assigned a score of zero. Exploratory factor analysis (EFA) was used to determine uni-dimensionality of the measure. Uni-dimensionality was confirmed by looking at the scree plot and also conducting parallel analysis (Ledesma & Valero-Mora, 2007) and Cronbach’s alpha was used to assess the internal consistency (Cronbach, 1947). In this analysis we found an alpha of 0.81, which indicates good internal consistency. Factor loadings were calculated using iterated principal factor estimation. All items except for item 9 had loadings above 0.3, which is a common cut off point. When item 9 was dropped the reliability only improved slightly ($\alpha=0.82$). Given that the improvement in reliability was minor and the mid-size of the sample, the item was kept in the scale. The median score on the social cohesion scale was 27.0 (IQR: 24-30).

HIV stigma: Internalized HIV stigma was assessed with an 8-item scale adapted from validated HIV stigma scales (Berger, Ferrans, & Lashley, 2001; Zelaya et al., 2008). Answers were given in a 5-point Likert-scale format (1 = strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree; 0=do not know) assessing agreement with statements measuring negative self-perceptions related to HIV (See Box 2 for the full list of items). Exploratory factor analysis (EFA) was conducted to determine uni-dimensionality and a scree plot and parallel analysis were used to confirm uni-dimensionality. Cronbach’s alpha was used to assess internal consistency. The alpha was 0.82, indicating good internal consistency. CFA indicated that all 8 items loaded significantly on internalized

HIV stigma (all loadings $p < 0.001$). To improve model fit correlations between items 1 and 2 based on information from the modification indexes. Scale fit was assessed using the comparative fit index (CFI), the Tucker-Lewis Fit Index (TLI) and root mean square error of approximation (RMSEA), with good fit determined if at least two of the three indexes indicated good fit as research indicates cut off values should not be interpreted rigidly (T. Brown, 2006; Perry, Nicholls, Clough, & Crust, 2015). For the CFI and TLI, values close to 0.95 or above indicate good fit and for the RMSEA values close or below 0.06 indicate good fit (Hu & Bentler, 1999). The final 8-item scale exhibited adequate fit (CFI = 0.97, TLI = 0.95, RMSEA = 0.11).

Sex work stigma: The same eight items used in the HIV stigma scale were adapted and applied to internalized sex work stigma from validated HIV stigma scales (Berger et al., 2001; Zelaya et al., 2008). EFA was used to determine uni-dimensionality and a scree plot and parallel analysis were used to confirm uni-dimensionality. Answers were given in a 5-point Likert-scale format similar to those of the social cohesion and internalized HIV stigma scales, and assessing agreement with statements measuring negative self-perceptions related to sex work. One item with low loading (< 0.3 , “It is easier to avoid friends than to tell them that you are a sex worker”) was dropped. Confirmatory Factor Analysis (CFA) indicated that all 7 items loaded significantly on internalized sex work stigma (all loadings $p < 0.001$). The final 7-item scale had adequate fit (CFI = 0.99, TLI = 0.99, RMSEA = 0.08). Cronbach’s alpha, used to assess internal consistency, was 0.84, indicating good internal consistency.

Behavioral Factors

Number of sexual partners per month: The number of sexual partners is presented in the public health literature as one of the main risk factors for HIV/STIs. This variable was measured asking women the number of new, regular, and fixed clients/partners in the last 30 days. New clients were those with whom the study participant had sex once or twice. Regular clients were those with whom the participant has had sex at least three times and who pay for sex. Partners are those with whom the participants have had sex at least three times and who do not pay for sex but give the women money.

Missed HIV medical appointments in the last 6 months: While this variable is typically used to measure retention in HIV care in the HIV literature (Mugavero, Davila, Nevin, & Giordano, 2010), a recent study analyzing the variable beyond being a core indicator of retention found that missed HIV visits over a 24-month period were associated with all-cause mortality in a multisite cohort of 3672 antiretroviral-naïve patients initiating antiretroviral therapy (ART) in the USA (Mugavero et al., 2014). The missed HIV medical appointments variable was included in the models in manuscript 1 to capture use of health services, which according to the Gelberg-Andersen Behavioral Model for Vulnerable Populations, is influenced by various factors that also affect health outcomes (Gelberg, Andersen, & Leake, 2000). These factors include demographic factors as well as perceived health, personal resources (income, social support), and personal health practices (adherence to care) among others (Gelberg et al., 2000). These are reflective of the reasons provided by the participants for missing HIV visits, which included lack of money, lack of child care, illness, a perception that it was not needed, forgetting to attend, having to help a family member, and not attending due to rain. Thus, the variable captures health-seeking behavior reflective of vulnerabilities that may confound the

associations of interest. To measure this variable the participants were asked if they had missed their HIV appointments in the last six months.

Alcohol Use: This variable was identified as a statistically significant STI risk factor in the analysis of the baseline survey (Donastorg et al., 2013). The study participants were asked about their alcohol use in the last 30 days and their answers were dichotomized depending on whether they used alcohol more than once per week or not.

Drug Use: This variable was also identified as a statistically significant STI risk factor in the analysis of baseline data (Donastorg et al., 2013). Drug use was measured by asking the study participants if in the last six months they have used marijuana, crack, cocaine, heroin, intravenous drugs or other types of drugs. The answers were dichotomized to those who have used at least one of those substances in the last six months and those who have not.

Pregnancy intention: Study participants were asked if they were currently trying to get pregnant. This variable was included in the model with CCU with steady partners per prior research indicating that pregnancy intentions are associated with condom use (Duff et al., 2014).

Socio-demographic variables

Age, marital status, and education were included in the models in paper 1 as these variables have been identified as potential confounders in associations assessing the relationship between condom use and social cohesion (Fonner et al., 20013; Halli et al., 2006).

Table 1 – List of variables

Variable	Method of Measurement	Variable Type	Aim	Time Frame	Operationalization
Outcome variable					
Consistent condom use (CCU) during vaginal sex with clients	Self-report	Dichotomous	1 & 2	Last 30 days	0=No CCU 1=CCU
Consistent condom use (CCU) during vaginal sex with partners	Self-report	Dichotomous	1 & 2	Last 30 days	0=No CCU 1=CCU
STI prevalence	Lab analysis of vaginal swabs testing for Trichomoniasis, Chlamydia & Gonorrhea	Dichotomous	1		0=Absence of tested STIs 1=Prevalence of one or more tested STIs
Predictor variable of interest					
Social cohesion	Scale from Kerrigan et al. (2008) and Lippman et al. (2012)	Continuous	1 & 2	Open	Score ranging from 0 to 44
Potential mediators					
HIV stigma	Scale adapted from Earnshaw et al. (2013), Berger et al. (2001) & Zelaya et al. (2008, 2012).	Continuous	2	Open	Scores obtained through structural equation modeling
Sex work stigma	Scale similar to HIV stigma scale but adapted to measure sex work stigma	Continuous	2	Open	Scores obtained through structural equation modeling
Behavioral factors					
Number of partners	Self-report	Dichotomous	1	Last 30 days	0=0 to 3 partners 1=4 to 60 partners
Missed medical appointments	Self-report	Dichotomous	1	Last 6 months	0=No missed appointments 1=At least one missed appointment
Alcohol use	Self-report	Dichotomous	1	Last 30 days	0=No alcohol use 1=Alcohol use
Drug use	Self-report	Dichotomous	1	Last 6 months	0=No drug use 1=Drug use
Pregnancy intentions	Self-report	Dichotomous	1	Currently trying to get pregnant	0=No 1=Yes

Quantitative data collection

Survey baseline data for *Abriendo Puertas* were collected in January and February 2013 and follow up data was collected in November and December 2013. Data was collected in Spanish through in person survey administration facilitated by trained researchers at the private offices of the HVTU. Vaginal swabs for STI testing and blood samples for HIV viral load (VL) testing were collected by a physician during a clinical exam at baseline and at follow up and processed at the Johns Hopkins School of Medicine (Baltimore) and the Dominican National Reference Laboratory (Santo Domingo), respectively (Donastorg et al., 2013). All participants who tested positive for STIs received free treatment (Donastorg et al., 2013).

Quantitative data analysis

All statistical analysis was conducted with Stata 13, except for SEM, which was conducted with Mplus. Initially data was examined for any inconsistencies (outliers, missing information, and other discrepancies), and there were checked against the original survey and corrected if necessary. Exploratory data analysis entailed inspecting variables for distribution and dichotomizing at the median variables that were skewed, namely age and education. Additionally, chi square tests and t-tests were run to determine if there were any statistically significant differences between participants with missing data and those with complete data for STIs, CCU with clients, and CCU with steady partners and each of the variables included in the three models, with no significant

differences encountered, except for a statistical significant difference between participants with missing and complete data for CCU with clients and alcohol use.

In manuscript 1, bivariate and multivariable logistic regressions were conducted with three different models with CCU with clients, CCU with steady partners and STI prevalence as the outcomes and social cohesion as the independent variable of interest. Based on the literature, we adjusted for substance use (alcohol use and drug use) (Donastorg et al., 2014), pregnancy intention (Model 2 only)(Cerniaglio, 2014) and socio demographic variables (age, education, and marital status) (D. Kerrigan et al., 2003; Sheri A. Lippman et al., 2010; Saggurti et al., 2013) as potential confounders. Additionally, we adjusted for missing HIV appointments to control for health seeking behavior which may reflect further vulnerability that may affect CCU and STI prevalence; and for CCU with clients and partners in the model with STI prevalence as the outcome. Multiple linear regression with social cohesion as the outcome was performed to obtain the variance inflation factor (VIF) and check for colinearity in the three models. No problems with colinearity were detected. Hosmer-Lemeshow tests were used to check model fit of each of the three models specified. Hosmer-Lemeshow tests indicated good model fit. All statistical analyses were conducted using STATA version 13 (Stata-Press, 2013).

In manuscript 2, structural equation modeling (SEM) was used to assess the hypothesized associations, testing whether pathways were statistically significant and the direction of the associations. We used latent variables with multiple indicators for social cohesion,

HIV stigma, and sex work stigma. The independent variable of interest was social cohesion, and the outcome variables were CCU with clients and CCU with steady partners. Four mediation models were fit. The models differed in the mediators being considered. HIV stigma and sex work stigma were evaluated, in models 1 and 2, respectively, as a single mediator. Model 3 considered mediation by HIV stigma and a correlation between HIV stigma and sex work-related stigma. Model 4 included these two stigma variables as mediators plus an interaction between them. The method of estimation in models 1, 2, and 3 was Mplus default estimator for categorical data (weighted least squares estimation, WLSMV) was used. This estimator has been shown to perform well with categorical data and small and moderate sample sizes (Byrne, 2012). In model 4 an ML estimator (for latent moderated structural equations, LMS) was used as this is the only estimator used by Mplus with models that include interaction terms (Muthen & Muthen, 1998-2012). Goodness of fit of models 1, 2, and 3 was assessed with the CFI, TLI, and RMSEA indexes. Goodness of fit of model 4 was assessed with the log likelihood ratio test (comparing model 4 with a model without the interaction term) since chi-square and related fit indices have not yet been developed in the literature for models with interaction terms (Klein & Moosbrugger, 2000).

Qualitative Research Methods

Characteristics of the qualitative study sample

The sample to address aim 3 of this study was comprised of 23 FSW from the Abriendo Puertas study who participated in in-depth interviews and 11 FSW who participated in two focus group discussions (FGDs). The women were recruited using purposive

sampling and ensuring some variation in terms of their time since HIV diagnosis, experiences of stigma and discrimination, and level of participation in the *casas abiertas*.

Qualitative data collection

The qualitative data was collected in January 2013 by the student investigator. Data was collected in Spanish at the private offices of the HVTU. Interviews were approximately 60 minutes long and focus groups discussions were approximately 90 minutes long. The data collection instruments were designed by the student investigator in collaboration with the research team. Key domains explored in the interviews included: how HIV diagnosis impacted their lives, what it meant for the participants to be part of Abriendo Puertas and the *casas abiertas*, how they had changed (physically and mentally) since participating in Abriendo Puertas including changes in HIV outcomes, and what power meant for them. The focus group among *casas abiertas* participants focused on experiences in the *casas abiertas*, experiences of stigma, physical and mental well being before and after the intervention, and the process of building social cohesion in the context of individual and community empowerment. The focus group among those who did not attend the *casas abiertas* focused on the reasons why they did not participate, their common challenges, experiences of stigma, physical and mental well being before and after the intervention, and their ideas about how to strengthen cohesion among FSW.

Qualitative data analysis

All interviews and focus groups were audio recorded, transcribed, and analyzed in Spanish with Atlas.ti 7.0 (Friese, 2013) and using thematic analysis techniques (Patton, 2002). The data was analyzed in two phases. In the first phase a preliminary analysis was conducted to identify constructs related to societal disciplining (i.e. instances of

domestic violence, verbal abuse, social rejection, employer discrimination) or self-castigation (i.e. fatalism, hopelessness, low self-esteem, loss of the will to live, suicidal ideation, etc.) and regaining power (fighting for one's life, regaining hope, self efficacy, increased self-esteem, solidarity, accessing social support, etc.). Additionally, HIV-related behaviors (i.e. accessing HIV care, treatment adherence, condom use, substance use, etc.) were also coded. In a second phase, transcripts were analyzed to identify community narratives, which were identified as recurring phrases used by the participants and by identifying instances when those narratives were performed, such as when the participants displayed solidarity. Additionally, memos were utilized from the interviews and focus group discussions throughout data collection to identify information gaps, describe how participants perceived concepts such as various forms of stigma and discrimination, social cohesion, community empowerment, and document relationships between various themes emerging in the data.

Protection of Human Subjects

All subjects were orally consented at the beginning of each instance of data collection. Due to discrimination and stigma attached to FSW living with HIV in the DR, a waiver of signed consent was requested to the Johns Hopkins Bloomberg School of Public Health (JHSPH) Institutional Review Board (IRB) to reduce any possible negative consequences of a breach in confidentiality. Participants completed all study interviews in a private location and data was de-identified. The document linking participant's study code to their name was stored in a password protected computer at the HVTU site. After each participant completed the follow up survey at the end of the study her personal

information was deleted unless she agreed to be contacted for involvement in future studies. Each participant received approximately \$10 USD (400 Dominican pesos) for completing each study visit, each of the six counseling sessions, and any in-depth interviews or focus group discussions. FSW who completed the baseline and follow up surveys received an additional 400 pesos at the end of the study. The study received ethical approval from the JHSPH, IDCP and the IRB in the Dominican Republic (Consejo Nacional de Bioetica en Salud, Conabios).

Paper 1: Social Cohesion is Significantly Associated with Consistent Condom Use and Sexually Transmitted Infections among Female Sex Workers Living with HIV in the Dominican Republic

Abstract

Community empowerment-based approaches have gained recognition as effective strategies to reduce HIV/STI risk among FSW. Social cohesion is an important element of such approaches as the process of empowerment often begins with women coming together to build internal cohesion within the sex worker community and then to mobilize their collective power and resources to advocate for their needs and rights. However, the influence of social cohesion on HIV/STI outcomes among FSW who are living with HIV has yet to be specifically examined. This cross-sectional study examines the relationship between social cohesion with consistent condom use (CCU) and sexually transmitted infections (STI) using multivariate logistic regression. STI prevalence (having gonorrhea, chlamydia and/or trichomoniasis) among the sample was 19%. Reported CCU was 95% with clients and 71% with steady partners. Social cohesion was significantly associated with CCU between FSW living with HIV and their clients in the last month (AOR = 1.65, CI: 1.11 - 2.45) and STI prevalence among FSW (AOR: 3.76, CI: 1.159 - 12.162). Social cohesion was not associated with condom use between FSW living with HIV and their steady partners. However, both illicit drug use in the past 6 months (AOR = 0.11, CI: 0.023 - 0.57) and pregnancy intentions (AOR = 0.11; CI: 0.02-0.42) were significantly associated with CCU with steady partners. Conclusions: Findings highlight the differential role of social cohesion on condom use outcomes between FSW living

with HIV and their paying clients versus steady partners. Research on the pathways via which cohesion influences condom use among sex workers and their clients is merited, as is research regarding the role of drug use and pregnancy intentions on condom use with steady partners.

Background

In Latin America and the Caribbean, female sex workers (FSW) have 12 times greater odds of being infected with HIV than other women of reproductive age (Baral et al., 2012). The Dominican Republic (DR) is no exception to the regional trend. It is estimated that approximately 4.4% of FSW in the DR are living with HIV (Conavihsida, 2012), which is over 6 times the current prevalence in the adult population of 0.7% (UNAIDS, 2015b). The most recent government bio-behavioral survey of key populations conducted in 2012 in five provinces found that HIV prevalence among FSW varies widely across provinces, ranging from 1.7% in Santo Domingo (Center), to 6.6% in La Alta Gracia (East) (Conavihsida, 2012), a trend likely explained by the greater concentration of HIV prevention interventions among FSW in specific areas of the country including Santo Domingo, the capital.

Prevalence of sexually transmitted infections (STIs) among FSW in the DR is also high, with a median national chlamydia prevalence of 20.1%, 7.8% for trichomoniasis, and 6.2% for gonorrhea based on the most recent bio-behavioral survey (Conavihsida, 2012). Results from the baseline survey of the “*Abriendo Puertas*” (Opening Doors) intervention conducted in 2013 also revealed high STI prevalence among FSW living with HIV in

Santo Doming: 23.1% of the cohort of 268 had at least one of three tested STI (chlamydia, gonorrhea and/or trichomoniasis). Having an STI at baseline was found to be significantly associated with being single (AOR 3.21, 95% CI 1.27-8.12), using drugs (AOR 3.52, 95% CI 1.32-9.45), and not being on antiretroviral treatment (ART) (AOR 0.51, 95% CI 0.26-1.00) among the cohort (Donastorg et al., 2014).

The DR has been recognized for having a community-led response to HIV/STI prevention with FSW that has included environmental-structural interventions promoting social cohesion, community mobilization, and supportive government policies (D. L. Kerrigan et al., 2012). However, until the implementation of *Abriendo Puertas* there had not been any interventions to address the specific prevention, treatment, and care needs of FSW living with HIV. This is not surprising given that in low and middle income countries most HIV-related efforts with FSW have focused on primary prevention and surveillance (Wariki et al., 2012). Indeed, limited research has been conducted on the effectiveness of interventions among FSW living with HIV even though they are at high risk of HIV re-infection, acquiring sexually transmitted infections (STIs), and onward HIV transmission (Donastorg et al., 2014).

In the last decade, community empowerment-based approaches to reduce HIV risk have emerge as effective strategies with FSW (D. L. Kerrigan et al., 2014) and are now recommended by the World Health Organization (WHO) as a central component of comprehensive HIV/STI prevention with this population(WHO, 2012) (WHO, 2013). Social cohesion plays a critical role in such approaches as the process of community

empowerment often begins with women coming together to build internal cohesion within the sex worker community and then to mobilize their collective power and resources to advocate for their needs and rights (D. L. Kerrigan et al., 2014).

Social cohesion, defined as the “extent of connectedness and solidarity among groups in a society” (I. Kawachi & L. Berkman, 2000), has been positively associated with consistent condom use (CCU) and participation in community-based interventions that have successfully promoted CCU among FSW. In a recent study in Swaziland, for example, researchers found that social cohesion was significantly associated with CCU with new, regular, and non-paying partners in the last week (Fonner et al., 2014).

Similarly, a study conducted in Rio de Janeiro, Brazil, revealed that social cohesion was significantly associated with CCU between FSW and their paying clients (D. Kerrigan et al., 2008). Lippman and colleagues (2010) found that social cohesion was inversely associated with the number of unprotected sex acts at baseline and positively associated with CCU between sex workers and their regular clients at follow-up in the context of the *Encontros* community empowerment intervention study (S. A. Lippman et al., 2012; Sheri A. Lippman et al., 2010). Finally, a study analyzing the effectiveness of the Avahan intervention in Southern India revealed that social cohesion mediated the association between community mobilization and CCU (Kuhlmann, Galavotti, Hastings, Narayanan, & Saggurti, 2014).

While the effect of social cohesion on CCU and other STI outcomes among FSW have been relatively well-established, it has not yet been studied among FSW living with HIV.

In this paper we analyze the association between social cohesion, CCU and STI prevalence among a cohort of FSW living with HIV. We hypothesize that social cohesion is positively associated with CCU and negatively associated with STI prevalence.

Methods

Study population

The data for this analysis comes from the 10-month follow up survey of *Abriendo Puertas* cohort, a multi-level intervention implemented in 2013 in Santo Domingo (Donastorg et al., 2014). Among the 228 women who participated in the follow up survey, five women did not answer the social cohesion scale and were excluded from the analysis. Many women did not have a given partner type at the time of the follow up survey and only those participants who had a new/regular client or steady partner were eligible for inclusion in the CCU analysis. There was additional missing data for missed health visits and STI outcomes. After excluding all missing data, the final number of data points used in each regression model was 140 (CCU with clients), 133 (CCU with steady partners), and 203 (STI). Bivariate analysis revealed no statistically significant differences between participants with missing and complete data for STIs, CCU with clients, and CCU with steady partners and each of the variables included in the three models except for a statistical significant difference between participants with missing and complete data for CCU with clients and alcohol use.

Sampling and recruitment

The study used a non-random hybrid sampling approach, with peer educators (current/former FSW engaged on HIV prevention), care providers, and other study participants referring participants. To be included in the study women had to meet the following criteria: being at least 18 years of age, HIV-infected, and having exchanged sex for money in the last month. HIV status was confirmed via a single rapid test (Retrocheck) prior to the baseline survey. From November 2012 to February 2013, 268 FSW were enrolled in the cohort. Of those, 250 participated in the intervention, and 90% of those were retained at 10-month follow up. The follow up survey, which collected the data used in this paper, was completed by 228 participants.

All subjects were consented before data collection. Oral consent was utilized to reduce any possible negative consequences of a potential breach in confidentiality. All study protocols and consent procedures were approved by the Institutional Review Boards of the Johns Hopkins Bloomberg School of Public Health and the Instituto Dermatológico y Cirugía de Piel Dr. Humberto Bogart Diaz, the Dominican research partner for the study which oversaw all local data collection. Each participant received approximately \$10 USD for completing each survey visit.

Data collection and measures

Follow-up survey data was collected from November-December 2013. All participants completed a structured survey administered in Spanish by a trained Dominican interviewer in a private office. Following the survey a physician collected vaginal swabs to test participants for STIs. Vaginal swab specimens were processed at a CLIA-certified laboratory at the Johns Hopkins School of Medicine in Baltimore. Analyses were

conducted using nucleic acid amplification testing (NAAT) methods. The Aptima Combo2 assay was used to test for gonorrhea and chlamydia and a separate Aptima assay was used to test for trichomoniasis. Participants who tested positive for an STI received free treatment based on national standards of care.

Outcome variables

STI prevalence was dichotomized based on presence of at least one of the three tested STI. CCU was assessed by asking participants the frequency of condom use (always, almost always, sometimes, almost never and never) during vaginal sex in the last 30 days with new clients, regular clients and steady partners. New clients were defined as those with whom the participant had one or two sexual encounters. Regular clients were defined as those with whom participants had three or more sexual encounters and the client paid for each sexual encounter. Steady partners were defined as those who gave the participants money but did not pay for each sexual encounter. An aggregate measure of CCU with new and regular clients was created by dichotomizing CCU with both types of partners (always and not always). A period of 30 days was used given that the frequency of sexual activity is high among FSW and recall over a longer period may be difficult. This measure has been used in other studies with FSW (Lippman et al., 2012; Fonner et al., 2013).

Social Cohesion

Social cohesion was assessed with a scale developed by Kerrigan (2008) and Lippman (2012) from studies among FSW in Brazil, and subsequently adapted by Fonner (2013) in

Swaziland. An item specific to the realities of FSW living with HIV was added to the scale (“You would feel comfortable sharing your HIV status with the sex workers you know”). Box 1 presents a list of the 11 items included in the scale. The questions had a 5-point Likert-scale response (1 = strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree; 0=do not know) assessing agreement with the statements related to trust, solidarity, and reciprocity among FSW. Exploratory factor analysis (EFA) was used to determine uni-dimensionality of the measure, and Cronbach’s alpha was used to assess the internal consistency (Cronbach, 1947). In this analysis we found an alpha of 0.81, which indicates good internal consistency. The median score on the social cohesion scale was 27.0 (IQR: 24-30).

The median score of social cohesion among FSW participants was 27 (IQR: 24-30). Over 65% of participants agreed that they could count on their colleagues to help with a violent client and that their group of sex worker friends was integrated. On the other hand, 87% of participants indicated that they could not disclose their HIV status to other sex workers.

Behavioral Factors

Number of sexual partners per month: Study participants were asked their number of new clients, regular clients, and steady non-paying partners in the last 30 days per definitions above.

Missed HIV medical appointments in the last 6 months: To measure this variable, participants were asked if in the last six months they had missed their HIV appointments

(Mugavero et al., 2010). The missed HIV medical appointments variable was included in the models in this paper to capture health-seeking behavior which may potentially be reflective of larger socio-economic vulnerabilities that may confound the associations of interest.

Alcohol Use: Study participants were asked about alcohol use in the last 30 days and answers were dichotomized depending on whether they used alcohol more than once per week or not.

Drug Use: Drug use was measured by asking the study participants if they have used marihuana, crack, cocaine, heroin, intravenous drugs or other types of drugs in the last six months. The answers were dichotomized (use of at least one substance).

Pregnancy intention: Study participants were asked if they were currently trying to get pregnant. This variable was included in the model with CCU with steady partners per prior research (Duff et al., 2014).

Socio-demographic variables

Age, marital status, and education were included in the regression models as these variables have been identified as potential confounders in associations assessing the relationship between CCU and social cohesion among FSW (Fonner et al., 20013; Halli et al., 2006).

Data Analysis

Proportions are reported for categorical variables and medians and inter-quartile ranges (IQR) are reported for continuous variables. We inspected variables for distribution and

dichotomized at the median variables that were skewed, namely age and education. Additionally, chi square tests and t-tests were run to determine if there were any statistically significant differences between participants with missing data and those with complete data for STIs, CCU with clients, and CCU with steady partners and each of the variables included in the three models. To test the main hypotheses, bivariate and multivariable logistic regressions were conducted with three different models with CCU with clients, CCU with steady partners and STI prevalence as the outcomes and social cohesion as the independent variable of interest. Based on the literature, we adjusted for substance use (alcohol use and drug use) (Donastorg et al., 2014), pregnancy intention (Model 2 only)(Cerniaglio, 2014) and socio demographic variables (age, education, and marital status) (D. Kerrigan et al., 2003; Sheri A. Lippman et al., 2010; Saggurti et al., 2013) as potential confounders. Additionally, we adjusted for missing HIV appointments to control for health seeking behavior which may reflect further vulnerability that may affect CCU and STI prevalence, and for CCU with clients and partners in the model with STIs as the outcome. Multiple linear regression with social cohesion as the outcome was performed to obtain the variance inflation factor (VIF) and check for colinearity in the three models. No problems with colinearity were detected. Hosmer-Lemeshow tests were used to check model fit of each of the three models specified. Hosmer-Lemeshow tests indicated good model fit for all three models. All statistical analyses were conducted using STATA version 13 (Stata-Press, 2013).

Results

Demographic and behavioral characteristics of the sample

Table 1 contains the demographic and behavioral characteristics of participants. The median age of the women was 27 (inter-quartile range [IQR] 30–43). About half of participants (n =120) had completed some secondary education, and approximately two thirds (n=149) were married, cohabitating or had a steady partners. They had a median number of three clients in the previous 30 days (IQR 1-6) and approximately one third reported missing HIV medical appointments in the previous six months. Reported substance use was high: 37% (n=83) reported alcohol use in the previous 30 days and 6% (n=14) reported drug use in the last six months. Fourteen women in the sample (6%) reported currently trying to get pregnant. Reported CCU with clients (both new and regular) was very high (95.2%) while CCU with steady partners was much lower (79.42%). Finally, STI prevalence was 19%.

Association between social cohesion and CCU and STIs

Table 2 presents the results from the three logistic regression models. Social cohesion was significantly and positively associated with CCU with clients in bivariate (Odds ratio [OR] = 1.50, 95% confidence interval [CI]: 1.12 - 2.00) and multivariate analysis (Adjusted odds ratio [AOR] = 1.65, CI: 1.11 - 2.45). None of the other variables included in the model with CCU with clients were significantly associated with this outcome.

In the model with CCU with steady partners as the outcome, social cohesion was not a statistically significantly associated with CCU with steady partners and the adjusted odds ratio was close to 1 (AOR = 1.02, CI: 0.892 - 1.157) indicating a negligible effect. Drug

use in the last 6 months was significantly associated with CCU with steady partners in bivariate (OR = 0.14; CI: 0.034 - 0.567) and multivariate analysis (AOR = 0.11, CI: 0.021 - 0.547). Additionally, pregnancy intentions were also statistically significant in both bivariate (OR = 0.12; CI: 0.034 - 0.405) and multivariate analysis (AOR = 0.11; CI: 0.028 - 0.415).

In the model with STI prevalence as the outcome, social cohesion was significantly associated with prevalence of at least one of three STIs in multivariate analysis (AOR: 3.76, CI: 1.159 - 12.162) but not in bivariate analysis (OR: 0.93; CI: 0.845 - 1.031). Additionally, in this model, the number of clients and steady partners were significantly associated with the prevalence of STI in bivariate (OR: 2.21; CI: 1.10 - 4.44) and multivariate analysis (AOR: 3.67, CI: 1.14 - 11.83).

Discussion

Social cohesion was positively associated with CCU between sex workers living with HIV and their paying clients, indicating that enhancing social cohesion may be an important HIV/STI prevention strategy among FSW living with HIV in the context of their work. Social cohesion, however, was not associated with CCU with steady partners, indicating that there are different dynamics around steady and casual relationships and that these influence CCU. This finding is consistent with that from a meta-analysis about the effect of community empowerment interventions for HIV prevention among FSW in low and middle income countries indicating that such interventions led to improvements in CCU with clients but not with steady partners (Deanna L. Kerrigan et al., 2013). It is

noteworthy that the finding holds with FSW living with HIV, indicating that the factors affecting CCU with steady partners among FSW generally may also influence FSW living with HIV. One such factor may be relationship intimacy (including trust, love and affection), which in the DR has been associated with CCU among FSW with the most recent regular paying partner (D. Kerrigan et al., 2003) and in CCU with steady partners (L. Murray et al., 2007). Additionally, within the context of steady relationships, gender power dynamics whereby women may be more likely to defer to their partners' needs may be more prevalent. The finding suggests that additional strategies to promote CCU with steady partners may be needed with the subgroup of FSW living with HIV.

Despite the promise of promoting social cohesion within an empowerment framework, research has also indicated that various forms of social stigma may impede such engagement among sex workers. By definition, stigma leads to the marginalization of those who are stigmatized (Goffman, 1963), likely interfering with group cohesion. Evidence from India (Asthana & Oostvogels, 1996; Chakrapani, Newman, Shunmugam, Kurian, & Dubrow, 2009), Brazil (L. R. Murray et al., 2010), and the DR (Kennedy et al., 2013) indicate that sex work stigma has a negative effect on sex worker participation in community-based interventions. Additionally, given its known negative effects on HIV prevention and health seeking behaviors (Babalola, 2007; Harris et al., 2011; Mukolo et al., 2013; Pearson et al., 2009; Posse & Baltussen, 2009; Pulerwitz, Michaelis, Lippman, Chinaglia, & Diaz, 2008; Rao, Kekwaletswe, Hosek, Martinez, & Rodriguez, 2007; Rintamaki, Davis, Skripkauskas, Bennett, & Wolf, 2006; Turan et al., 2011; Venable, Carey, Blair, & Littlewood, 2006) and condom use (Earnshaw et al., 2014; Hubach et al.,

2015; Nelson et al., 2015; Paz-Bailey et al., 2012), HIV stigma may be an additional challenge for FSW living with HIV in relation to the promotion of social cohesion and community empowerment. The high prevalence of HIV stigma in the DR and the marginalized status of FSW living with HIV raises important questions about the effect that HIV stigma may have on the association between cohesion and CCU with clients in that setting. Further research exploring the potential role that HIV stigma may have on the association between social cohesion and CCU is warranted.

Drug use was one of two variables that reached statistical significance in the model with CCU with steady partners as the outcome, suggesting that FSW using drugs may be less able to negotiate CCU with steady partners. This is not surprising since CCU among FSW has been associated with drug use in other middle and high income countries including the Mexico-US border (Munoz et al., 2010; Strathdee et al., 2009), Vietnam (Tran Thi Tuyet, Le Cu, & Nguyen Thanh, 2008), and China (Lau et al.). This also suggests that HIV/STI prevention interventions with this population should take into account their heightened vulnerability from drug use, a topic that until recently has not been much researched among FSW in the DR.

We also found that pregnancy intentions were a significant factor associated with CCU with steady partners. This finding underscores that CCU between FSW living with HIV and their steady partners is not only an HIV/STI prevention strategy but also a contraceptive method and that FSW are likely to forgo CCU with steady partners if they are trying to get pregnant. This has important programming implications: In cases when

pregnancy is desired, FSW living with HIV require access to services to prevent vertical transmission and to minimize the risk of onward HIV transmission to steady partners in cases of zero-discordance. This is particularly relevant in light of findings from baseline research with the *Abriendo Puertas* cohort indication that participants who desired children were less likely to currently be on antiretroviral treatment and more likely to have a detectable viral load (Cerniaglio, 2014).

Lastly, social cohesion was found to be protective on not only reported condom use with clients, but also protective against STI. The finding of an association between STI prevalence and social cohesion provides a link between a biological outcome (STI prevalence) and an important marker for ongoing HIV transmission, highlighting the importance of strengthening solidarity and mutual aid as an effective HIV/STI prevention strategy among FSW who are also living with HIV. Having a larger number of paying clients (over the median) was also significantly associated with STI, which is consistent with the research among FSW in other contexts (Linhart et al., 2008; Magnani et al., 2010; Tanudyaya et al., 2010).

Limitations

Several limitations should be noted in interpreting findings. As this is a cross-sectional study, we cannot make causal inferences given the lack of information about temporality. Additionally, this study utilized a non-random, hybrid sampling approach, limiting generalizability of the findings. Except for STI prevalence, the data analyzed was self-reported, which introduces social desirability and reporting bias. We did have data about

the HIV status of steady partners and could not control for this variable as a potential confounder. Additionally, social cohesion is a group phenomenon and it was measured at the individual level with questions related to group dynamics. While these measures of social cohesion have been used in other studies, there is a debate about the utility of using individual measures for social constructs (Giordano, Ohlsson, & Lindstrom, 2011). Finally, the sample size used in two of the models is small which may limit our ability to detect associations. A larger sample would help to detect more precise estimates with smaller confidence intervals.

Conclusions

In a sample of FSW living with HIV in Santo Domingo, social cohesion was positively associated with CCU with paying clients but not with non-paying steady partners, and was protective against STI. Findings point to the importance of promoting social cohesion among FSW living with HIV to help address their HIV/STI prevention needs and reduce onward HIV/STI transmission. Further research on pathways linking social cohesion to CCU among FSW is needed to improve programming.

Table 1 – Socio demographic characteristics of the sample of FSW living with HIV and HIV/STI behaviors and outcomes

	Frequency (%) or median (inter-quartile range) n (223)
<i>Socio demographic variables</i>	
Age - median (IQR)	37 (30, 43)
Age (19-37) - n (%)	120 (52.47%)
Age (38-62) - n (%)	108 (47.53%)
Education: 0-7th grade - n (%)	120 (53.81%)
8th grade through university - n (%)	103 (46.19%)
Marital status	
Single	74 (33.18%)
Married, cohabitating, steady partner	149 (66.82%)
<i>Outcome variables</i>	
Consistent Condom Use (CCU)	
CCU with clients in the last 30 days- n (%) ^a	139 (95.2%)
No CCU with clients in the last 30 days – n (%)	7 (4.8%)
CCU with steady partners in the last 30 days – n (%) ^b	102 (71.32%)
No CCU with steady partners in the last 30 days – n (%)	39 (28.68%)
STI prevalence ^c	41 (19.07%)
<i>Independent variable of interest</i>	
Social cohesion – median (IQR)	27 (24, 30)
<i>Behavioral variables</i>	
Number of clients and steady partners (IQR)	3 (1, 6)
0-3 clients and steady partners – n (%)	123 (55.16%)
4-60 clients and steady partners – n (%)	100 (44.84%)
Missed HIV medical appointments in the last 6 months ^d	66 (31.13%)

	Frequency (%) or median (inter-quartile range) n (223)
Alcohol use (at least once per week in the last 30d) – n (%)	83 (37.22%)
Any drug use – n (%)	14 (6.28%)
Pregnancy intention	14 (6.28%)

^a 77 reported not having clients in the previous 30 days

^b 80 reported not having steady partners in the previous 30 days and 2 were missing

^c 8 missing

^d 11 missing

Table 2 – Factors associated with consistent condom use in the last 30 days between FSW living with HIV and their clients and steady partners and STI prevalence

	CCU Clients	CCU Steady Partners	STI
VARIABLES	Adjusted odds ratio 95% CI Model 1	Adjusted odds ratio 95% CI Model 2	Adjusted odds ratio 95% CI Model 3
Social cohesion	1.65** (1.112 - 2.448)	1.01 (0.892 - 1.168)	0.88** (0.782 - 0.990)
<i>CCU w/clients last 30 days (base: yes)</i>			
CCU w/clients last 30 days: no	---	---	0.86 (0.118 - 6.195)
No sex w/clients last 30 days	---	---	1.06 (0.098 - 11.396)
<i>CCU w/steady partners last 30 days (base: yes)</i>			
CCU w/steady partners last 30 days: no	---	---	0.99 (0.307 - 3.158)
No sex w/steady partners last 30 days	---	---	1.77 (0.273 - 11.445)
Number of clients & steady partners 4-60 (base: 0-3)	0.32 (0.024 - 4.126)	1.06 (0.487 - 2.546)	3.76** (1.159 - 12.162)
Missed HIV medical appt (6 mo)	3.41 (0.260 - 44.749)	0.92 (0.376 - 2.342)	1.52 (0.656 - 3.529)
Alcohol use (at least once per week, last 30d)	0.69 (0.077 - 6.213)	0.88 (0.359 - 2.232)	0.93 (0.408 - 2.128)

	CCU Clients	CCU Steady Partners	STI
VARIABLES	Adjusted odds ratio 95% CI Model 1	Adjusted odds ratio 95% CI Model 2	Adjusted odds ratio 95% CI Model 3
Drug use	0.30 (0.017 - 5.356)	0.11** (0.021 - 0.550)	0.47 (0.085 - 2.589)
Pregnancy intentions	---	0.109* (0.029 - 0.415)	---
Age: 38-62 (base: 19-37)	1.20 (0.155 - 9.292)	0.73 (0.300 - 1.783)	0.90 (0.407 - 1.972)
Education 8th grade through university (base: 0 - 7 grade)	2.95 (0.361 - 24.159)	1.87 (0.774 - 4.537)	1.30 (0.600 - 2.794)
Marital status: single (base: married, cohabitating, steady partner)	4.86 (0.473 - 49.948)	---	1.00 (0.169 - 5.874)
Constant	0.00** (0.000 - 0.960)	2.61 (0.068 - 99.376)	2.55 (0.058 - 112.442)
Observations	140	133	203

Confidence interval in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Box 1 – Items in the aggregate measure of social cohesion among female sex workers

1. You can count on your sex worker colleagues if you need to borrow money.
2. You can count on your sex worker colleagues to accompany you to the doctor or hospital.
3. You can count on your sex worker colleagues if you need to talk about your problems.
4. In general, sex workers in the area where you live only worry about themselves.
5. You can count on your sex worker colleagues if you need somewhere to stay.
6. You can count on your sex worker colleagues to help deal with a violent or difficult client.
7. You can count on your sex worker colleagues to support the use of condoms.
8. The group of sex workers with whom you work is an integrated group.
9. In general the sex workers you work with are always arguing amongst each other.
10. You can trust the majority of other sex workers working in your area.
11. You would feel comfortable sharing your HIV status with the sex workers you know.

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Paper 2: HIV Stigma Mediates the Association Between Social Cohesion and Consistent Condom Use among Female Sex Workers Living with HIV in the Dominican Republic

Abstract

The promotion of social cohesion within a community empowerment framework has been shown to be a successful approach to improving consistent condom use (CCU) among female sex workers, including those living with HIV. However, the potential layered effect that various types of stigma, such as sex work and HIV stigma, may have on CCU among FSW living with HIV has not yet been explored. Drawing on the Abriendo Puertas cohort (n=268) of FSW living with HIV from the Dominican Republic, we used structural equation modeling (SEM) to test the hypothesis that both HIV stigma and sex work stigma negatively mediate the association between social cohesion and CCU and that they have a layered effect. We found that HIV stigma is a significant pathway between social cohesion and CCU with both clients and steady partners, while sex work-related stigma was not. We did not find evidence of a mediating layering effect of HIV and sex work stigma. Our findings highlight the urgent need to further address internalized HIV stigma within the context of comprehensive, community-based approaches to improve HIV/STI outcomes among FSW living with HIV. Further research on the layered effects of various forms of stigma on HIV risk behaviors is needed to develop more accurate stigma measurement tools and to determine effective points for intervention.

Background

Stigma has been recognized as one of the major barriers to the implementation of effective HIV prevention, treatment, and care programs (Reidpath & Chan, 2005), and it continues to significantly hamper HIV programs around the world (UNAIDS, 2007; UNAIDS & WHO, 2011). Goffman (1963) defined stigma as “an attribute that is deeply discrediting” (pp. 2) and he indicated that a language of relationships not attributes is needed to understand stigma, suggesting that stigma is not only a trait but also a dynamic social process. Indeed, a stigmatizing trait takes meaning through social interactions in which those who possess stigmatizing traits are *othered* and *dehumanized* (Bruce G. Link & Phelan, 2001; Parker & Aggleton, 2003). Stigmatization is, therefore, a group process that leads to the marginalization of certain groups (B. G. Link & Phelan, 2014). Parker and Aggleton (2003) contend that stigma plays a key role in producing and reproducing relations of power and control in society and that stigma is closely linked to social inequality around class, race, gender, and sexuality.

In the area of HIV, stigma is often thought of as a barrier to access to HIV treatment and care as it is known to negatively impact HIV treatment adherence and access to care among people living with HIV (PLHIV) (Peitzmeier, Grosso, Bowes, Ceesay, & Baral, 2015; Vanable et al., 2006; Zulliger, Maulsby, et al., 2015). However, a growing body of literature indicates that stigma also negatively influences HIV prevention behaviors and outcomes, particularly among those living with HIV. A study among 924 people living with HIV (PLHIV) in South Africa, for example, revealed that internalized HIV stigma was associated with greater likelihood of unprotected sex with HIV-uninfected/unknown partners (Earnshaw et al., 2014). Similarly, among PLHIV in Honduras, researchers found that unprotected sex was more likely among study participants who reported discrimination (Paz-Bailey et al., 2012). A study in Uganda indicated

that PLHIV who had higher internalized stigma were less likely than those with lower internalized stigma to disclose their HIV status, particularly to their sexual partners (Tsai et al., 2013).

In the case of marginalized groups, such as female sex workers (FSW) and men who have sex with men (MSM), stigma also represents a significant barrier to both adopting HIV prevention behaviors such as consistent condom use (CCU) and accessing HIV services such as HIV testing and counseling and HIV treatment and care. A study among MSM in the USA, for example, revealed that perceived HIV stigma was associated with unprotected receptive or insertive anal intercourse with HIV-uninfected/ partners of unknown status (Hatzenbuehler, O'Cleirigh, Mayer, Mimiaga, & Safren, 2011), and a study in Ghana showed that HIV stigma was associated with lower condom use among older MSM (Nelson et al., 2015). Studies among FSW in India and Brazil have suggested that sex work-related stigma curtailed participation in HIV prevention interventions promoting CCU, thus likely affecting the efficacy of the interventions (Asthana & Oostvogels, 1996; L. R. Murray et al., 2010). Additionally, in relation to HIV treatment and care, a qualitative study conducted in India indicated that expected stigma and discrimination associated with HIV and sex work was one of the barriers FSW faced in accessing HIV care (Chakrapani et al., 2009); and formative research with FSW in the Dominican Republic (DR) revealed high levels of stigma and discrimination by health care providers which discouraged access to care (Kennedy et al., 2013).

For socially marginalized groups stigma is typically not a singular entity associated with HIV but it is often layered with other stigmas, such as those associated with occupation (i.e. sex work), routes of transmission (i.e. injecting drug use, anal sex), gender identity (i.e. gay, lesbians, trans-

sexual), and personal characteristics (i.e. ethnicity, gender) (Reidpath & Chan, 2005). Studies from Swaziland and the DR (Kennedy et al., 2013), Jamaica and the Bahamas (Rogers et al., 2014), China (K. Y. Chan, Yang, Zhang, & Reidpath, 2007), and Thailand (K. Y. Chan & Reidpath, 2007) indicate that FSW, MSM, and persons who inject drugs (PWID) living with HIV face layered stigma related to both HIV status and being a member of a given social group.

In the case of FSW, for example, they not only face stigma related to HIV but also stigma around their work. A study in Canada among sex workers who work on the street, for example, revealed that of the 252 participants, 55.9% reported occupational sex work stigma, which was defined as hiding their occupation from family, friends, and/or community (Lazarus et al., 2012). In the same study, 49.6% of the participants reported barriers to access health care and sex work stigma was significantly associated with an increased likelihood of experiencing barriers to accessing care (Lazarus et al., 2012). A study in the DR revealed that internalized sex work stigma among FSW living with HIV was negatively associated with both retention in HIV care and treatment continuity (Zulliger, Maulsby, et al., 2015). Finally, a study assessing the impact of the Fio da Alma HIV/STI prevention intervention for FSW implemented in Rio de Janeiro in the early 2000's, found that low level of participation in community empowerment intervention was associated with higher reported sex work stigma (D. Kerrigan et al., 2008).

While stigma has been negatively associated with HIV-related behaviors, growing evidence indicates that social cohesion may help to promote HIV prevention behaviors among FSW. Social cohesion is featured as an important element in community empowerment-based approaches for FSW since such approaches often start with the creation of safe spaces for community members to meet, discuss concerns, and build cohesion among them (Evans &

Lambert, 2008; D. Kerrigan et al., 2008; D. L. Kerrigan et al., 2014). Social cohesion has been defined as the extent of connectedness and solidarity among groups in a society (I. Kawachi & L. Berkman, 2000) that is evidenced by the level of trust, reciprocity and mutual aid (C. Muntaner, G. Oates, & J. Lynch, 2006).

Studies from Swaziland, Brazil, and India suggest that social cohesion is positively associated with CCU among FSW (Fonner et al., 2014; D. Kerrigan et al., 2008; Kuhlmann et al., 2014; S. A. Lippman et al., 2012). Additionally, a recent study analyzing the effectiveness of the Avahan intervention, a prevention intervention for sex workers implemented in India, revealed that social cohesion mediated the association between community mobilization and consistent condom use with clients (Kuhlmann et al., 2014). Recent evidence indicates that social cohesion is also significantly associated with STI and CCU with clients among FSW living with HIV in the Dominican Republic (refer to paper 1).

Research has also found that stigma associated with sex work may influence sex workers' engagement in community empowerment approaches (L. R. Murray et al., 2010). Stigma may be a particularly salient issue for FSW living with HIV as they are confronted with both sex work and HIV-related stigma among other potential forms of stigma. Yet, to our knowledge, no studies have explored the role that stigma may play in relation to social cohesion and how this may affect HIV prevention behaviors such as consistent condom use. We seek to explore these relationships here and hypothesize that both HIV stigma and sex work stigma negatively mediate the association between social cohesion and CCU among sex workers living with HIV. We also explore the potential layered effect of HIV and sex work stigma.

Methods

Context

While HIV prevalence among FSW in the DR has stabilized and declined since the mid-1990s, at 4.4% it continues to be significantly higher than among the general population (0.7%) (UNAIDS, 2015b). The 2012 bio-behavioral survey conducted among FSW in the DR revealed high levels of reported condom use (at last sex) between FSW and their most recent client, ranging from 60% to 91% in settings with greater intervention (Conavihsida, 2012). Consistent condom use with steady partners continues to be much lower, ranging from 5% to 21% (Conavihsida, 2012). Additionally, there are high reported levels of HIV and sex work stigma and discrimination. The 2012 bio-behavioral survey revealed that more than 85% FSW reported experiencing discrimination from health care providers and approximately one third reported being discriminated by their families because of their occupation (Conavihsida, 2012).

Sample and recruitment

The current analysis was conducted with data (n=228) from the follow-up survey of the *Abriendo Puertas* cohort. *Abriendo Puertas* is a multi-level intervention and evaluation initially implemented in Santo Domingo in 2013 among female sex workers living with HIV. For more information about *Abriendo Puertas* refer to Donastorg and colleagues (2013). Using a non-random, hybrid sampling approach a total of 268 participants were recruited into the cohort by either peer navigators (who were current/former sex workers working on HIV prevention activities), other study participants or care providers. Participants' HIV status was confirmed before enrollment through a single rapid test (Retrocheck). Of the original 268 cohort members, 250 participated in the intervention and at 10-month follow-up, 90% or 228 were surveyed again. The study was conducted by Johns Hopkins University in partnership with the Instituto Dermatologico y Cirugia de Piel Dr. Humberto Bogart Diaz (IDCP), COIN, and MODEMU.

All subjects signed a waiver of consent at the beginning of each instance of data collection. Study protocols and consent procedures were approved by the Institutional Review Board (IRB) of the Johns Hopkins Bloomberg School of Public Health and the IRB of the IDCP. Each participant received approximately \$10 USD (400 Dominican pesos) for completing each survey visit.

Data collection and measures

Internalized HIV Stigma

Internalized HIV stigma was assessed with an 8-item scale adapted from validated HIV stigma scales (Berger et al., 2001; Zelaya et al., 2008). Exploratory factor analysis (EFA) was conducted to determine uni-dimensionality, and Cronbach's alpha was used to assess internal consistency. The alpha was 0.82, indicating good internal consistency. Answers were given in a 5-point Likert-scale format (1 = strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree; 0=do not know) assessing agreement with statements measuring negative self-perceptions related to HIV (See Box 2 for the full list of items). Confirmatory factor analysis (CFA) indicated that all 8 items loaded significantly on internalized HIV stigma (all loadings $p < 0.001$). To improve model fit correlations between items 1 and 2 based on information from the modification indexes. Scale fit was assessed using the comparative fit index (CFI), the Tucker-Lewis Fit Index (TLI) and root mean square error of approximation (RMSEA), with good fit determined if at least two of the three indexes indicated good fit as research indicates cut off values should not be interpreted rigidly (T. Brown, 2006; Perry et al., 2015). For the CFI and TLI, values close to 0.95 or above indicate good fit and for the RMSEA values close or below 0.06 indicate good fit (Hu & Bentler, 1999). The final 8-item scale exhibited adequate fit (CFI = 0.97, TLI = 0.95, RMSEA = 0.11).

Internalized Sex Work Stigma

The same eight items used in the HIV stigma scale were adapted and applied to internalized sex work stigma from validated HIV stigma scales (Berger et al., 2001; Zelaya et al., 2008). EFA was used to determine uni-dimensionality. Answers were given in a 5-point Likert-scale format similar to those of the social cohesion and internalized HIV stigma scales, and assessing agreement with statements measuring negative self-perceptions related to sex work (See Box 3 for the full list of items). One item with low loading (<0.3 , “It is easier to avoid friends than to tell them that you are a sex worker”) was dropped. CFA indicated that all 7 items loaded significantly on internalized sex work stigma (all loadings $p < 0.001$). The final 7-item scale had adequate fit (CFI = 0.99, TLI = 0.99, RMSEA = 0.08).

Social cohesion

Social cohesion was assessed with a scale based on work by Kerrigan and Lippman in Brazil and adapted by Fonner in Swaziland (Fonner et al., 2014; D. Kerrigan et al., 2008; S. A. Lippman et al., 2012). One item to measure trust among FSW related to HIV status disclosure was added. Answers were given in a 5-point Likert-scale format (1 = strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree; 0 = do not know) assessing agreement with the statements related to the trust, mutual aid, and reciprocity among FSW. Exploratory factor analysis (EFA) was used to determine uni-dimensionality of the measure and Cronbach’s alpha was used to determine internal consistency. The scale had an alpha of 0.82, indicating good internal consistency. We also conducted Confirmatory Factor Analysis (CFA) to measure scale fit. To improve fit two items with low loadings (<0.4) were dropped (“In general, sex workers in the area where you live only worry about themselves” = 0.38; “In general the sex workers you work with are always arguing amongst each other” = 0.20). The 9 items included in the final scale used in the SEM analysis are listed in Box 1. All 9 items loaded significantly on cohesion (all loadings $p < 0.001$).

Based on information provided by the modification indices, correlations between items 1 and 2, 2 and 3, and 5 and 6 were added to improve fit. The 9-item scale exhibited adequate fit (CFI = 0.97, TLI = 0.96, RMSEA = 0.10).

CCU with clients and CCU with steady partners

Consistent condom use (CCU) was assessed by asking participants the frequency (always, almost always, sometimes, almost never, never) of condom use during vaginal sex in the last 30 days with new clients, regular clients and their steady partners, respectively. New and regular clients were sexual partners who paid after each sex act and they were combined into a client category. Steady partners were defined as those with whom the participants had had sex at least three times in their lives and who gave them money but did not pay after each sexual encounter. CCU with these two types of partners were binary variables representing overall consistent condom use in the past 30 days.

Data Analysis

Descriptive analysis to determine medians, inter-quartile range (IQR), frequencies, and percentages was done using STATA version 13. We used structural equation modeling (SEM) to assess the hypothesized associations, testing whether pathways were statistically significant and the direction of the association. SEM is a methodology to represent, estimate, and test hypothesized relationships between measured variables and latent (unobserved) variables (Byrne, 2012). All SEM models were implemented using Mplus version 7. We used latent variables with multiple indicators for social cohesion, HIV stigma, and sex work stigma. All items measuring latent factors were treated in analysis as ordered categorical variables as they were on a 1-4 Likert scale.

Mediation models

Four mediation models were fit: In all models, the independent variable of interest was social cohesion, and the outcome variables were CCU with clients and CCU with steady partners. The models differed in the mediators being considered. HIV stigma and sex work stigma each was evaluated, in models 1 and 2, respectively, as a single mediator. Model 3 considered mediation by HIV stigma and a correlation between HIV stigma and sex work-related stigma. Model 4 included these two stigma variables as mediators plus an interaction between them.

Estimation

In models 1, 2, and 3 the default estimator for categorical data in Mplus (weighted least squares estimation, WLSMV) was used. This estimator has been shown to perform well with categorical data and small and moderate sample sizes (Byrne, 2012). WLSMV uses all available data under the assumption that missing data is missing completely at random (MCAR) (Byrne, 2012; Muthen & Muthen, 1998-2012). To test that data was MCAR we conducted chi square tests between women with complete and missing CCU data and demographic characteristics including age, education, and marital status and found no evidence of associations, indicating that MCAR is a reasonable assumption. In model 4 an ML estimator (for latent moderated structural equations, LMS) was used as this is the only estimator used by Mplus with models that include interaction terms (Muthen & Muthen, 1998-2012). Evidence indicates that LMS have good performance with the nonlinearity induced by interaction terms (Dimitruk, Schermelleh-Engel, Kelava, & Moosbrugger, 2007; Kelava, Moosbrugger, Dimitruk, & Schermelleh-Engel, 2008; Kelava et al., 2011; Klein & Moosbrugger, 2000; Marsh, Wen, & Hau, 2004; Pohlig, 2014). Goodness of fit of models 1, 2, and 3 was assessed with the CFI, TLI, and RMSEA indexes. Goodness of fit of model 4 was assessed with the log likelihood ratio test (comparing model 4 with a model without the interaction term) since chi-square and related fit indices have not yet been developed in the literature for models with interaction terms (Klein & Moosbrugger,

2000). In model 4 we did not include correlations among the indicators of the latent variables as this is not possible with an ML estimator (Muthen & Muthen, 1998-2012). The coefficients presented are standardized for models 1, 2, and 3; and non-standardized for model 4 as this is the only format provided by Mplus for models with interaction terms.

Results

Sample characteristics

Demographic characteristics of the participants are shown in Table 1. The median age of the participants was 37 years (Inter-quartile range, IQR: 19-62); they had a low level of education, with a median education of 7th grade. The majority were married, cohabitating or in a relationship with a steady partner (66.23%); and a large majority (82%) had between 1-3 children. The women in the sample had worked in sex work for a long time, with a median of 16 years (IQR: 9-23). They started working as sex workers at a young age, with about half of the women starting when they were 18 years or younger (IQR: 15-24). The median number of years since the participants were diagnosed with HIV was 6 years (IQR: 4-9). A large proportion reported CCU with clients in the last 30 days (95%) while comparatively fewer participants reported CCU with clients (72.54%). Participants reported higher standardized HIV stigma than sex work stigma (-0.21 vs. -0.31). Standardized median social cohesion was -0.23 indicating a medium level of cohesion among the women in the sample.

Model results

Models 1 and 2: mediation effects

The SEM for model 1 showed good fit (CFI: 0.985, TLI: 0.982, RMSEA: 0.035) and the paths between social cohesion and CCU with clients ($\beta = 0.62$; $p < 0.001$) and social cohesion and HIV stigma ($\beta = -0.16$; $p = 0.025$) were significant and in the expected direction. As expected, social cohesion was positively associated with CCU and social cohesion was negatively associated with

stigma. The standardized coefficients indicate that one standard deviation difference in social cohesion is associated with a 0.16 standard deviation drop in HIV stigma and a 0.62 standard deviation increase in CCU with clients. The paths between HIV stigma and CCU with clients ($\beta = -0.47$; $p = 0.007$) and HIV stigma and CCU with steady partners were also significant ($\beta = -0.41$; $p < 0.001$). In the case of CCU with steady partners, the direct path between social cohesion and condom use was not statistically significant ($\beta=0.096$, $SE=0.80$, $p=0.424$), suggesting near total mediation (See Figure 1). The results suggest that HIV stigma mediates the association between social cohesion and CCU with clients.

The SEM for model 2 showed good fit (CFI: 0.98, TLI: 0.976, RMSEA: 0.046) and the paths between SW stigma and CCU with clients ($\beta = -0.48$; $p = 0.001$) and SW stigma and CCU with steady partners ($\beta = -0.35$; $p = 0.004$) were significant and in the expected direction. As expected, sex work stigma is negatively associated with CCU with clients and with CCU with steady partners. However, the paths between social cohesion and CCU with clients ($\beta = -0.47$; $p = 0.007$), social cohesion and CCU with steady partners ($\beta = -0.41$; $p < 0.001$), and social cohesion and sex work stigma ($\beta = -0.47$; $p = 0.007$) were not significant (See Figure 2). Thus, there was no evidence of sex work stigma mediating the effect between social cohesion and CCU with clients or partners.

Models 3 and 4: layered effect of HIV and sex work stigma

The SEM for model 3 showed good fit (CFI: 0.969, TLI: 0.965, RMSEA: 0.045). The coefficients were similar in magnitude, direction, and statistical significance as those of model 1. Thus, adding SW stigma to the model and correlating it with HIV stigma did not significantly change the model, suggesting a lack of a layering effect of HIV and SW stigma (See Figure 3).

Of note is that the correlation added between HIV stigma and SW stigma was of large magnitude and highly statistically significant ($\beta = 0.80$; $p < 0.001$), suggesting that models that include both HIV and sex work stigma (such as model 4) will have high multi-collinearity. The SEM for model 4 showed poor fit ($\chi^2 = -1.132$ with 2df, $p > 0.10$) compared to a model including HIV and sex work stigma without an interaction term. The only path that was statistically significant in model 4 was the path between social cohesion and CCU with clients ($\beta = 1.99$; $p = 0.005$) (See Figure 4).

Discussion

Under the current paradigm of treatment as prevention (TasP), HIV prevention among people living with HIV (PLHIV) is primarily being promoted under a biomedical framework focusing on the treatment cascade and behavioral efforts are focused on ensuring that people enter and stay in the continuum of care. As the field prioritizes a biomedical approach to HIV prevention, research on important HIV prevention behaviors such as consistent condom use (CCU) among PLHIV is receiving less attention, with little known on the sexual risk behaviors of FSW living with HIV in low and middle income countries (Jadhav et al., 2013). The existing literature on FSW living with HIV focuses on access to and retention in HIV care and treatment. Few studies analyze the factors that may influence HIV/STI prevention behaviors such as CCU in this population. In this study we have analyzed two such factors, namely social cohesion and stigma, to understand the influence they may have on CCU. This analysis sheds light on effective points for intervention for primary prevention of HIV re-infection, STI infection, and onward HIV transmission as part of a more holistic combination prevention approach that attends to not only biomedical, but also behavioral and socio-structural factors understood to be *fundamental causes* of disease and health outcomes (B. G. Link & Phelan, 1995; Phelan, Link, & Tehranifar, 2010).

As hypothesized, we found that HIV stigma mediated the association between social cohesion and CCU among FSW living with HIV. In the case of CCU with clients the results suggest partial mediation, and in the case of CCU with steady partners the results suggest full mediation. Various studies have analyzed the association between stigma and CCU, and social cohesion and CCU separately. To our knowledge the potential mediation effect of HIV stigma between social cohesion and CCU has not previously been investigated, particularly among FSW living with HIV. The results of this study help to fill this gap and they highlight the importance of taking into account social factors such as HIV stigma and social cohesion in HIV/STI prevention interventions for FSW. The results also suggest that community-based programs seeking to generate social cohesion to promote CCU among FSW living with HIV may have a larger impact if HIV stigma is addressed.

The mediation effect found in this study may be explained given that internalized HIV stigma is likely reduced as FSW living with HIV build cohesion with other women who have similar experiences, identify with them, and develop a sense of normalcy. Qualitative research is needed to develop a more nuanced understanding of the association between social cohesion, stigma, and health-related behaviors such as CCU. Such research can shed light on the interplay between social cohesion and stigma and help to determine strategies for intervention.

The results also indicate that while negatively associated with CCU with both clients and steady partners, sex work stigma was *not* a pathway between social cohesion and CCU with either clients or steady partners. The association found between sex work stigma and CCU (found in model 2) may be due to the high correlation between sex work stigma and HIV stigma (found in

model 3). This suggests that the effect of sex work stigma on CCU may be explained through its correlation with HIV stigma and the significant effect of HIV stigma on CCU. This finding is noteworthy as it indicates that different types of internalized stigma experienced by vulnerable populations may affect health-related outcomes and behaviors differently, highlighting the complexity of the effects of highly correlated but different social processes on health (Earnshaw, Smith, Cunningham, & Copenhaver, 2013).

We did not find evidence of a layered mediation effect of HIV and sex work stigma on the association between social cohesion and CCU. This finding seems to be at odds with evidence of layered stigmatization of key populations by healthcare providers in various contexts. The finding, however, suggests that while layered stigma may be experienced in a certain context it may not be experienced similarly across contexts. A qualitative study among intravenous drug users in Vietnam, for example, found that the participants described layered stigma in their communities but not in their families (Deering et al., 2011). Additionally, this finding also highlights that while various types of internalized stigmas may be experienced by individuals and communities, the effects of such stigmas in various health behaviors are not necessarily layered, and that such layering may vary depending on the health behaviors or outcomes being analyzed. Furthermore, this finding highlights the importance of developing a nuanced understanding of pathways leading to various health behaviors in order to intervene more effectively in various contexts.

Finally, the potential lack of a layered effect suggest that a certain type of internalized stigma may come into play with a particular health behavior and may provide a more direct path to the uptake or rejection of such behavior. This may depend on the perceived severity of a particularly

type of stigma. A study qualitatively exploring internalized layered HIV and Hepatitis C stigma, for example, revealed that for the large majority of the 132 participants HIV stigma was more prominent than Hepatitis C (HCV) stigma and that multiple stigmatizing statuses did not necessarily have an additive or interacting effect on how people experience their multiple stigmatizing statuses (Lekas, Siegel, & Leider, 2011). In this study participants perceived HIV stigma as more detrimental to their lives and well being than HCV (Lekas et al., 2011). This is a clear example in which HIV stigma is a stronger pathway to certain health behaviors and outcomes compared to HCV stigma.

In analyzing the results of this study, it is important to consider the context in the DR to interpret our findings. The DR has had a strong history of community-led response to HIV prevention with FSW that has included environmental-structural interventions promoting social cohesion, community mobilization, and supportive government policies (D. L. Kerrigan et al., 2012). Additionally, various local non-governmental organizations and a national sex worker organization exist in the DR and have worked over many years to address the rights of FSW and reduce stigma associated with sex work. Thus, at the community level internalized sex work stigma may not pose as significant of a barrier to building social cohesion among FSW in the DR. This, however, is not the case with internalized HIV stigma, which was high in our sample.

Finally, it is also important to note that given the limitations of current statistical methods to handle high correlation among latent constructs, we cannot conclude that there is no layered mediation effect of HIV and sex work stigma between social cohesion and CCU. Simulation studies have indicated that the LMS approach performs well in cases of small and medium correlation (Kelava et al., 2008). However, there is no evidence of the adequacy of the

performance of LMS in models with high latent correlation (Kelava et al., 2008). In such cases coefficients may vary widely among data sets (Dimitruk et al., 2007). Thus, the lack of good model fit and statistically significant results in model 4 may be due to lack of appropriate statistical tools to evaluate the interaction effect of highly correlated latent variables. While this methodological considerations are noteworthy, model 3 provides some evidence indicating that a layered effect may not exist as, when compared to model 1, the coefficients and statistical significance of the paths are very similar, indicating that adding sex work stigma to the model and correlating it to HIV stigma does not largely change the magnitude or significance of the parameters. Further development of methods to handle highly correlated latent variables is necessary to analyze the effect of layered stigma on various health behaviors and outcomes.

Limitations

This study utilized a non-random, hybrid sampling approach, which limits the generalizability of the findings. Additionally, as this is a cross-sectional study, we cannot make causal inferences given the lack of information about temporality. The data analyzed was self-reported, which introduces social desirability and reporting bias. Lastly, the nuanced nature of assessing multiple aspects of stigma experienced by marginalized groups and their effect on health outcomes continues to be an area of exploration with methodological limitations that do not allow making strong conclusions.

Conclusions

In our sample of FSW living with HIV, we found that HIV stigma is a significant pathway between social cohesion and CCU with both clients and steady partners, while sex work-related stigma was not. Furthermore, we did not find evidence of a mediating layering effect of HIV

and sex work stigma in this association. Our findings point to the need to address internalized HIV stigma in HIV/STI prevention interventions for FSW, particularly those aimed at building social cohesion such as community empowerment approaches (D. L. Kerrigan et al., 2014). Further research on the layered effects of various forms of stigma on HIV behaviors of key populations including FSW living with HIV is needed to better understand how stigma layering operates.

Table 1 – Socio demographic characteristics of the sample of FSW living with HIV and HIV/STI behaviors and outcomes

	Frequency (%) or median (inter-quartile range) n (228)
<i>Socio demographic variables</i>	
Age – median (IQR)	37 (19, 62)
Age (19-37) – n (%)	150 (52.63%)
Age (38-62) – n (%)	108 (47.37%)
Education: 0-7 th grade – n (%)	121 (53.07%)
8 th grade through university – n (%)	107 (46.93%)
Marital status	
Single	77 (33.77%)
Married, cohabitating, or has a steady partner	151 (66.23%)
Children – median (IQR)	3 (1, 3)
Children (0)	15 (6.58%)
Children (1-3)	187 (82.02%)
Children (4-7)	55 (11.4%)
Years working as a sex worker – median (IQR)	16 (9-23)
Age when started sex work – median (IQR)	18 (15-24)
Year living with HIV – median (IQR)	6 (4-9)
<i>Consistent Condom Use (CCU)</i>	
CCU with clients in the last 30 days -- n (%) ^b	141 (95.27%)
No CCU with clients in the last 30 days – n (%)	7 (4.73%)
CCU with steady partners in the last 30 days – n (%) ^c	103 (72.54%)
No CCU with steady partners in the last 30 days – n (%)	39 (27.46%)
<i>Latent Variables</i>	
Social cohesion standardized score –median (IQR) ^a	-0.02 (-0.69, 0.72)
HIV stigma standardized score –median (IQR)	-0.21 (-0.59, 0.55)
Sex work stigma – median (IQR)	-0.31 (-0.51, 0.71)

^a 5 missing

^b 80 reported not having clients in the previous 30 days and did not provide information about CCU with clients

^c 83 reported not having steady partners in the previous 30 days and did not provide information about CCU with steady partners and 3 were missing

Table 2 – Parameter estimates from mediation models on social cohesion, stigma and CCU among FSW living with HIV

	MODEL 1			MODEL 2			MODEL 3			MODEL 4		
	HIV stigma only			SW stigma only			HIV & SW stigma correlated			HIV & SW stigma interaction		
	Standardized Coefficient	Standard Error	p-value	Stand. Coef.	Standard Error	p-value	Stand. Coef.	Standard Error	p-value	Coefficient	Standard Error	p-value
<i>Model component predicting CCU w/clients</i>												
Cohesion	0.62	0.09	<0.001	0.05	0.08	<0.001	0.60	0.089	<0.001	1.99	0.71	0.005
HIV stigma	-0.47	0.17	0.007				-0.53	0.17	0.002	-0.13	0.48	0.79
SW stigma	---	---	---	-0.48	0.15	0.001	---	---	---	-1.09	-1.85	0.06
Int. stigma	---	---	---	---	---	---	---	---	---	-0.15	-0.39	0.70
<i>Model component predicting CCU w/ steady partners</i>												
Cohesion	0.10	0.12	0.424	0.17	0.12	0.12	0.09	0.12	0.44	0.15	0.24	0.53
HIV stigma	-0.41	0.11	<0.001	---	---	---	-0.41	0.12	0.001	-0.34	0.26	0.19
SW stigma	---	---	---	-0.35	0.12	0.004	---	---	---	-0.24	0.27	0.38
Int. stigma	---	---	---	---	---	---	---	---	---	-0.26	0.21	0.20
<i>Model component predicting HIV stigma</i>												
Cohesion	-0.16	0.07	0.025	---	---	---	-0.15	0.07	0.033	-0.13	0.09	0.17
<i>Model component predicting SW stigma</i>												
Cohesion	---	---	---	0.05	0.06	0.43	---	---	---	0.04	0.11	0.74
<i>Correlation between CCU w/partners and CCU w/clients</i>												
	0.86	0.64	0.180	0.44	0.26	0.08	---	---	---	---	---	---
<i>Correlation between HIV stigma and SW stigma</i>												
	---	---	---	---	---	---	0.80	0.03	<0.001	---	---	---
	Index			Index			Index					
CFI	0.985			0.980			0.969					
TLI	0.982			0.976			0.965					
RMSEA	0.035			0.046			0.045					
-2 ΔLog likelihood (compared to model without interaction term using LMS estimation)										$\chi^2 = -1.132$ with 2df, p > 0.10		

Figure 1 -- Model 1: Standardized coefficients of social cohesion and consistent condom use among FSW living with HIV and their clients and steady partners with HIV stigma as a mediator

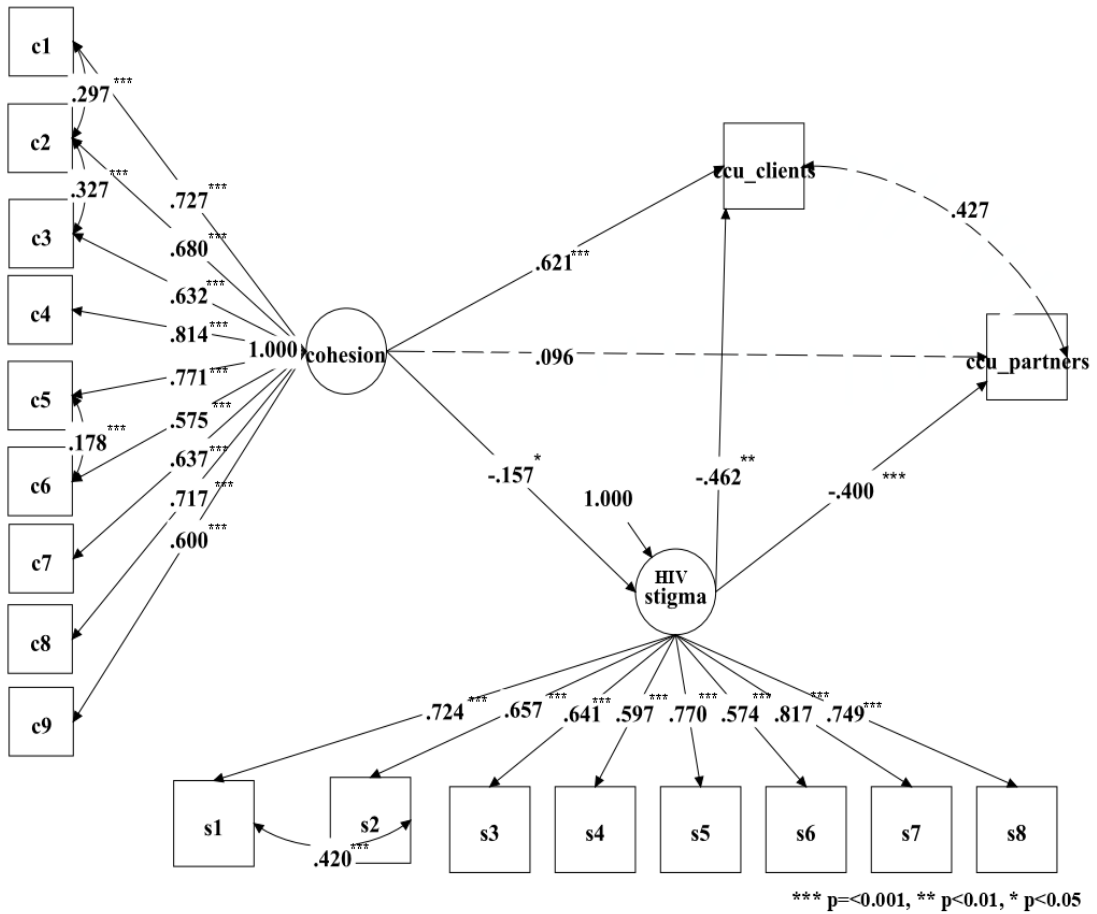
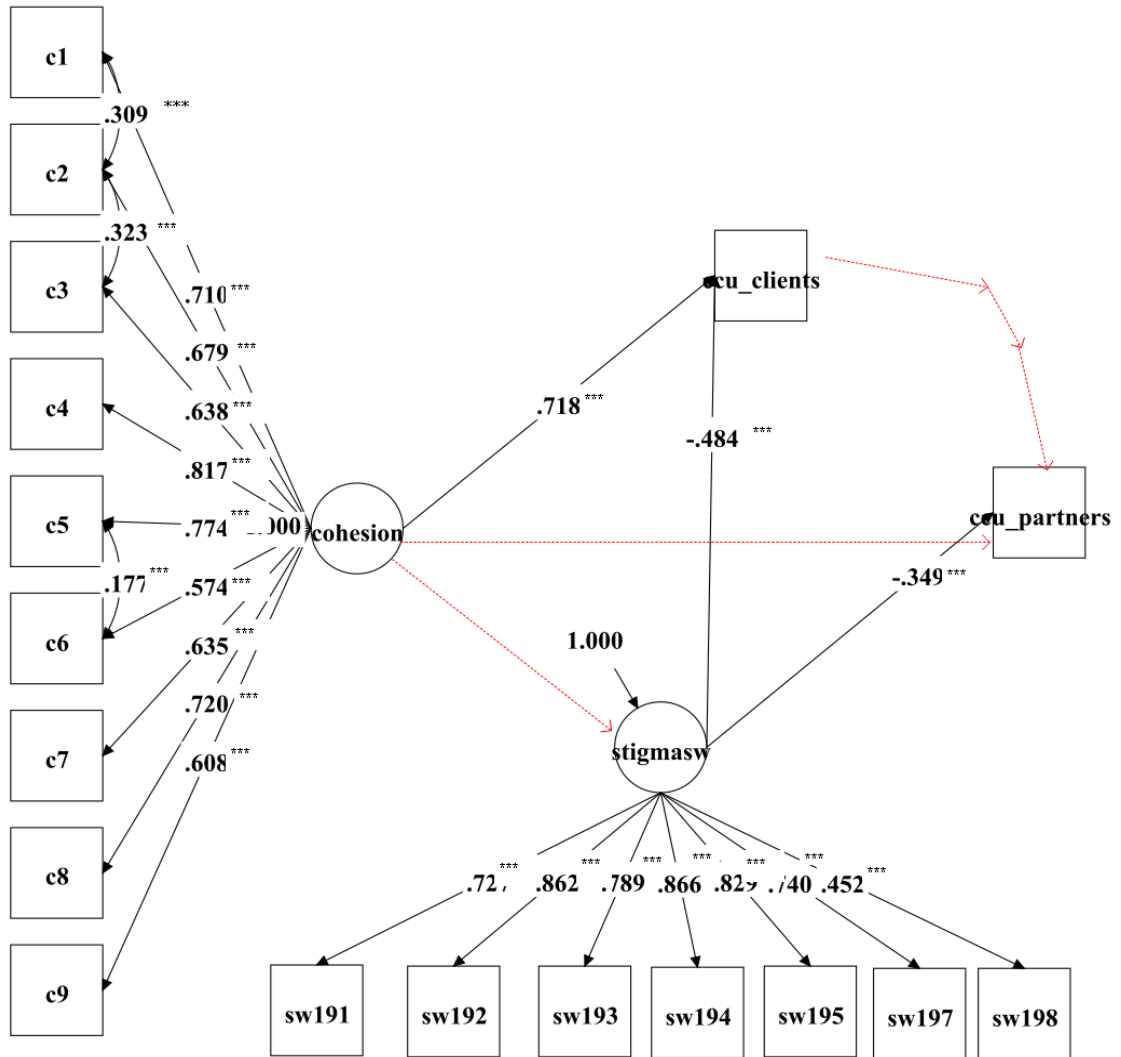


Figure 2 -- Model 2: Standardized coefficients of social cohesion and consistent condom use among FSW living with HIV and their clients and steady partners, with sex work stigma as a mediator



Note: Lines in red not statistically significant

Figure 3 -- Model 3: Standardized coefficients of social cohesion and consistent condom use among FSW living with HIV and their clients and steady partners, with HIV stigma as a mediator and sex work stigma correlated with HIV stigma

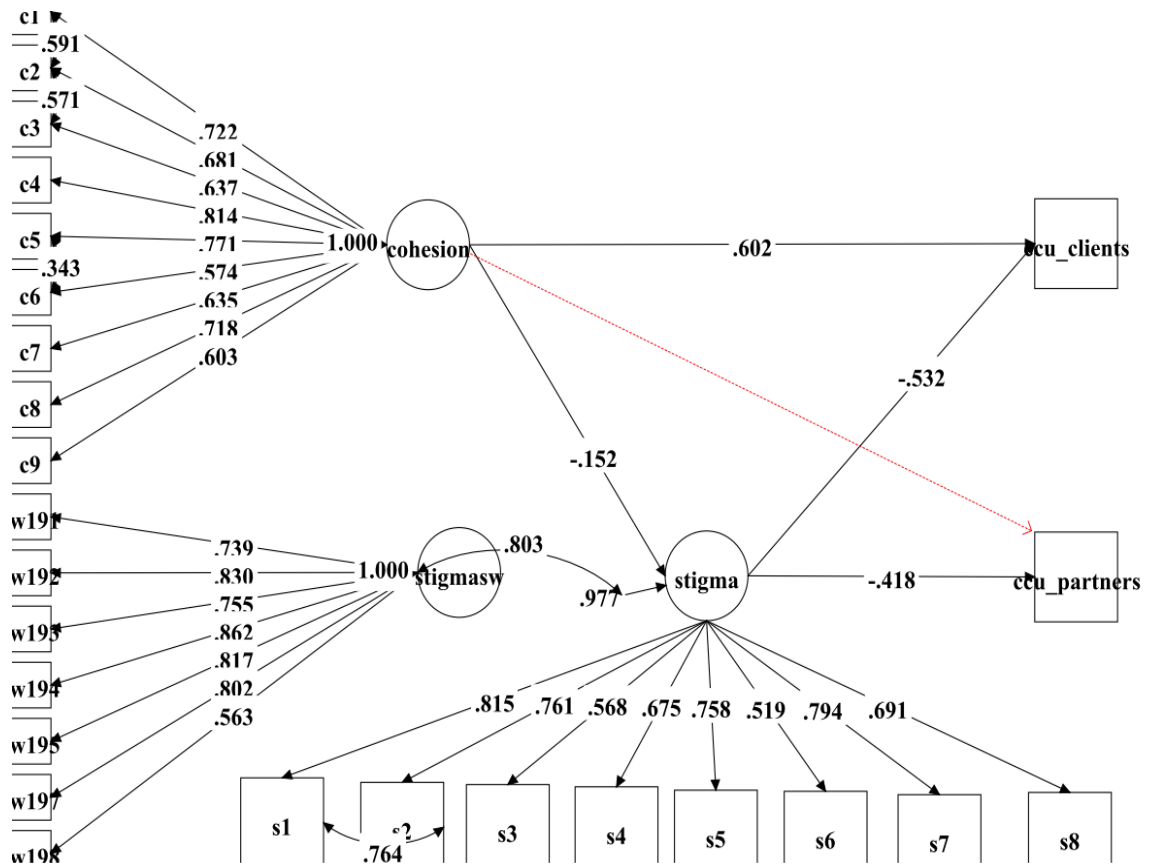
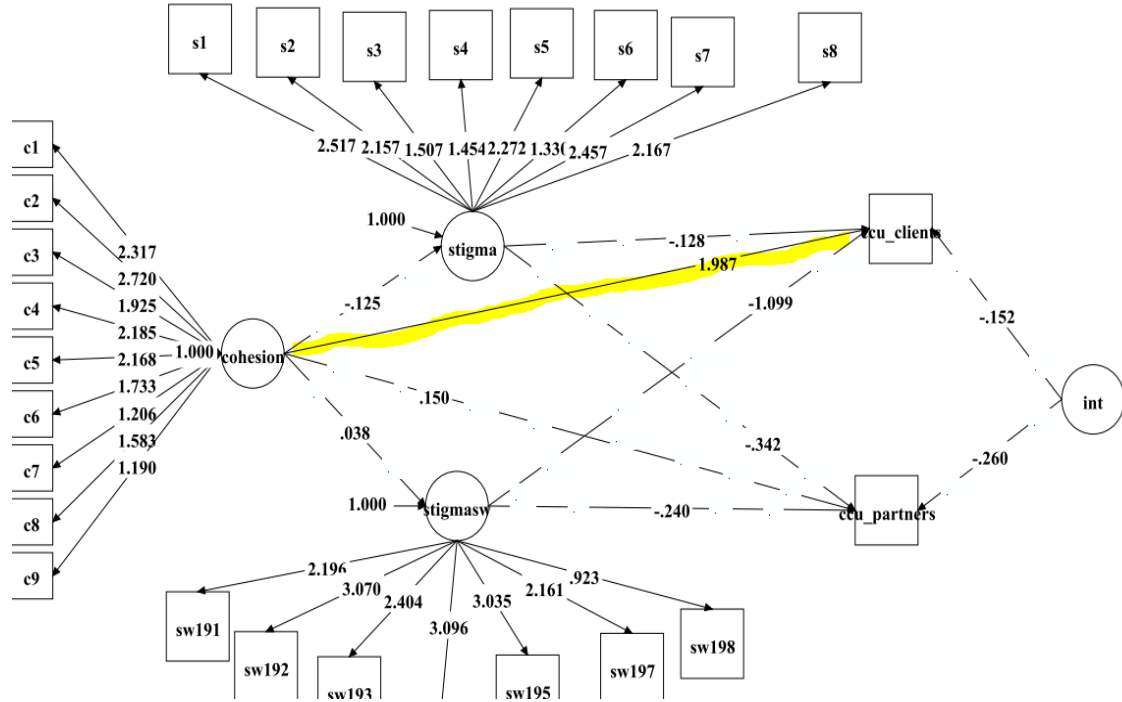


Figure4 – Model 4: Standardized coefficients of social cohesion and consistent condom use among FSW living with HIV and their clients and steady partners, with HIV stigma and sex work stigma and an interaction term of HIV and sex work stigma as mediators



Note: Arrow highlighted in yellow is the only significant coefficient in the model.

Box 1 – Items in the aggregate measure of social cohesion among female sex workers

Box 1 – Social Cohesion Scale

1. You can count on your sex worker colleagues if you need to borrow money.
2. You can count on your sex worker colleagues to accompany you to the doctor or hospital.
3. You can count on your sex worker colleagues if you need to talk about your problems.
4. You can count on your sex worker colleagues if you need somewhere to stay.
5. You can count on your sex worker colleagues to help deal with a violent or difficult client.
6. You can count on your sex worker colleagues to support the use of condoms.
7. The group of sex workers with whom you work is an integrated group.
8. In general the sex workers you work with are always arguing amongst each other.
9. You would feel comfortable sharing your HIV status with the sex workers you know.

Box 2 – Items in the aggregate measure of HIV and sex work stigma (measured separately)

1. HIV/sex work makes you feel like a bad person.
2. You feel like you're not as good as others because you are living with HIV/are a sex worker.
3. The attitudes of people towards HIV/sex work make you feel worse about yourself.
4. You feel guilty because you are living with HIV/are a sex worker.
5. You feel ashamed of living with HIV/are a sex worker.
6. It is easier to avoid friends than to tell them that you are living with HIV (*HIV stigma scale only*).
7. You feel worthless because you are living with HIV/are a sex worker.
8. You feel that you bring many problems to your family because you are living with HIV/are a sex worker.

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Paper 3: “We talk, we do not have shame:” the reduction of layered stigma through reconstructing identity and reconfiguring power among FSW living with HIV in the Dominican Republic

Abstract

This study explores the relationship between social cohesion and both HIV and sex work-related stigma among sex female workers (FSW) living with HIV enrolled in a multi-level HIV/STI prevention, treatment and care intervention in Santo Domingo, Dominican Republic. Based on a conceptualization of stigma as social phenomena related to power, we explore social cohesion as a strategy to address layered HIV and sex work-related stigma through a thematic analysis of 23 in-depth interviews and two focus groups with FSW living with HIV. Drawing on Foucault’s conceptualization of the power over life, discipline, and resistance, we argue that social cohesion provides the psychosocial space to subvert oppressive societal norms by enabling the reconstruction of identity. Among the study participants, this happened through the production, repetition, and performance of new de-stigmatized narratives that emerged and were solidified through interaction in a safe space. Findings highlight that providing safe spaces to practice new social norms rather than solely attempting to change beliefs is fundamental to effectively addressing stigma. Additionally findings point to the importance of cohesion as a means to challenge oppressive social norms by providing safe psychosocial spaces for personal and social transformation.

Introduction

In the Dominican Republic (DR), female sex workers (FSW) are a highly vulnerable and marginalized group. They are typically women who have low levels of education, limited economic opportunity, and at least one child, who they often financially support on their own (D. L. Kerrigan et al., 2012). They face layered stigma and discrimination related to working in the sex industry and for those living with HIV, the situation is more challenging as they also face structural and interpersonal discrimination due to their HIV status (Kennedy et al., 2013). Evidence from a recent study with the Abriendo Puertas cohort revealed that internalized sex work stigma negatively affected health outcomes for this group as it was negatively associated with both retention in HIV care and treatment continuity (Zulliger, Maulsby, et al., 2015). In such an environment effectively addressing layered stigma constitutes the foundation to improve the health outcomes of this group, which is understudied and under-served. This study analyzes layered stigma from a Foucauldian perspective and presents social cohesion stimulated by a community-based intervention in the DR as a critical means to resist and subvert stigma.

Background

Ervin Goffman in his seminal theory of stigma defined it as an “attribute that is deeply discrediting” and that reduces the bearer “from a whole and usual person to a tainted, discounted one” (pg. 3) (Goffman, 1963). According to Goffman stigma occurs when society attaches a negative social meaning to an individual categorizing the person as part of a group which is perceived to have a *spoiled identity* (Goffman, 1963). Goffman (1963) argued that as the stigmatized person is “othered” and dehumanized, his life chances are reduced.

Researchers using Goffman's conceptualization have primarily studied stigma as a trait (Bruce G. Link & Phelan, 2001; Parker & Aggleton, 2003), developing socio-cognitive frameworks, which focus on how stigma is experienced and enacted by individuals and how categories of stigmatized people are created and linked to stereotypes (Earnshaw & Chaudoir, 2009; Hatzenbuehler, 2009; Holzemer et al., 2007). This has led to an emphasis on a socio-cognitive perspective to study stigma to the detriment of analyzing it from other perspectives.

As a reaction to the socio-cognitive perspective predominant in the literature, a growing number of researchers have analyzed stigma from a socio-political perspective, conceptualizing stigma as intrinsically related to power. Link and Phelan (2001), for example, propose that power is essential to the social production of stigma given that it takes power to stigmatize. More recently, Link and Phelan developed the concept of "stigma power" analyzing stigma as a strategy of stigmatizers to exploit, control, and exclude others (B. G. Link & Phelan, 2014). Focusing on HIV/AIDS-related stigma, Parker & Aggleton (2003) also take a structural perspective; they posit that HIV stigma is a social process that produces and reproduces social inequities related to class, race, gender, and sexuality. Furthermore, recent work around HIV stigma highlights that socially marginalized groups affected by HIV typically face not only HIV stigma but layered stigma based on their occupation (i.e. sex work), gender identity (i.e. gay, lesbians, trans-sexual), and personal characteristics (i.e. ethnicity, gender) (Reidpath & Chan, 2005).

In their analysis of HIV stigma, Parker and Aggleton (2003) drew both on the work of Goffman as well as Foucault's work on the relationship between culture, power, and notions of difference. They point to Foucault's analysis of "cultural systems" or areas of discourse such as psychiatry and biomedicine was tightly linked to understanding such cultural discourses as forms of control of individuals and social bodies (Parker & Aggleton, 2003). They also highlight Foucault's insights about the new power regime in modernity whereby social control is exercised not through physical force but through the production of conforming subjects. Drawing on Foucault's work on the production of differences in the service of power, Parker & Aggleton (2003) propose that stigma and stigmatization function at the point of intersection between culture, power, and difference and that a full understanding of stigma requires understanding the relationships between these categories. They indicate that Goffman's and Foucault's work taken together allow for a more nuanced understanding of culturally constituted stigmatization as key to the establishment and maintenance of the social order. Indeed, they propose that effectively addressing HIV stigma requires "question[ing] the very structures of equality and inequality in any social setting" and challenging "the most basic principles of social life" (pp. 18) (Parker & Aggleton, 2003).

While Goffman's work focused on the social construction of meaning through interaction, Foucault's work analyzes the cultural production of differences (in our case stigma) in the service of power (Parker & Aggleton, 2003). According to Foucault in pre-modern times power was characterized by the ability of the monarch or sovereign to take life (juridical power) (Foucault, 1978). While power has continued to function juridically, Foucault proposed that in modernity a new form of power surfaced: the power

over life. According to Foucault the ancient right to take life was replaced by a power to foster life or disallow it to the point of death (Foucault, 1978). Foucault sees this new form of power as endeavoring to “administer, optimize, and multiply life while subjecting it to controls and regulations” (loc 1796 of 2147) (Foucault, 1978). One of the ways in which the power over life is exercised is through social norms (Foucault, 1978). From a Foucauldian perspective, HIV stigma can be understood as a strategy to enforce social norms around sexuality and personal responsibility for one’s body and health (or healthism (Rose, 1999)) in order to maintain the social order. Thus, stigma and the resulting marginalization can be understood as a strategy to discipline those who have engaged in behaviors that violate established norms and threaten the social order.

According to Foucault, this modern type of power is not only exercised by society but by individuals themselves. In his book *Discipline and Punish: The Birth of the Prison* Foucault highlights “the gaze” as an important disciplinary practice of modern power. The gaze is a surveillance technique employed in panopticon-styled prisons where inmates were organized so that they could be constantly seen, known, surveilled, and controlled (Foucault, 1977). One of the characteristics of the gaze is that it becomes internalized resulting in prisoners surveilling and policing themselves as they do not know when they are being watched (Foucault, 1977). Such policing and disciplining includes self-castigation and self-marginalization when norms have been transgressed.

Despite Foucault’s contribution in the understanding of power, his work came under heavy criticism from political theorists who highlight that it does not fully address resistance and agency to bring about change (Allen, 1999; Cronin, 1996). According to

these critics, Foucault's decentering of the knowing and willful individual from being at the center of history--or its protagonist--to being a subject of history--or its object--places the individual in a position where the possibility of resisting and rebelling against normative conceptions of truth and injustice are not possible (Cronin, 1996). However, some would argue that this criticism is undue as Foucault does open the possibility for resistance by clearly indicating that power generates the opportunity for resistance and personal and collective agency (Pickett, 1996; Thompson, 2004).

Foucault's conceptualization of power serves as a robust analytical tool to understand the micro-politics of everyday life and as the basis to develop a better understanding of possibilities for resistance and subversion. In this paper we use Foucault's conceptualization of the power over life to analyze stigma as a tactic of modern power and to understand how it is deployed through *disallowing life via marginalization and the normalization of violence* against those who transgress social norms. Additionally, we draw on the concept of the *internalization of the gaze* as a micro practice to understand the process of self-stigmatization and its negative psychosocial consequences. Finally, we analyze social cohesion as a tool of collective resistance.

Furthering understanding of how social cohesion operates is crucial as we not only seek to understand stigma from a socio-political perspective but, more importantly, to determine how to effectively address it. Social cohesion has been shown to be an integral component of community empowerment approaches among FSW in various contexts which bring community members together to analyze, articulate and demand their human rights including access to quality HIV services (D. L. Kerrigan et al., 2014). Hence,

social cohesion--conceptualized as the level of trust, solidarity, and mutual aid--is a necessary first step for community mobilization (D. L. Kerrigan et al., 2014) and related to processes that seek to alter the current power structure. Quantitative evidence also indicates that HIV stigma mediates the association between social cohesion and protective health behaviors among FSW living with HIV (See paper 2). Analyzing the nuances of how social cohesion allows a space for resistance of HIV stigma using a Foucauldian framework may offer the key to more fully understand stigma and how to address it.

Methods

The Abriendo Puertas (Opening Doors) intervention

Abriendo Puertas was initially implemented as a pilot intervention in 2013 over a period of 10 months and sought to improve HIV outcomes among FSW living with HIV in Santo Domingo. The intervention was offered to a cohort of 268 FSW living with HIV in Santo Domingo, Dominican Republic, who met the following criteria: being 18 years of age, HIV-infected, and having exchanged sex for money in the last month. The study was implemented by Johns Hopkins University in partnership with the Instituto Dermatológico y Cirugía de Piel Dr. Humberto Bogart Díaz (IDCP), COIN, and MODEMU (*Movimiento de Mujeres Unidas*) based in Santo Domingo. The multi-level intervention had four components: 1) individual counseling and health education; 2) peer-led HIV service navigation; 3) sensitivity training for clinical care providers; and 4) community solidarity and mobilization activities.

The latter component was implemented by MODEMU, a FSW-led civil society organization based in Santo Domingo. MODEMU facilitated the *casas abiertas* (open

houses), which provided opportunities for participants to come together to discuss topics of interest such as financial security, resources available for people living with HIV, exploring partnerships among each other to start micro-businesses, challenges taking care of a family member living with HIV and the importance of taking care of their health. The *casas abiertas* offered the women space to share and learn from their common challenges and jointly examine potential avenues for creative action. They also offered specific skill building workshops geared to promote better health and increase financial security among the women and their families.

Sample

In January of 2013, 34 women enrolled in the *Abriendo Puertas* cohort participated in semi-structured in-depth interviews (23 women) and two focus group discussions (11 women) as part of this qualitative sub-study. We sought a purposeful sample of individuals who had and had not participated in the *casas abiertas* component of the intervention. Of the 23 women who participated in in-depth interviews, 14 had participated in the *casas abiertas*. The two focus groups were comprised of one group with women who participated in the *casas abiertas* (n=5) and another group of women that did not (n=6). Recruitment of participants for the qualitative study was conducted by the first author and the intervention counseling team who helped to select women with varied experiences and who were likely to provide rich data.

Data collection and analysis procedures

Interview and focus group field guides were developed in collaboration with the study team based on formative research conducted in preparation for the intervention. Key

domains explored in the interviews included: how HIV diagnosis impacted their lives, what it meant for the participants to be part of Abriendo Puertas and the *casas abiertas*, how they had changed (physically and mentally) since participating in Abriendo Puertas including changes in HIV outcomes, and what power meant for them. The focus group among *casas abiertas* participants focused on experiences in the *casas abiertas*, experiences of stigma, physical and mental well being before and after the intervention, and the process of building social cohesion in the context of individual and community empowerment. The focus group among those who did not attend the *casas abiertas* focused on the reasons why they did not participate, their common challenges, experiences of stigma, physical and mental well being before and after the intervention, and their ideas about how to strengthen cohesion among FSW. Interviews were approximately 60 minutes long and FGDs were approximately 90 minutes long. All interviews and focus groups were conducted by a female, native Spanish speaker in a private room at the IDCP.

Interview transcripts were analyzed using thematic analysis techniques (Patton, 2002). All interviews and focus groups were audio recorded, transcribed, and analyzed in Spanish using Atlas.ti 7.0 (Friese, 2013). The data was analyzed in two phases. In the first phase a preliminary analysis was conducted to identify constructs related to societal disciplining (i.e. instances of domestic violence, verbal abuse, social rejection, employer discrimination) or self-castigation (i.e. fatalism, hopelessness, low self-esteem, loss of the will to live, suicidal ideation, etc.) and regaining power (fighting for one's life, regaining hope, self efficacy, increased self-esteem, solidarity, accessing social support, etc.). The coding was conducted on the specific constructs and tying them to instances of societal

disciplining, self-disciplining, and resistance was done at the thematic analysis stage. Additionally, we also coded aspects related to HIV behaviors (i.e. accessing HIV care, treatment adherence, condom use, substance use, etc.) to more fully understand the dynamics at play and their influence on health and well being. In a second phase, transcripts were analyzed to identify community narratives, which were identified as recurring phrases used by the participants and by identifying instances when those narratives were performed, such as when the participants displayed solidarity. Additionally, memos were utilized from the interviews and focus group discussions throughout data collection to identify information gaps, describe how participants perceived concepts such as various forms of stigma and discrimination, social cohesion, community empowerment, and document relationships between various themes emerging in the data.

Ethical approvals

The study was approved by the Institutional Review Boards of the Johns Hopkins University Bloomberg School of Public Health and IDCP. All subjects were consented at the beginning of each instance of data collection. Each participant received approximately \$10 USD (400 Dominican pesos) for participating in this sub-study. The names provided in the results section are pseudonyms to ensure confidentiality of the participants.

Results

Disallowing life: Self-disciplining through the internalization of the gaze

Many of the women interviewed indicated that upon being diagnosed with HIV they felt that their “world had ended” or that the “world was falling on them”. One participant expressed the sense of death clearly: “I thought that they killed me the day when they told me I was positive: that day I died.” This sense of death or imminent death surfaced in spite of the fact that in the Dominican Republic anti-retroviral therapy is free of charge in public health facilities and that upon diagnosis most of the participants received general information about the availability of treatment. For many participants, from the very point of diagnosis the *gaze* gave way to disallowing life through self-disciplining. In fact, some of them revealed that before being diagnosed with HIV they thought badly of PLHIV. Once diagnosed, their negative attitudes turned towards themselves through various forms of self-castigation.

One of the respondents, who had worked as a peer counselor for many years, shared that upon finding out that they are HIV positive, PLHIV are in shock and “the first [reactions] are feelings of guilt, depression, and a profound sadness; ...feeling completely lost.” Post HIV-diagnosis many women could not talk, had no desire to take care of themselves, to shower or to put on make up, did not want to leave their house, or lost their appetite for food and—perhaps more importantly—for life. These participants were, in effect, letting themselves die.

Depression kills... When you are depressed because of your HIV status you lose your appetite, you obsess thinking about that disease [AIDS] all the time and you do not eat. After I was diagnosed I became extremely thin.—Teresa.

[At *Abriendo Puertas*] I learned to value myself because when you fall like this [get HIV], you stop loving yourself... I believed that life was over and my self-esteem fell a lot. Before joining *Abriendo Puertas* I felt like a worthless thing.--

Maritza

HIV-related internalized stigma and the related self-disciplining were not the only type of constraining or debilitating experiences faced by the participants as many of them also experienced stigma related to their profession. Internalized sex work stigma led many participants to hide their profession from their families, friends, and neighbors. Some had internalized sex work stigma to such a high degree that they had normalized sex work-related violence and accepted it as a fact of life.

I did not know [but learned at *Abriendo Puertas*] that there should not be distinctions between a sex worker and another woman... Both should be treated with respect.--Sara

While internalized sex work stigma appeared to affect the participants to different degrees, it was present even in the discourse of those who seemed least affected by it. For example, toward the beginning of our interview, Luz, who had worked for over 20 years as a sex worker, indicated that sex work is a profession like any other. Luz is an activist heavily involved with the local sex worker and PLHIV movements. While she had embraced her profession and her narrative did not indicate feelings of shame, even Luz had some moments of doubt when she needed reassurance. Luz shared that when her

son reached adulthood she asked him if he felt that she had given him a bad example given her line of work. Her son told her that she had been a wonderful mother.

Some participants tried to avoid internalizing sex work-related stigma and the related self-disciplining by developing a financial security discourse around sex work, highlighting that their work had allowed them to provide for their children, support their parents or siblings, fulfill financial obligations, and build their own houses. Sex work gave them financial independence and for some helped them to avoid living in situations of domestic violence or being dependent on violent partners who threatened withdrawing financial support. The ability to provide for their children and sense of self sacrifice as mothers was a source of pride rather than shame.

I have worked, built my house, supported my children. In my household, I am man and woman... [and] we do what I say because I am the one who supports the house and provides.--Lourdes

On the other hand, in the case of life with HIV, most participants described significant challenges accepting their diagnosis. Most women revealed that their HIV diagnosis led to anxiety, depression, and suicidal ideation. These were just some of the self-castigating tactics of power. Internalized HIV stigma was also exhibited by an ever present sense of guilt and shame related to their HIV status. This led to self-marginalization and to zealously guarding confidentiality about their status. Even if they succeeded in keeping their HIV status confidential, most participants could not escape self-disciplining from the internalized gaze.

Disallowing life: Social disciplining through marginalization and normalization of violence

Through their narratives participants shared many instances of marginalization, rejection, and abuse because of their profession and HIV status. Some participants said that policemen would force them to provide sexual services for free; and others indicated that clients would not pay them for their services or would physically and verbally abuse them. Others had endured verbally abuse from their steady partners them because of their profession. Such violence often took place with impunity as sex workers were not afforded the same rights as other women such as protection from the police and social respect.

There is a lot of verbal abuse against sex workers. My steady partner never beat me but many times he insulted me [because I am a sex worker]. When he did this I felt like he was not valuing me, like he was treating me as if I was an object or an animal—Sara.

The participants not only faced societal marginalization due to their occupation but also due to their HIV status. The participants indicated that people living with HIV were “treated like animals”, put to eat separately, yelled insults in public, and perceived as “rotten.” Furthermore, some participants said that HIV stigma and discrimination is so ingrained in local discourse that calling someone “sidoso” (a person who has AIDS) is considered an insult or a slander.

When I found that I was HIV positive I was afraid of the being shunned away in my neighborhood. There are still a lot of people who talk a lot; they say bad things about HIV. I laugh to avoid being found out. If they knew I have *that*...--

Marina

In an environment of high expected HIV-related discrimination keeping one's status secret was of the essence in order to avoid societal disciplining through violence, abuse, or marginalization. The participants went to great lengths to avoid having their HIV status becoming publicly known. For example, many indicated traveling long distances to HIV clinics to access treatment instead of accessing local facilities where they risked meeting acquaintances, neighbors or friends who could divulge their status. In spite of having financial constraints most women preferred to pay for transportation to treatment centers far away from the prying eyes. A few women indicated avoiding support groups for people living with HIV to avoid any possibility of their HIV status becoming public. Thus, by hiding their HIV status from others the participants often found themselves marginalized with limitations on the support they were able to receive to cope with their diagnosis.

Life was disallowed through the denial of resources, opportunities, and appropriate services. Potential employers denied them job opportunities and health care providers often denied or delayed treatment, and did not provide important health information and appropriate confidentiality. A respondent painfully related the traumatic experience of being singled out and called "sidoso" (AIDS patient) amongst other patients by a doctor in a public health facility.

The women's narratives around such debilitating or constraining tactics of power revealed a profound sense of social injustice. Through the denial of appropriate services and opportunities their chance to "improve themselves" and achieve their potential was disallowed.

I feel discriminated because I am a *person*, an *intelligent woman* who deserves a good job, and who should not have had to go through some of the things I have gone through. But here you are discriminated; you are denied a job because of living with HIV. There are many times when you want to apply for a job, you go to apply and they ask you for lab tests. I feel very bad because the people who are hiring hand you a piece of paper and they tell you: "go get these lab tests done." And no, they don't give you a job opportunity and the possibility to improve yourself, all because you are living with HIV.—Ines

The participants did not discuss HIV stigma experienced from clients likely because, for the most part, they did not share their HIV status with their clients. The participants' narratives indicated that they were acutely aware of the importance of not disclosing their HIV status to clients to avoid the possibility of becoming victims of violence.

Additionally, they could not disclose their status to clients as they stood to lose an important or perhaps their only source of income. Indeed, one participant started working as a sex worker after losing her job as a seamstress because of her HIV status and not finding any other viable options. Many participants indicated wanting to leave the sex industry to take better care of their health as sex work often included long nights and drinking alcohol with their clients, and was not seen as conducive to taking care of

their health by some. Yet, given their financial responsibilities and lack of opportunity, the option of leaving sex work was not available for many respondents.

Resisting and subverting oppressive norms: Reconstructing identity through social cohesion

In the context of the pervasive and multiple forms of stigma and the resulting self and societal disciplining and marginalization, the participants isolated themselves either physically by staying at home and avoiding places where they may be recognized as PLHIV or psychosocially by not sharing important aspects of their lives with others (i.e. disclosing HIV status and profession). Many felt alone in these struggles until they participated in the *Abriendo Puertas* intervention. One of the components of the intervention, the *casas abiertas*, provided a safe physical and social space to come together to build trust and solidarity among sex workers living with HIV.

The first day [that I went to *casas abiertas*] I was very scared but a *companera* told me: “come in, I am also like that [living with HIV] and all the women you see here are also like that and they are here. I relaxed a little bit and went inside the room and felt great because I realized that I am not the only one.—Elena

By coming together participants were able to take an important step to overcome self- and societal marginalization. Some participants said that the *casas abiertas* made them realize that they were not alone, that there were other women facing similar circumstances. Cohesion, in particular the element of trust generated, created a psychosocial space for the participants to disclose their HIV status without feeling judged

or blamed and to feel accepted regardless of their HIV status. Thus, participants were able to redefine their internalized sense of abnormality by being treated and acting “normal” in an environment where their HIV status was known.

Since attending *casas abiertas*, I now belong to that family. [At the *casas abiertas*] we talk, we do not have shame. If I tell the woman next to me [at the *casas abiertas*]: “Listen, I am positive.” She will tell me: “me too.” But, with an outsider, if I tell him: “I am positive,” he will likely not treat me like one of my *companeras*.—Alta Gracia

Cohesion also provided a psychosocial space for the emergence of positive and de-stigmatized community narratives. These new narratives revolved around courage, strength, resilience, and agency for FSW living with HIV as a group to fight for their lives and provide for their loved ones. Being able to count on the support of a cohesive community to develop, perform, and sustain empowering narratives enabled the women to reinforce each other’s narratives and together reconstruct their identities. One of the narratives that emerged was the idea of presenting life with HIV in a positive light as compared to life with other diseases such as cancer or diabetes. The participants mentioned that HIV can be treated and that HIV infection was not fatal. Other commonly shared de-stigmatizing narratives emphasized not allowing HIV to take control of their lives, feeling valuable, and reclaiming life by taking care of their health.

I tell myself the truth: “I am HIV positive and I am going to die when God wants it, not when the disease decides it!” Those are words that I learned here, the other women [at *casas abiertas*] taught me this.”—Marisol

The de-stigmatized and empowering narratives that emerged at the *casas abiertas* also extended beyond the *casas abiertas*. Performance of these narratives through the uptake of protective health behaviors such as treatment adherence was an important way to fully integrate and embody new narratives. Embodiment of the idea that life was worth living and that they have to fight for their lives was translated into such health seeking behaviors including staying in care, as well as adherence to HIV treatment.

I stopped taking my medication because I used to take care of two children and I did not have time. Also, I did not feel comfortable going to get my medicines. But, after spending sometime [at Abriendo Puertas] I started taking my medicines again and I told myself: “why not live? I see other people [companeras] living normal lives with HIV. Before coming to the program I did not have a will to live. Now I want to live because I see how good life is.--Gracia

At the *casas abiertas*, the fact that they were living with HIV lost its central place in the women’s identities and it became a circumstance rather than a defining feature. Thus, together the women helped each other to develop a new sense of self where living with HIV did not define them.

I get along with Anita very well. I met her at the *casas abiertas* and we have become great friends. [When we get together] we... forget that we have this problem [HIV]. When we get together we feel important, we talk like two civilized people, and we do not have to talk about *that* [HIV] because we already know we have it. With Anita I feel OK with her knowing that I am living with HIV. It doesn't matter what we tell other people [about our HIV status]. The important thing is that when I am with Anita I focus on thinking: "I am the same as other people, I am not defective."—Elena

Solidarity and mutual aid, elements of social cohesion, were essential in developing and strengthening a sense of agency which the women directly link to their perception of power. The ability to help other FSW and people living with HIV through counseling, taking them to the doctor, or sharing their experience led to a sense of agency that had been taken away from them. Indeed, from the participants who were asked what power meant to them most responded that *power is being able to help others*. Through helping others the participants were able to restore the agency once lost because of stigma.

Power is you being able to help others like in my case, I already had to help a number of people who confide in me and confess that they are sick, that they have this problem [HIV], that they don't feel well. And, I go to the center where I am getting my medication and I take them there because for me this is very important. —Kathy

I feel powerful because I have been able to help some people [living with HIV] to go forward. There was one companero who was not doing well, he didn't care about anything. One day, as I was arriving to my church, he stops me on my tracks and confesses to me: "listen, *epa*, I am like you. And I ask him: "Like me, how so?" He says to me: "I also have this and this [HIV]. I want you to take me [to the center] where you go because I saw you when you were very ill [and you have recovered]." He was right, I was in critical condition at one point but thanks to God and somebody who helped me I recuperated and moved forward. And I can assure you that I went with him, I took that man to the doctor, I invited him to my church, and he is doing well, with his self-esteem up high.--Maritza

The opportunity to help others provided an avenue to re-organize and re-construct the self putting into practice a positive narrative, which replaced the negative narrative (HIV stigma) imposed by society and the internalized gaze. Solidarity was also a way to embody de-stigmatized narratives as it was a re-affirmation of the humanity of which they had been robbed as their life was disallowed. Furthermore, solidarity also provided an avenue to create content for narratives that could be recounted and shared and that would strengthen the sense of a valuable self, leading to a significant reduction of stigma.

Yes, I have helped a lot of people who are living with HIV. I have given them "animo" [will to fight] for life. When I see somebody who is depressed or going through a difficult situation I try to help them see things differently... Like the other girls that come here [to Abriendo Puertas] with me. Sometimes they tell me: "I don't have food, ... I need babysitting, I don't have money for

transportation [to go to my Abriendo Puertas appointment]. I tell them: “listen, this is what we will do, you do not have transportation, I will find the money for you and when you have money you pay me back. As for the baby, I will take your baby and I will wait for you downstairs while you attend your counseling session”. I try to find ways to help other women go to [Abriendo Puertas] counseling because there people learn about life, like me... I was living in a very dark world [before participating in Abriendo Puertas]. When people called me out and insulted me: “oh God, that woman has AIDS”... when people told me *that*, I used to feel offended. But ... now I don’t care what people tell me. I tell them: “*Mi amor* [Honey], lucky me because there is treatment for *that* [HIV]!!”—

Altagracia

Discussion

While several authors have written about the socio-political nature of stigma, individually-oriented socio-cognitive frameworks have informed most of the HIV stigma reduction interventions reported in the public health literature (L. Brown, Macintyre, & Trujillo, 2003; Sengupta, Banks, Jonas, Miles, & Smith, 2011; Stangl, Lloyd, Brady, Holland, & Baral, 2013). The emphasis on addressing individuals’ experiences of HIV stigma has constrained the scope of stigma reduction interventions. Strategies used to date have primarily included promoting empathy with PLHIV and reducing fear of HIV/AIDS and PLHIV using strategies such as PLHIV testimonials, dissemination of information about HIV/AIDS and modes of physical contagion (Mahajan et al., 2008; Sengupta et al., 2011; Stangl et al., 2013). More recently stigma reduction strategies have also focused on building PLHIV’s skills to reduce internalized stigma through skills

building, access to support groups, counseling, and stigma-reduction trainings for health personnel and other service providers (Mahajan et al., 2008; Sengupta et al., 2011; Stangl et al., 2013). Thus, strategies to address HIV stigma have primarily treated HIV stigma as a thing, a barrier to be eliminated, without considerable attention to its larger socio-structural roots.

While such interventions have made important contributions to the field, the predominant approach may not be the most conducive to sustained social change. Indeed, socio-cognitive strategies are limited to the extent that they do not address the underlying power dynamics fueling stigma. The importance of taking a Foucauldian perspective to understand stigma lies in the possibility of uncovering such dynamics. Given that “power is only accepted when it is hidden” (pp. 459) (Pickett, 1996) such uncovering allows for a better understanding of effective ways to address stigma.

If stigma is indeed a tactic through which power is deployed, methods to effectively address it must subvert the norms through which stigmatizing differences are created. From a Foucauldian perspective, such subversion entails rebelling against those ways in which we are defined, categorized, and classified (Rajchman, 1983); or, more simply put, they entail reconstructing identity. We are not born free but into various configurations of power. Given these constraints, “freedom does not lie in discovering who we are, but in being able to construct who we want to be, thus rebelling against the configurations of power constraining us” (Rajchman, 1983). In the case of the women in the study, freedom entailed rebelling against the negative, devaluing, constraining labels imposed

on them by society by supporting each other in constructing who they wanted to be: women of courage, value, beauty, and strength.

An important question that follows is how to construct “who we want to be” in an environment where the capillary and policing arms of power are ubiquitous, even within us. Such environment was that faced by the participants of the *Abriendo Puertas* intervention. They shared numerous experiences of sex work and HIV-related stigma, which were central elements of a process whereby they lost their agency, self worth, ability to access social support, and perceived social respect. Participants were marginalized, denied opportunities, and verbally, psychologically or physically abused. These were societal strategies to discipline them for transgressing norms around sexuality and healthism (Crawford, 1980; Queen, 2001).

Per Foucault’s conceptualization of power, when it comes to understanding the hold modern power has on us social practices are more fundamental than ideologies (Fraser, 1989). The results revealed numerous self-stigmatizing practices implemented by the participants. Through their participation in the intervention the women were able to come together to develop and put into practices new de-stigmatizing narratives that re-defined their identity. At the beginning of their participation in the intervention these new narratives were likely not fully believed and embodied by the participants.

However, through being able to come together and develop, repeat, and practice new de-stigmatized narratives their identities were reconstructed as embodiment took place.

Thus, this study not only highlights the strong hold that stigma had on the participants and but it also suggests that changing stigmatizing beliefs not only requires hearing de-

stigmatizing messages (which is the current socio-cognitive approach) but also developing and coming to embody new narratives through repetition and practice, which we can label as a socio-political approach. This approach highlights the importance of providing safe spaces to develop, repeat, and perform new narratives, which ultimately are new configurations of power.

In this study we found that social cohesion offered such space. The women coming together and realizing that they were not alone was a first step to overcome marginalization and reclaim life. Through establishing trust they were able to disclose their HIV status in an environment where they felt accepted. In such safe space they were able to start practicing and embodying a sense of normality that they had lost. This psychosocial space offered an environment for new de-stigmatized narratives to emerge and for practicing positive values such as courage, resilience, solidarity, and resourcefulness. While other studies have found an association between social cohesion and HIV/STI prevention health behaviors among FSW (Fonner et al., 2014; D. Kerrigan et al., 2008), to our knowledge no other studies have analyzed social cohesion as a psychosocial space for the development, repetition, and practice of de-stigmatizing narratives among FSW living with HIV.

From a programmatic perspective, our findings highlight the importance of ensuring that programmatic efforts provide FSW living with HIV the opportunity to change oppressive norms and address power imbalances by developing and performing new, empowered narratives. One such opportunity is presented by strengthening social cohesion which offers a safe physical and psychosocial space to subvert oppressive norms. These

opportunities should include avenues to produce and reproduce a de-stigmatized identity and, in so doing, plant the seeds of personal and social transformation and freedom. Such seeds are likely to lead to community mobilization to address structural issues underlying negative HIV-related outcomes, as well as the experiences of social inequality faced by FSW, creating the possibilities of sustainable social change.

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General Discussion

The overall objective of this dissertation was to analyze the association between social cohesion and HIV/STI prevention outcomes (including CCU, STI prevalence); and to examine its role in reducing HIV and sex work-related stigma among a cohort of FSW living with HIV in the DR.

Social cohesion has been at the center of community empowerment-based interventions aiming to reduce HIV/STI prevalence among FSW (Deanna L. Kerrigan et al., 2013). Projects such as Sonagachi and Avahan in India; Encontros in Brazil; and a structural intervention implemented in the Dominican Republic actively sought to build a cohesive and inclusive sex worker community as a means to facilitate collective action to promote socio-political change, reduce stigma and discrimination related to sex work, and/or change social norms around CCU. While research indicates an association between social cohesion and CCU among FSW (Blanchard et al., 2013; Fonner et al., 2014; D. Kerrigan et al., 2008), researchers have not investigated if this association holds among FSW living with HIV.

Manuscript 1 contributes to the literature by exploring the association between social cohesion and CCU and STI prevalence among FSW living with HIV. The manuscript indicates that the association holds: Social cohesion was associated with CCU with clients but not with steady partners and social cohesion was also associated with STI prevalence. The findings suggest that social cohesion may be a viable strategy to promote CCU with clients and STI reduction among FSW living with HIV.

Manuscript 2 then seeks to examine three potential pathways related to the association between social cohesion and condom use: HIV stigma, sex work stigma, and layered stigma. The findings indicate that HIV stigma is a pathway, however sex work stigma is not. Sex work stigma was significantly associated with CCU with clients and CCU with partners but not with social cohesion. The manuscript contributes to the literature by indicating that negatively defined or stigmatized identities may be defined more positively when people in those groups come together to redefine their identities in more positive terms.

Manuscript 2 also contributes to the literature indicating that distinct types of stigma may differentially impact HIV/STI prevention outcomes. Given the current emphasis on HIV care and treatment, the literature has focused on analyzing the differential effect of various types of stigma among FSW on HIV care and treatment outcomes. For example, a study using baseline data from the *Abriendo Puertas* cohort revealed that internalized sex work stigma was associated to retention in HIV care, while internal HIV stigma was not associated with retention (Zulliger, Barrington, Donastorg, Perez, & Kerrigan, 2015). Another a study revealed that HIV-related stigma was negatively associated with HIV testing uptake while sex-work related stigma was positively associated with HIV testing among a group of 139 FSW in Russia (King, Maman, Bowling, Moracco, & Dudina, 2013). Various other studies have also identified various types of stigma among FSW living with HIV as barriers to accessing and staying in HIV treatment and care (Chakrapani et al., 2009; Kennedy et al., 2013; Mtetwa, Busza, Chidiya, Mungofa, & Cowan, 2013; Rogers et al., 2014). There is, however, less research on the effect of different types of stigma on prevention-related HIV/STI health outcomes among FSW

living with HIV. The results from Manuscript 2 fill this gap, pointing to a differential effect: HIV stigma mediates the association between social cohesion and CCU with clients but sex work stigma does not.

Manuscript 3 takes an in-depth look at the process via which social cohesion, stigma, and HIV behaviors are connected in the everyday lives of FSW living with HIV. These stories reveal that social cohesion may be understood as a strategy to provide safe spaces that allow for the formation and practice of new configurations of power that may lead to develop new de-stigmatized identities more conducive to health. The availability of safe spaces have been part other interventions for FSW such as *Fio del Alma* and *Encontros* in Brazil (D. Kerrigan et al., 2008; S. A. Lippman et al., 2012). Manuscript 3 contributes to the literature by highlighting that safe spaces not only have physical but also psychosocial characteristics, and that they are environments where resistance to oppressive power structure can emerge. Safe psychosocial spaces are environments of trust, solidarity, and mutual aid, where participants can share their views without fear of being disciplined by the prevailing power structure (social norms), which pervade all levels of society and even infiltrate individuals' psyche.

Manuscript 3 also contributes to the literature by highlighting the importance of *practices* to reduce internalized stigma. *Practices*, as referred in the Manuscript, are similar to the popular psychological technique of behavioral activation, which has proven effective in at least two meta-analysis (Cuijpers, Van Straten, & Warmerdam, 2007; Mazzucchelli, Kane, & Rees, 2010). Current social and behavior change interventions typically emphasize message and information delivery for behavior change, focusing on cognition

to change behaviors. These interventions are implemented from the understanding that people are rational. Additionally, there are a growing number of structural interventions that are focused on changing structural and environmental factors. These interventions are implemented from the understanding that structural or environmental factors are barriers or facilitators to enact behaviors need to be removed or placed in order to facilitate the uptake of healthier behaviors. While it is true that behavior change may start with changes in knowledge, attitudes, behavioral intentions, and be facilitated by barrier removal, findings from this study suggest that uptake of new practices do not have to necessarily follow this prescription: *Practices* may be implemented before the related cognitive and emotional aspects are fully internalized, and without regard to barriers and facilitators. Thus *practices* could be one more tool in the arsenal of strategies to promote social and behavior change at population level.

Finally, it is noteworthy that Manuscript 3 takes a socio-political approach to analyze stigma, which is typically studied from a socio-cognitive perspective (Bruce G. Link & Phelan, 2001; Parker & Aggleton, 2003). A socio-political perspective allows understanding the power dynamics underlying the stigmatization process and how community processes such as social cohesion may help to change those dynamics. While taking a socio-political perspective to analyze stigma, the findings from Manuscript 3 suggest that stigma is not a structural factor that lies far away from the individual at community or other levels of the ecological model, but a factor that seamlessly permeates through the community and individual levels without regard to boundaries. The results in Manuscript 3 indicate that stigma can be understood as a strategy of modern power to enforce social norms and that it can be found at community level and also internalized in

individuals. The opposite is true for social cohesion: while this construct is typically considered a structural factor influencing health outcomes and behaviors, Manuscript 3 also analyzes it at the individual level. Thus, the conceptualization of social cohesion and stigma used in Manuscript 3 moves away from one in which individual and structural levels have clearly defined boundaries to one where these boundaries are porous and the constructs permeate both levels. This is an important contribution to the literature as it advances the idea of the interconnectedness of ecological levels through the embodiment of structural factors and the micro-politics underlying individual constructs; micro-politics which are connected to the macro-political and economic structure.

Research, Programming, and Policy Implications

Findings from this dissertation have important research, programming and policy implications. The three manuscripts included in this dissertation indicate that social cohesion in the context of a multi-level HIV/STI prevention, treatment, and care intervention may be an effective strategy to promote healthier behaviors and outcomes among FSW living with HIV. Most of the research to date is descriptive and focuses on general characteristics of FSW living with HIV and the barriers they face to access and adhere to HIV treatment (Chakrapani et al., 2009; Mtetwa et al., 2013; Rogers et al., 2014; Zulliger, Barrington, et al., 2015). While this research is extremely important, it is also important to consider the HIV/STI prevention needs of this population. Multi-level interventions among this population in other contexts are urgently needed as is research on other HIV/STI prevention strategies that may be effective. Indeed, even though sex workers are a key population, there has not been sufficient resources or attention devoted to HIV and sex work (UNAIDS, 2009). Furthermore, most HIV/STI prevention

interventions with FSW do not report separately prevention outcomes for FSW living with HIV as it seems that FSW are no longer considered a target of HIV/STI prevention interventions once they are infected with HIV. This is in spite of the fact that it is likely that those infected face higher level of HIV/STI vulnerability than their counterparts, that such vulnerability will only be exacerbated by HIV stigma, and that their HIV/STI prevention needs do not subside once they are infected with HIV.

Additionally, more research is needed to determine if *practices* in safe spaces may be viable strategies for the reduction of HIV stigma and the uptake of HIV/STI prevention behaviors among FSW living with HIV in other contexts. Behavioral activation is a popular technique in psychology (Cuijpers et al., 2007; Mazzucchelli et al., 2010) which has yet to be utilized and studied in public health behavioral interventions. This technique may offer a new strategy in the arsenal of tools to promote social and behavior change.

Another research implication of this dissertation is the need for better statistical and measurement tools of various social constructs. The methodological challenges encountered in manuscript 2 indicate the need to develop tools that are better able to measure highly correlated constructs such as HIV stigma and sex work stigma.

Additionally, manuscript 2 highlights the importance of taking into consideration how social constructs may have different effects depending on the perspective used to measure them. For example, for a researcher analyzing stigma and discrimination against FSW living with HIV in the Dominican Republic qualitative data from FSW and health care providers may indicate layered sex work and HIV stigma. However, quantitative data

measuring the perceptions of FSW living with HIV may indicate more preoccupation with HIV stigma and FSW stigma. Thus, the effect of both types of stigma on certain health behaviors rather than being compounded through layering may be primarily acting through HIV stigma.

Finally, further research is also needed to understand how social factors that are considered to be at the structural level are embodied in the individual and how individual factors that are considered solely to be at the individual level are underlined by micro-politics which are connect to the larger political and economic structure. This integrated level of thinking can provide new insights to find effective points of intervention.

Strengths and Limitations

There are number of general limitations to the study that should be considered. Data for the quantitative phase of this study is cross-sectional, which limits the ability to make causal inferences given the lack of information about temporality. Additionally, the study used a convenience sample, which could lead to selection bias given how sampling was done. There may be FSW who are very vulnerable, isolated, and hard to reach who were not part of this sample and who may have different experiences that the study participants. While care was taken to avoid this, the sample cannot be considered representative of FSW living with HIV in Santo Domingo. Recall bias may have occurred for questions that asked participants to provide information for the previous six months. Another limitation is potential social desirability bias in the qualitative portion of the study. Participants may have controlled their narrative and given answers based on expectations of judgment on the part of the researcher. To avoid this, the student researcher ensured establishing

rapport with the FSW participating in the interviews and ensuring confidentiality. Finally, there could be selection bias in terms of the women who reported high social cohesion at the end of the study. It is possible that those women were somehow different than those who reported low social cohesion. Thus, there may be unmeasured confounders such as self-esteem, level of stress, or depression for which we have not accounted.

General Conclusions

The results from the three manuscripts in this dissertation present consistent findings about the relationship between social cohesion, stigma and HIV/STI prevention behaviors and outcomes. Quantitative findings from manuscripts 1 and 2 indicate that social cohesion was associated with CCU with clients and STI prevalence; and that HIV stigma is in the pathway of this association. Qualitative findings from manuscript 3 indicate that social cohesion can be understood as an empowerment strategy leading to reducing stigma and to the uptake of positive health behaviors. The results indicate that social cohesion is an important HIV/STI prevention strategy among FSW living with HIV that can lead to the reduction of stigma and the uptake of healthier HIV/STI prevention behaviors and improved health outcomes.

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Curriculum Vita

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Profile

Passionate behavioral scientist and capacity building professional with experience designing, implementing, and evaluating social and behavior change communication (BCC) programs and five years of experience living and working in low and middle-income countries. Brings a unique combination of program implementation, technical assistance, and scientific research experience. Has technical expertise in behavioral sciences, behavior change communication interventions, capacity building, HIV/STI prevention, treatment and care, working with vulnerable populations, and qualitative and quantitative research methods. Fluent in Spanish and English, highly proficient in Portuguese.

Consultancies

United Nations Population Fund (UNFPA)

Mozambique, 7/2015-8/2015

- Develop a behavior change communications (BCC) package to prevent and address violence against women and girls with an emphasis on gender equity and sexual and reproductive health.

World Bank

Washington DC, 6/2015 & 9/2015

- Member of a team conducting a systematic literature review of scientific evidence about entertainment education interventions in various social development areas including health, gender equity, and environment. This process included reviewing 1,500+ articles and synthesizing the evidence.

Pact, Inc., Linkages across the Continuum of Services for Key Populations Affected by HIV (LINKAGES) Project

Malawi, 5/2015

- Provided technical assistance to non-profit organizations providing HIV/AIDS services to sex workers and men who have sex with men in Malawi.

Professional Experience

United States Agency for International Development (USAID), Office of HIV/AIDS (OHA), Implementation and Support Division (ISD)

Social and Behavior Change Advisor
Present

Washington, DC, 10/2015-

- Serve as the advisor on Social and Behavior Change Communications (SBCC) both at the USAID country-level and at headquarters, providing guidance on the design, assessment and evaluation of the behavioral components of HIV/AIDS prevention, treatment, and care programs.
- Provide USAID and PEPFAR country teams, host country governments and implementing partners technical input and ongoing support to ensure best practices are incorporated in behavioral interventions and communication campaigns.
- Develop initiatives to build in-country capacity to address management and sustainability of SBCC programs at all levels; and consult with universities and other training institutions to strengthen SBCC education.
- Advise USAID headquarters technical working groups on health communication strategies for HIV prevention, treatment and care, including incorporation of gender, stigma and discrimination components.
- Disseminate lessons learned through technical briefs and journal articles; assist in the development of cross-sectoral communication strategies; provide advice on local capacity building, sustainability and community level involvement in HIV/AIDS communication for prevention, care, treatment and support strategies with partner country governments, civil society and the private sector.

Johns Hopkins Center for Communication Programs (CCP)

Pacto (Prevenção Activa e Comunicação Para Todos) (BCC) Project, Mozambique

Malawi BRIDGE II HIV (BCC) Prevention Project, Malawi

Guatemala Behavior Change Communications (BCC) Project, Guatemala

Health Capacity Collaborative (HC3), Family Planning (BCC) Project, Angola

Research to Prevention (R2P) Project, FSW living with HIV, Dominican Republic

Doctoral Student Research Assistant
09/2015

Baltimore, MD 11/2012 –

- Draft evaluation protocols, develop data collection tools for program evaluation, analyze quantitative data, conduct literature reviews, conduct systematic reviews, and draft manuscripts for publication in peer reviewed journals.
- Analyze monitoring and evaluation data of HIV/STI prevention programs
- Evaluated activities of peer educators in the PACTO project, which linked people living with HIV/AIDS (PLWHA) to care and treatment services through establishing referral networks.
- Wrote literature review of behavior change communication (BCC) evidence in three key sectors (maternal and child health, democracy and governance, and environment) in Guatemala to inform BCC strategy for programs funded by USAID.
- Assisted in the development of BCC strategy for USAID-funded programs in Guatemala.
- Member of a team that developed research protocol for formative research in

preparation for a BCC program in Angola to promote increased use of modern contraceptives and access to family planning services among young couples.

- Lead author of a systematic review of HIV-alcohol risk reduction interventions implemented in sub-Saharan Africa. The studies review focused on individual behavior change through education and information sharing.
- Member of team that evaluated the Tchova Tchova program, which was a BCC program to promote gender equity in Mozambique.

**United States Agency for International Development (USAID), Global Health
Fellows Program, Public Health Institute**

**Implementation Support Division (ISD), Office of HIV/AIDS (OHA), Bureau for
Global Health**

HIV/AIDS Capacity Building Intern

Washington, DC 05/2012-

11/2012

- Developed a framework for monitoring and evaluation (M&E) of capacity building interventions for civil society organizations (CSOs) implementing HIV prevention, treatment and care projects and a list of outcome indicators
- Wrote a qualitative analyses about the lessons learned in capacity building of NGOs and CBOs implementing HIV prevention, treatment and care projects in Africa
- Developed a research protocol for a qualitative study on factors that contribute to the sustainability of CSOs providing HIV/AIDS prevention, treatment, and care services
- Developed scopes of work for a desk review of the New Partners Initiative Project which provided capacity building support and funding to CSOs in Africa and Asia providing HIV/AIDS services

Johns Hopkins Bloomberg School of Public Health

Student Researcher

Baltimore, MD, 09/2011 –

05/2012

- Developed a HIV/AIDS health education curriculum and information, education and communication (IEC) materials (photo novella and brochures) for low-literacy Latino clients of AIRS, a Baltimore-based non-profit organization providing housing services for low income people living with HIV (10/2011 – 03/2012)
- Leader of a team that developed a new program framework for AIRS Permanent Housing Program and provided tools for client needs assessments (09/2011)
- Using the Stages of Change Model, conducted a qualitative study to analyze the factors that prevent substance abuse relapse among clients of the Helping Up Mission, a local NGO that provides social services to homeless people battling with substance addictions in Baltimore (01/2012 – 05/2012)

Pact, Inc.

**Community REACH (HIV/AIDS Prevention) Project
BRIDGE HIV/AIDS (BCC) Prevention Project**

Evidence Based Targeted (EBT) HIV/AIDS Prevention Project
Capacity Building and Knowledge Management Program Manager
Lilongwe, MALAWI, 08/2009 – 06/2011

- Provided technical direction and oversaw Pact Malawi's capacity building work in two large public health projects: the Community REACH and the BRIDGE HIV/AIDS Prevention Project. This included developing a capacity building strategy, project work plans, supervising project implementation and managing relationships with local partners.
- Provided technical assistance to the implementation team of the Evidence Based Targeted (EBT) HIV/AIDS Prevention Project, which was a complex national project with multiple local and national partners. The program targeted most at risk populations including men who have sex with men, plantation workers, and market vendors.
- Member of team that developed BCC messages to be disseminated by peer educators working with local civil society partners.
- Developed curriculum to train health personnel to conduct referrals, improve access to services and avoid stigma and discrimination against people living with HIV and most at risk populations
- Assisted in the development of Pact Malawi's guidelines for designing and implementing HIV/AIDS prevention programs.
- Facilitated organizational capacity assessments (OCA) of local civil society partners and managed the development and implementation of partners' institutional strengthening plans.
- Led organizational network analyses (ONA) to assess the interconnectedness and collaboration of community based organizations (CBOs) in the districts where BRIDGE was implemented.
- Designed, facilitated and/or coordinated capacity building workshops in identified priority capacity areas such as community mobilization, strategic planning, leadership, resource mobilization and governance.
- Wrote and submitted semi-annual reports and assisted with program monitoring and evaluation.
- Wrote final evaluation of capacity building activities.
- Supported grantees in the development of their project proposals, work plans, performance monitoring plans and data collection tools.
- Developed and coordinated Pact Malawi's Knowledge Management Initiative.
- Directly supervised one Program Officer under the REACH project and indirectly supervised the work of four service specialists working on EBT-Prev Project and two program officers working on the BRIDGE Project.

Academy for Educational Development (AED)

CAP Mozambique Health Services Capacity Building Project
Operations and Financial Director and Technical Assistance Provider
Maputo, MOZAMBIQUE, 11/2007 – 07/2009

- Managed the finances and operations of a \$9 million USAID-funded NGO and CBO capacity building public health project in Mozambique providing funding

and technical assistance to local organizations implementing SBCC interventions in their communities.

- Provided capacity building support to grantees implementing HIV prevention interventions in communities in various areas of the country.
- Conducted training for grantees and staff.
- Established grant-management systems and ensured grant recipient compliance with AED and donor regulations.
- Reviewed and negotiated budgets with local partners.
- Conducted and coordinated pre-award evaluations and/or assessments of potential grantees.
- Conducted on-site reviews of grantees and provided management recommendations.
- Supervised grants accountants in the review of grantee financial reports to ensure compliance with AED and donor regulations.
- Supervised a team of 10 staff: 4 financial technical assistance providers and 6 administrative, human resources, logistics and finance staff to ensure smooth program operations.

Capable Partners (CAP) NGO and CBO Capacity Building Project

Program and Finance Officer

Washington DC, 09/2005 –

11/2007

- Provided management and programmatic support to a portfolio of programs under the Capable Partners Program (CAP) totaling approximately \$45 million. CAP provided funding and technical assistance to NGOs implementing behavioral interventions in various countries including Mexico (Health and Human Services for Victims of Trafficking project), Kenya (HIV/AIDs prevention, treatment, and care project), Mozambique (HIV/AIDS prevention project), South Africa (Prevention of Mother to Child Transmission project), and Liberia (HIV prevention project).
- Established grant-making systems in field offices of assigned projects and ensured grant recipient compliance with grant agreement and donor regulations.
- Ensured AED contract compliance and quality of project deliverables for assigned projects.
- Prepared quarterly program reports.
- Prepared cost proposal budgets and budget modifications for multi-million dollar projects.

Development Alternatives, Inc. (DAI), Democracy and Governance Group

Peru Policy and Institutional Development Program

Director of Operations and Finance (Deputy Director)

Lima, PERU, 06/2004 –

09/2005

- Managed the finances and operations of a \$6 million capacity development program providing policy support to the Government of Peru.
- Supervised and trained seven staff members and evaluated their performance.

- Monitored political situation in Peru, particularly that relating to counter narcotics policies.
- Negotiated subcontract prices and managed local subcontracts and consultant agreements.
- Ensured timely payments to subcontractors, consultants, and vendors and timely issuance of contracts.
- Analyzed the financial status of the project, including accrued and projected expenditures.
- Prepared reports for the project funder.
- Developed and updated project's operations manual, which included project financial systems, contracting and subcontracting procedures, personnel policies, travel policies, and procurement policies.
- Led the administrative team to streamline and institutionalize policies and procedures for efficient operations.
- Reviewed and approved field expenditures, local subcontractor invoices, local consultant timesheets, and invoices. Reviewed end of the month accounting reports, bank reconciliation, and payroll.
- Initiated and worked with home office contract's office to process any necessary contract modifications.

Catholic Legal Immigration Network, Inc. (CLINIC)

Resource Development Officer
05/2004

Washington, DC, 06/2002-

- Wrote dozens of grant proposals and concept papers to obtain funds to provide free legal services to indigent immigrant detainees and advocate for the rights of low-income immigrants in the United States.
- Identified potential funding sources and cultivated and managed relationship with donors. Raised approximately \$2 million.
- Prepared narrative and financial grant reports.

Global Education Partnership

Development Director
06/2002

Washington, DC, 09/2001-

- Wrote concept papers, grant proposals and grant narrative and financial reports.
- Assisted the Programs Director to develop a new monitoring and evaluation system for the organization's educational projects.
- Recruited and supervised two development associates and three interns.

Education

- **Doctor of Philosophy (PhD)**, Behavioral Sciences, Department of Health Behavior and Society.
Johns Hopkins University Bloomberg School of Public Health, Baltimore, Maryland, expected 11/2015

- *NIH Fellowship on Sexually Transmitted Infections (STI)*, National Institute of Health (NIH) and Johns Hopkins STI Training Program (2013-2015)
- *Full tuition scholarship*: highest departmental scholarship (2012-2013)
- *PhD Candidate*: As of June 2014 completed all PhD requirements except for the dissertation
- *Dissertation*: The association between social cohesion and HIV and sex work stigma with consistent condom use and STI prevalence among female sex workers living with HIV in Santo Domingo, Dominican Republic
- **Master of Public Health (MPH)**, Social and Behavioral Sciences Concentration. Johns Hopkins University Bloomberg School of Public Health, Baltimore, Maryland, 05/2012
 - *Sommer Scholarship*: full tuition and stipend awarded to outstanding MPH candidates
 - *Master's Thesis*: Case study: Scaling up a maternal and neonatal quality improvement project in Ecuador
- **Master of Public Policy (MPP) and Certificate in International Development** Duke University, Durham, North Carolina, 05/2001
 - *Joel Fleischmann Scholarship*: full tuition scholarship awarded to outstanding MPP candidates upon admission
- **Bachelor of Science (BS)** in Economics, summa cum laude. Truman State University, Kirksville, Missouri, 05/1999
 - *International Merit Scholarship*: 50% tuition scholarship awarded to outstanding international students
 - *President's Honorary Scholarship*, Truman State University, 1995-1999: awarded to outstanding students who maintained a GPA of 3.5 or higher
 - *McGee/Korslund Scholarship*, Truman State University, 1997-1998 : granted to outstanding students

Languages

Spanish: Fluent

English: Fluent

Portuguese: Highly proficient

French: Beginner

Conference abstracts

Carrasco, M, Barrington, C, Donastorg, Y, Perez, M, Kerrigan, D. Social cohesion is significantly associated with consistent condom use among female sex workers living with HIV in Santo Domingo, Dominican Republic. Poster presentation at 2014 CDC Conference on Sexually Transmitted Infections.

Carrasco, M., Grieb, S., Flores-Miller, A., Desir, F., Zelaya, C., Sherman, S., Page, K. Typology of Latina immigrant sex work in Baltimore. 2015 Symposium on Women & HIV. Accepted (oral presentation).

Figueroa, ME, Carrasco, M, M., Poppe, P., Kwizera, A., Pinho, D., Massingue, F., Tanque, M. Community dialogue for normative and behavior change: the *Tchova Tchova* project in Mozambique. 2014 Conference of the International Communications Association. Accepted (oral presentation).

Grieb, S., Carrasco, M., Flores-Miller, A., Desir, F., Zelaya, C., Sherman, S., Page, K. "Developing a typology of the Latino immigrant sex industry in a new receiving community to aid in HIV prevention efforts." 2014 Conference of the American Public Health Association. Accepted (oral presentation).

Grieb, S., Carrasco, M., Flores-Miller, A., Desir, F., Zelaya, C., Sherman, S., Page, K. "Typology of the Latino immigrant sex industry in a new receiving community to aid in HIV prevention efforts." 2014 Conference of the American Public Health Association. Accepted (oral presentation).

Publications and Papers in Progress

Carrasco, M. Debates for Peace: A community mobilization package to stimulate conversation and new practices to prevent and address violence against women and girls in Mozambique. UNFPA and Mozambique Ministry of Gender, Children and Social Action. Maputo: Mozambique.

Carrasco, M, Arias, R, Figueroa, ME. The multi-dimensional nature of HIV stigma: Evidence from Mozambique. Invited to revise and resubmit. African Journal of AIDS Research

Carrasco, M., Esser, M.E., Sparks, A., & Kaufman, M. HIV-alcohol risk reduction interventions in sub-Saharan Africa: A systematic review of the literature and recommendations for a way forward. Accepted for publication with revisions. *AIDS & Behavior*.

Carrasco, M. & Sklaw, K. The seven principles of capacity building of civil society organizations (CSOs) delivering HIV/AIDs services: lessons learned through the New Partners Initiative (NPI) in Africa. 2014. USAID.

Figueroa, ME, Carrasco, M, M., Poppe, P., Kwizera, A., Pinho, D., Massingue, F., Tanque, M. Community dialogue for normative and behavior change: the *Tchova Tchova* project in Mozambique. Accepted for publication with revisions. *Journal of Health Communication, International Perspectives*.

Kaufman, M. R., Rimal, R. N., Carrasco, M., Fajobi, O., Soko, A., Limaye, R., & Mkandawire, G. (2014). Using social and behavior change communication to increase HIV testing and condom use: the Malawi BRIDGE Project. *AIDS Care, 26 Suppl 1*, S46–49. doi:10.1080/09540121.2014.906741

Kerrigan, D., Donastorg, Y., Perez, M., Zulliger, R., Carrasco, M., Fleming, P., & Barrington, C. (2014) *Abriendo Puertas: Feasibility and Initial Effects of a Multi-Level Intervention Among Female Sex Workers Living with HIV in the Dominican Republic*. Project Search: Research to Prevention Project.

Honors and Awards

- Doctoral Distinguished Award (2014-2015), Department of Health Behavior and Society, Johns Hopkins Bloomberg School of Public Health
- R2P Research Grant, 2012-2013, USAID Project Search, Research to Prevention Project
- AED 2006 Technical and Management Team Leadership Award, Academy for Educational Development, 2006: team award to recognize outstanding project design and implementation
- AED 2006 and 2005 Innovative Award, Academy for Educational Development, 2005-2006: award to recognize staff who contributed significantly to developing innovative new projects
- Duke University Teaching Assistant Fellowship, Duke University, 2000-2001: awarded to outstanding applicants
- Economics Student of the Year Award, Truman State University, 1999: awarded to the best graduating student in the Economics division
- Phi Kappa Phi Scholastic Honorary Society, 1997-1999 : membership granted to outstanding students who showed leadership potential
- Dean's List, Truman State University, 1995-1999: students included in the list had a GPA of 3.5 or higher

Leadership and Volunteering

- Vice-President for Community Affairs, Student Assembly, Johns Hopkins Bloomberg School of Public Health (2012-2013)
- Board Member, Student Outreach Center (SOURCE), Johns Hopkins Bloomberg School of Public Health (2012-2013)
- Vice-President and founding member, Johns Hopkins Latino Public Health Network, 2011-2012