



Short Communication

Sexual risk behaviors in African American and Puerto Rican women: Impulsivity and self-control[☆]Jung Yeon Lee^{*}, Judith S. Brook, Kerstin Pahl, David W. Brook

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ABSTRACT

Millions of people are living with the human immunodeficiency virus (HIV). African American and Hispanic/Latino communities suffer the most severe burden of HIV in the US. The ultimate goal of this study was to better understand risk factors for this infection: Do impulsivity and self control operate independently or synergistically with respect to HIV sexual risk behaviors in women? An enhanced understanding of these risk factors may better inform future interventions. Among the total of 343 female participants, half were African American and the other half were Latina. Data in this study were collected in the area of New York City during 2014–2016, when the mean age of the participants was 39 years. Linear regression analyses were used to examine the associations of impulsivity and self control with HIV sexual risk behaviors. Impulsivity and self control were independently associated with most of the HIV sexual risk behaviors examined. In addition, the interaction terms between impulsivity and low self control were all significantly associated with each of the sexual risk behaviors. Prevention programs should consider incorporating the roles of impulsivity and self control simultaneously as related to HIV risk behaviors.

1. Introduction

According to the World Health Organization (WHO), there were approximately 36.7 million people living worldwide with human immunodeficiency virus (HIV) at the end of 2015 (WHO, 2016). In the United States (US), it is estimated that 1.2 million people are living with HIV; however, 20% of these individuals are unaware of their infections (CDC, 2011). Especially, African American and Hispanic/Latino communities suffer the most severe burden of HIV, since new HIV diagnoses are disproportionately found among African Americans (45%) and Hispanics (24%) in 2015 (CDC, 2015). Prior research has focused on HIV risk behaviors in gay and/or bisexual men (Diaz, 2013; Newcomb et al., 2014). However, there is a dearth of research that has investigated HIV-relevant behaviors among women in their thirties, who may be at risk for HIV because of their involvement in HIV sexual risk behaviors.

The present research used Dahlberg and Krug's public health approach (Dahlberg and Krug, 2002), which identified four steps to prevention: 1) define the problem, 2) identify risk/protective factors, 3) develop and test prevention strategies, and 4) assure widespread adoption. The current study is designed to address the first two steps by

examining impulsivity and self control as well as the effects of interaction between impulsivity and self control, and their concurrent associations with several HIV sexual risk behaviors in African American and Latina women. The HIV sexual risk behaviors examined in this study are a) the number of sexual partners, b) alcohol use prior to sexual intercourse, c) illicit drug use prior to sexual intercourse, d) unprotected anal intercourse, and e) unprotected vaginal intercourse.

Although much of the behavioral research on young adults has examined the impact of certain psychosocial variables (e.g., norms) on sexual risk behaviors, personality traits may also be important determinants of sexual risk behaviors (Noar et al., 2006). Studies in young people have examined impulsivity as an important correlate of HIV risk behaviors (Charnigo et al., 2013; Kahn et al., 2002). Similarly, low self control has also been found to be related to HIV sexual risk behaviors (Buhi and Goodson, 2007). However, there has been little research on the effect of the interaction between impulsivity and self control on HIV sexual risk behaviors among African American and Latina women.

The purpose of this study was to elucidate how impulsivity and self control contribute to HIV sexual risk behaviors among African American and Latina women. We hypothesized that women who scored high on impulsivity and low on self control will be more likely to

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engage in high HIV sexual risk behaviors. The ultimate goal was to better understand whether these factors operate independently or synergistically with respect to HIV sexual risk behaviors; as such, an understanding may inform future interventions.

2. Materials and methods

2.1. Participants

This study included 343 female participants (50% African Americans, 50% Latinas) who completed the seventh wave of a survey administered in the Harlem Longitudinal Development Study. Data in this study was collected during 2014–2016, when the mean age of the participants at this wave was 39.1 years (Standard deviation = 1.5 years). The Institutional Review Board of the New York University School of Medicine approved the study. We obtained informed assent or consent from all of the participants.

2.2. Measures

2.2.1. Demographic variables

- a) Age in years
- b) Race/ethnicity: African American (1); and Latina (2).

2.2.1.1. Independent variables.

- a) *Impulsivity*: a 3 item scale assessing short-term outcome as opposed to long-term outcome, e.g., “How well does the following describe you?: You often act on the spur of the moment without stopping to think.” The answer options ranged from completely false (0) to completely true (3). Cronbach's alpha was 0.69.
- b) *Low self control*: a 3 item scale assessing the ability to be in command of one's behavior, e.g., “Do you feel like losing your temper at people?” The answer options ranged from completely false (0) to completely true (3). Cronbach's alpha was 0.73.

2.2.1.2. Dependent variables.

- a) *The number of sex partners*: a single item, i.e., “How many male sexual partners have you had in the past year?”
- b) *Alcohol use prior to intercourse*: a single item, i.e., “Over the past year, how often have you been under the influence of alcohol while having sex?”
- c) *Illicit drugs use prior to intercourse*: a single item, i.e., “Over the past year, how often have you been under the influence of illicit drugs while having sex?”
- d) *Unprotected anal intercourse*: a single item, i.e., “In the past year, how many times did you have unprotected anal sex with partners other than with your primary partner?”
- e) *Unprotected vaginal intercourse*: a single item, i.e., “In the past year, how many times did you have unprotected vaginal sex with partners other than with your primary partner?”

2.2.2. Analytic plan

SAS software (version 9.4) was used to perform linear regression analyses. In each of the analyses, there was a main independent variable and two control variables (i.e., age and race/ethnicity).

3. Results

The means with standard deviations or percentages of the variables used in this study are presented in Table 1. Table 2 presents the findings from the linear regression analyses. The results indicated that impulsivity was positively associated with the number of sex partners ($b = 0.14, p < 0.05$), alcohol use prior to intercourse ($b = 0.25,$

Table 1

Sample description: means (standard deviations; SD) or percentages.

	Means (SD) or percentages
Demographic variables	
Age	39.0 (1.4)
Race/ethnicity	50% African American; 50% Puerto Rican
Independent variables	
Impulsivity	1.6 (0.7)
Low self control	2.0 (0.7)
Dependent variables	
The number of sex partners	1.1 (0.6)
Alcohol use prior to intercourse	0.8 (1.1)
Illicit drug use prior to intercourse	0.04 (0.3)
Unprotected anal intercourse	0.4 (5.0)
Unprotected vaginal intercourse	0.5 (5.1)

Note. Answer options for alcohol or illicit drugs use prior to intercourse: never (0), a few times a year or less (1), about once a month (2), several times a month (3), once a week or more (4), always (5).

Data used in this study were collected in the area of New York City during 2014–2016.

$p < 0.05$), illicit drugs use prior to intercourse ($b = 0.05, p < 0.05$), and unprotected anal intercourse ($b = 0.97, p < 0.05$). Low self control was also positively associated with the number of sex partners ($b = 0.16, p < 0.01$), alcohol use prior to intercourse ($b = 0.27, p < 0.01$), and illicit drugs use prior to intercourse ($b = 0.06, p < 0.05$). In addition, the interaction terms between impulsivity and low self control were all significantly associated with each of the sexual risk behaviors ($p < 0.05$). For the demographic variables, age was not significantly related to any of the sexual risk behaviors. However, African Americans as compared to Latina were more likely to have a larger number of sex partners in the past year ($p < 0.01$).

4. Discussion

The present cross-sectional study adds to the literature on the correlation of impulsivity and low self control with HIV sexual risk behaviors among African American and Latina women. Overall, our hypotheses indicating the positive associations of impulsivity and low self control with HIV sexual risk behaviors were supported. The findings of the present study are in accord with research that reported an association between impulsivity and behaviors conferring risks for HIV infection (Charnigo et al., 2013). Also, it is consistent with the literature showing that low self control was associated with sexual risk behaviors (Buhi and Goodson, 2007).

In addition, the interaction between impulsivity and low self control has a synergistic impact on HIV sexual risk behaviors. Either impulsivity alone or low self control alone was not related to unprotected vaginal intercourse. However, the interaction term between impulsivity and low self control was significantly related to unprotected vaginal intercourse; that is, there was some impact on HIV sexual risk behaviors only if both impulsivity and low self control co-exist. These findings address the first two steps (defining the problems and identifying risk/protective factors) of Dahlberg and Krug's public health approach (Dahlberg and Krug, 2002), and also can possibly be used as a guide for the third step (developing prevention strategies), since the interaction effect of impulsivity and low self control on HIV sexual risk behaviors came out stronger than the effects of either impulsivity alone or low self control alone.

This research has limitations. First, the participants were all African American and Latina women. Second, this study did not control for sociodemographic variables such as educational level. Third, there are a number of other factors such as abuse in childhood that may influence HIV sexual risk behaviors that were not included in this research. In sum, this research only provides an initial picture of how impulsivity

Table 2

Parameter estimates with standard errors in parentheses from linear regression analyses: the effects of impulsivity and low self control on HIV sexual risk behaviors when the participants were 39 years old.

	Number of sex partners	Alcohol use prior to intercourse	Illicit drug use prior to intercourse	Unprotected anal intercourse	Unprotected vaginal intercourse
Impulsivity	0.14 (0.06) ^b	0.25 (0.10) ^b	0.05 (0.03) ^b	0.97 (0.46) ^b	0.84 (0.48) ^a
Low self control	0.16 (0.06) ^b	0.27 (0.10) ^c	0.06 (0.03) ^b	0.58 (0.49)	0.55 (0.50)
Interaction: Impulsivity × Low self control	0.05 (0.02) ^c	0.08 (0.03) ^c	0.02 (0.01) ^b	0.26 (0.13) ^b	0.28 (0.12) ^b

Data used in this study were collected in the area of New York City during 2014–2016.

In each of the linear regression analyses, age and race/ethnicity were statistically controlled.

^a $p < 0.1$.

^b $p < 0.05$.

^c $p < 0.01$.

and low self control are independently and jointly related to HIV sexual risk behaviors in women.

4.1. Conclusions

The findings of this research emphasize the need for prevention programs focused on impulsivity as well as self control in sexually active African American and Latina women. Based on our findings, the current study suggests that preventive interventions targeting impulsivity and self control at the same time may be more effective than targeting either impulsivity or self control alone in order to reduce the risk of engaging in HIV sexual risk behaviors.

Future studies would benefit from examining how longitudinal joint trajectories of impulsivity and self control relate to HIV sexual risk behaviors. Research should include additional confounding factors that might mediate their effects on HIV sexual risk behaviors.

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Transparency document

The [Transparency document](#) associated with this article can be found, in online version.

References

Buhi, Eric R., Goodson, Patricia, 2007. Predictors of adolescent sexual behavior and intention: a theory-guided systematic review. *J. Adolesc. Health* 40 (1), 4–21. <http://dx.doi.org/10.1016/j.jadohealth.2006.09.027>.

CDC, 2011. Centers for Disease Control and Prevention. Fact Sheet: HIV in the United States. Available at: <http://www.cdc.gov/hiv/resources/factsheets/PDF.us.pdf> Accessed in March 2017.

CDC, 2015. Centers for Disease Control and Prevention. HIV in the United States: At a Glance. Available at: <http://www.cdc.gov/hiv/statistics/overview/ataglance.html> Accessed in March 2017.

Charnigo, Richard, Noar, Seth M., Garnett, Christopher, Crosby, Richard, Palmgreen, Philip, Zimmerman, Rick S., 2013. Sensation seeking and impulsivity: combined associations with risky sexual behavior in a large sample of young adults. *J. Sex Res.* 50 (5), 480–488. <http://dx.doi.org/10.1080/00224499.2011.652264>.

Dahlberg, Linda L., Krug, Etienne G., 2002. Violence: a global public health problem. In: Krug, E.G., Dahlberg, L.L., Mercy, J.A., Zwi, A.B., Lozano, R. (Eds.), *World Report on Violence and Health*. World Health Organization, Geneva, pp. 1–56.

Diaz, Rafael M., 2013. *Latino gay men and HIV: Culture, sexuality, and risk behavior*. Routledge, New York and London.

Kahn, Jessica A., Kaplowitz, Rebekah A., Goodman, Elizabeth, Emans, S. Jean, 2002. The association between impulsiveness and sexual risk behaviors in adolescent and young adult women. *J. Adolesc. Health* 30 (4), 229–232. [http://dx.doi.org/10.1016/S1054-139X\(01\)00391-3](http://dx.doi.org/10.1016/S1054-139X(01)00391-3).

Newcomb, Michael E., Ryan, Daniel T., Garofalo, Robert, Mustanski, Brian, 2014. The effects of sexual partnership and relationship characteristics on three sexual risk variables in young men who have sex with men. *Arch. Sex. Behav.* 43 (1), 61–72. <http://dx.doi.org/10.1007/s10508-013-0207-9>.

Noar, Seth M., Zimmerman, Rick S., Palmgreen, Philip, Lustria, Mia, Horosewski, Mary Lee, 2006. Integrating personality and psychosocial theoretical approaches to understanding safer sexual behavior: Implications for message design. *Health Commun.* 19 (2), 165–174. http://dx.doi.org/10.1207/s15327027hc1902_8.

WHO, 2016. World Health Organization. Available at: <http://www.who.int/hiv/en/> Accessed in March 2017.