



Full Length Research Paper

Correlates of sexual outcome expectations and risk of sexually transmitted infections (STIs) among male inmates in the United States

Torrance Stephens^{1*} and Ronald Braithwaite²

¹Department of Psychology, Clark Atlanta University, Atlanta, Georgia, USA

²Department of Community and Preventive Medicine, Morehouse School of Medicine, USA.

Accepted 18 February, 2016

This study sought to identify variables that independently correlate with sexual outcome expectations among a sample of 187 convicted felons in Georgia. Trained interviewers collected data from study participants after explaining the purpose of the study and obtaining informed consent. Relationships between individual sexual outcome expectation variables and other demographics were examined using multiple linear regression models. Models specified self-reported sexual outcome expectation regarding a given infectious disease risk as an outcome with selected variables. Respondents' age was a predictor of using condoms each time they had sex (Beta = 0.15, $P < 0.04$) and limiting the number of sex partners (Beta = 0.19, $P < 0.008$). Incarceration history (first time versus prior incarceration) was significantly associated with using and/or requesting that their partners use condoms each time they had sex ($p < 0.03$), and being able to ask partners about their sexual history ($p < 0.03$). Our findings imply that interventions to prevent infectious diseases among inmates should address education and illicit substances specifically in sexual situations so as to better understand the nature of risk practices and sexual behavior among this group.

Keywords: Outcome expectations, human immunodeficiency virus (HIV) risk, inmates, sex.

INTRODUCTION

Infectious diseases and sexually transmitted infections (STIs) are both expensive and principal public health problems in the United States and are even more so among incarcerated populations (Lang and Belenko, 2001; Harris et al., 2002; Narevic et al., 2006; Stephens et al., 2002). Nationally, rates of human immunodeficiency virus (HIV), tuberculosis (TB) and hepatitis C (HCV) are greater for incarcerated populations than the general community (Bruneau et al., 2001; Mullings et al., 2003; Dolan et al., 2005). Specifically, rates of STIs are

substantially higher in prison populations than in the public worldwide (Massad et al., 1999; Clarke et al., 2001).

Many of these studies that examine inmate populations and psychosocial and behavioral constructs tend to look at overt behaviors. Lang and Belenko (2001) found among other factors, that age, physical abuse history, anxiety, family problems and poly-substance use were predictive of sex-related HIV risk. Incarcerated populations tend to have multiple HIV risk behaviors.

These include having a relatively high lifetime number of sexual partners, limited condom use and having sex under the influence of drugs and alcohol (Bruneau et al., 2001; Belenko et al., 2005; Stephens et al., 2004; Johnson et al., 2004; Narevic et al., 2006).

Theoretical frame work

Rooted in social cognitive theory, the concept of outcome expectation is an important component of health-related behavioral change. According to this theory, outcome expectations may be shaped by social norms, knowledge, and self-efficacy (Bandura, 1977; Dilorio et al., 2006). Previous studies of HIV risk behaviors and sexual health have consistently shown that low outcome expectations are strong predictors of behaviors that increase risk for infectious disease among adults with mental illness (Kelly et al., 1995), heterosexual adult female STD patients (Thompson et al., 1997) and heterosexual adult males (Bengel et al., 1996).

Little is known about outcome expectations related to sexual practices among inmates and how they may differ by sociodemographic factors unique to inmate populations. In addition, few data on sexual outcome expectation among inmate populations exist; yet, this population is at particularly high risk for infectious diseases, including STIs. What is documented is that sexual self expectation is a predictor of HIV risk among inmate populations and can be impacted positively with peer-based interventions (Braithwaite et al., 2005). Thus, the objectives of this study were to estimate independent correlates of sexual outcome expectations with respect to infectious disease risk behaviors of a sample of male inmates in Georgia and to identify inmate characteristics associated with these psychosocial outcomes.

METHODOLOGY

Study site and sample

This study collected data from adult male inmates in Georgia, USA. Baseline level data was collected after the identification of a pool of eligible participants by the Department of Correction's Personnel. Inmates had to be between 60 and 90 days prior to release from the facility, returning to the metropolitan Atlanta area (this criterion would make follow up more feasible), 18 years of age or older, and male to be eligible for inclusion. The participants were recruited from a population housed at three medium security correctional institutions for men located in middle Georgia and a transitional center located in a major southeastern city.

Data collection

Trained interviewers collected data from study participants after explaining the purpose of the study and obtaining informed consent. The interviewer provided an overview of the major areas to be covered with the data collection instrument to each participant to make certain that they understood the response format. The instrument was written on a fourth grade reading level.

Participants were 187 adult male inmates recruited from three

medium security prisons and one Area Transition Center in Georgia. The ages of participants ranged from 18 to 59 years ($M = 35.3$, $SD = 8.9$) with the majority of the participants ($126 = 67.4\%$) being African American. Although nearly half ($87 = 46.28\%$) had been incarcerated prior to the current incarceration, the mean total lifetime years incarcerated was 9.17 ($SD = 15.4$).

Analysis

Relationships between individual sexual outcome expectation variables and other demographics were examined using multiple linear regression models. All models specified self-reported sexual expectation regarding a given infectious disease risk as an outcome with selected demographic variables (race, age, education, income prior to incarceration, length of incarceration, first time incarceration and total years incarcerated) as predictor variables. All measures were entered independently into the estimated equations.

Measures

Participants were asked to provide descriptive and scale information on several variables using standard response formats. Socio-demographic variables on the data collection instrument included: ethnicity, marital status, educational level, income prior to incarceration, and incarceration history. Several individual items represented incarceration status. Length of incarceration was an open ended item that asked participants to write the total years served during their recent incarceration. Prior or first time incarceration was measured with a dichotomous response item worded: "Was this your first time being incarcerated?"

A measure of sexual outcome expectations was obtained by asking individuals eight items about "how confident are you that you will be able to do the following activities when you are released from prison?" Example items included "Using a condom or request that your partner use them every time you have sex"; "limiting the number of sexual partners you have"; "engaging in sexual activity after using marijuana"; and "asking your partner whether they have a sexually transmitted infection (that is, herpes, syphilis)." Responses were measured on a 100-point Likert-type scale from (0) "not at all confident" to (100) "very confident". Cronbach's alpha coefficient for the eight items was 78.

RESULTS

Table 1 presents results of the linear regression analysis that examined whether the selected demographic variables and attributes of incarceration were associated with self-reported sexual outcome expectation among inmates prior to their current incarceration. As shown, race, age, and first time incarceration were significantly predicted and associated with inmate's ability to use and/or request that they use a condom every time during sex. Total years' incarceration was almost significantly associated with variable ($p < 0.06$). Race was not significantly correlated with any of the other independent sexual self-expectation outcomes; however, it was almost associated with inmate's propensity to engage in sexually activity ex post facto drinking ($p < 0.08$).

Respondents' age was a predictor of using condoms each time they had sex ($Beta = 0.15$, $P < 0.04$) and limiting the number of sex partners ($Beta = 0.19$, $P < 0.008$). Age was nearly predictive of inmates being able to

Table 1. Relations between sexual outcome expectations and selected variables.

Parameter	Use/Request use of condoms every time			Limit number of sex partners			Request partner HIV status			Discuss with partner safer sexual behavior		
	B	t	p	B	t	p	B	t	p	B	t	p
Race	-0.24	-3.38	0.001	-0.11	-1.42	0.15	-0.10	-1.32	0.18	-0.06	-0.87	0.38
Age	0.15	2.07	0.04	0.19	2.68	0.008	0.11	1.44	0.15	0.13	1.84	0.06
Education	-0.05	-0.74	0.45	-0.02	0.25	0.79	-0.01	-0.15	0.87	-0.13	-1.75	0.08
Income	-0.08	-1.12	0.26	-0.10	-1.38	0.17	-0.02	-0.38	0.70	-0.07	-0.97	0.33
Length incarcerated	0.06	0.82	0.41	0.05	0.76	0.44	0.08	1.08	0.28	0.02	0.33	0.73
1st Time incarcerated	0.15	2.10	0.03	0.12	1.64	0.10	0.05	0.72	0.47	0.14	1.81	0.07
Total years incarcerated	0.13	1.84	0.06	-0.14	-1.87	0.06	0.09	1.22	0.22	0.08	1.01	0.27

Parameter	Engage sexual activity after drinking			Engage sexual activity after using marijuana			Ask partners if they have STDs			Ask about sexual history prior to sex		
	B	t	p	B	t	p	B	t	p	B	t	p
Race	0.13	1.71	0.08	0.06	0.87	0.38	-0.04	0.64	0.51	-0.11	-1.47	0.14
Age	-0.07	-1.01	0.31	-0.13	-1.74	0.08	0.02	6.25	0.79	-0.11	1.55	0.12
Education	0.01	0.014	0.88	-0.05	-0.74	0.44	-0.07	-1.04	0.30	-0.05	0.069	0.48
Income	-0.03	-0.43	0.66	-0.09	-1.22	0.22	0.04	0.65	0.51	-0.06	-0.79	0.427
Length Incarcerated	-0.09	-1.30	0.19	-0.08	-1.15	0.24	0.06	0.81	0.41	0.01	0.14	0.88
1st Time Incarcerated	0.07	0.36	0.71	0.06	0.84	0.40	0.13	1.69	0.09	0.16	2.17	0.03
Total Years Incarcerated	49	0.64	0.51	0.08	1.14	0.25	0.11	1.48	0.13	0.03	0.45	0.64

discuss safe sex practices with their partners (p < 0.06) and when engaging in sexual activity after using marijuana (p < 0.08). In addition, participant education approached significance and was inversely associated with inmates being able to discuss safe sex practices with their partner(s) (p < 0.08).

Incarceration history (first time versus prior incarceration) was significantly associated with using and/or requesting that their partners use condoms each time they had sex (p < 0.03), and being able to ask partners about their sexual history (p < 0.03). This variable approached significance for discussing safer sex practices with

their partners (p < 0.07) and asking their partners if they have or have had an STI (p < 0.09).

DISCUSSION

In this cohort of inmate’s, several variables including race, age and incarceration history were associated with several individual outcome expectations related to sexual risk practices. Of note was that education, albeit not a significant correlate of any of the individual outcome expectations for this sample changed the direction of the sample distribution below the median with

the exception of “engaging in sexual activity after drinking.” Thus, the more education the more inmates believed they could perform the aforementioned activities unless it was regarding behaviors under the influence of alcohol. This is not unusual since education has been considered a protective factor for a host of health risks related to infectious disease (Kral et al., 2001; Stephens et al., 2005). Income was also observed to be inversely associated with multiple outcome expectations with the exception of “asking one’s partner about their history of STIs.

It is difficult to compare study findings to prior research on the construct in particular with respect

to incarcerated populations. What was observed from the research, especially in the area of dietary behavior change and physical activity, was that outcome expectations can be instrumental in producing self-efficacious health behaviors (Clark and Dodge, 1999; Tercyak and Tyc, 2006; Baranowski et al., 1999). In addition, the impact of education on HIV risk as documented in this study has been presented in other studies related to predictors of HIV risk (Kral et al., 2001; Moore et al., 1999; Srinivas et al., 2000).

Thus, true primary prevention with regards to this population in terms of sexual outcome expectations and their association with HIV risk practices would entail targeting education, specifically keeping potential inmates from ever entering the prison system. This means that focusing on education, staying in school and overall academic performance can be a resilient factor that reduces both the likelihood of being incarcerated, as well as enhancing individuals ability to reduce risk based on risk outcome expectations related to sex.

One limitation of this study is the possible bias associated with asking an inmate to project future behaviors when released from prison as well as the reliability of self-reported data. Future research should incorporate other measures of sexual outcome expectations such as specific negotiation skills under the influence of other elicit substances such as ecstasy and heroin. Nonetheless, our position is that sexual outcome expectations can provide valuable insight into how well inmate populations adapt and are amenable to infectious disease risk reduction interventions.

This study was also limited by the selectivity of the sample (inmates from three prisons in middle Georgia and one area transition center), with the majority of the participants being African American. Another major problem with the study was that sexual outcome expectation measures were derived from measures used with adolescent and college samples and based on self-report. Finally, it is possible that social desirability response biases exerted an influence on the findings. Despite these limitations, this study is an important first step to developing a reliable understanding regarding outcome expectations related to STI risk practices among inmate populations. Strengthening outcome expectations related to STI risk reduction and thereby increasing self-efficacious health practices can improve overall health and ultimately the quality of life for inmates, since they will eventually be returned to the community from which they came.

In conclusion, this study employed linear regression models to examine relationships between sociodemographic variables and sexual outcome expectations among a sample of male inmates. The findings of this study imply that interventions to prevent STIs among inmates should address their use of illicit substances, specifically in sexual situations, so as to better understand the nature of risk practices and sexual behavior among this group.

Conflict of Interests

The author(s) have not declared any conflict of interests.

ACKNOWLEDGEMENT

This research was funded by the National Institute on Drug Abuse [1 R01 DA122331-01A1].

REFERENCES

- Bandura A (1997). *Self-Efficacy: The Exercise of Control*. New York: W.H. Freeman.
- Baranowski T, Cullen KW, Baranowski J (1999). *PSYCHOSOCIAL CORRELATES OF DIETARY INTAKE: Advancing Dietary Intervention*. *Ann. Rev. Nutr.* 19:17-40.
- Belenko S, Lin J, O'Connor L, Sung H, Lynch K (2005). Sexual and physical victimization as predictors of HIV risk among felony drug offenders *AIDS & behavior* 9(3):311-323.
- Bengel J, Belz-merk M, Farin E (1996). The role of risk perception and efficacy cognitions in the prediction of HIV-related preventive behavior and condom use. *Psychological Health* 11(4):505-25.
- Braithwaite R, Stephens T, Treadwell H, Braithwaite K, Conerly R (2005). "Short-term impact of an HIV risk reduction intervention for soon-to-be released inmates in Georgia". *Journal of Health Care for the Poor and Underserved - Volume 16, Number 4*, pp. 130-139.
- Bruneau J, Lamothe F, Soto J, Lachance N, Vincelette J, Vassal A, Franco E (2001). Determinants of HIV infection among injection drug users in Montréal. *CMAJ*, 164 (6).
- Clark N, Dodge J (1999). Exploring Self-Efficacy as a Predictor of Disease Management. *Health Education & Behavior* 26(1)72-89.
- Clarke J, Stein M, Hanna L, Sobota M, Rich J (2001). Active and former injection drug users report of HIV risk behaviors during periods of incarceration. *Substance Abuse*, 22(4):209-216.
- Dilorio C, Resnicow K, McCarty F, De AK, Dudley WN, Dongqing T, Denzmore P (2006). *Keepin' It R.E.A.L.!: Results of a Mother-Adolescent HIV Prevention Program*. *Nurs. Res.* 55(1):43-51.
- Dolan K, Shearer J, White B, Zhou J, Kaldor J, Wodak A (2005). Four-year follow-up of imprisoned male heroin users and methadone treatment: mortality, re-incarceration and hepatitis C infection. *Addiction*, 100 Page 820.
- Harris V, Rafii R, Tonge S, Uldall K (2002). Re-arrest: does HIV serostatus make a difference? *AIDS Care* 14(6):839-849.
- Johnson R, Ross M, Taylor W, Williams Carvajal R, Peters R (2004). A history of drug use and childhood sexual abuse among incarcerated males in a county jail. *Substance Use & Misuse* 40(2):211-229.
- Kelly J, Murphy D, Sikkema K, Somlai A, Mulry G, Fernandez J, Miller J, Stevenson L (1995). Predictors of high and low levels of HIV risk behavior among adults with chronic mental illness. *Psychiatric Services* 46:813-818.
- Kral A, Bluthenthal R, Lorvick J, Gee L, Bacchetti P, Edlin B (2001). Sexual transmission of HIV-1 among injection drug users in San Francisco, USA: risk-factor analysis. *The Lancet* 357(9266):1397-1401.
- Lang M, Belenko S (2001). A cluster analysis of HIV risk among felony drug offenders. *Criminal Justice and Behavior* 28(1):24-61.
- Massad E, Rozman M, Azevedo R, Silveira A, Takey K, Yamamoto Y, Strazza L, Ferreira M, Carvalho H, Burattini M (1999). Preponderance of parenteral transmission *European Journal of Epidemiology* 15(5):439-445.
- Moore J, Schuman PA, Schoenbaum E, Boland B, Solomon L, Smith D (1999). Severe adverse life events and depressive symptoms among women with, or at risk for, HIV infection in four cities in the United States of America. *AIDS* 13(17):2459-2468.
- Narevic E, Garrity T, Schoenberg N, Hiller M, Webster J, Leukefeld TM (2006). Factors predicting unmet health services needs among incarcerated substance users. *Substance Use and Misuse* 41(8):1077-1094.

- Srinivas R, Melkote SR, Muppidi DG (2000). Social and Economic Factors in an Integrated Behavioral and Societal Approach to Communications in HIV/AIDS. *J. Health Communication* 5:17-27.
- Stephens T, Braithwaite R, Conerly R (2005). A Profile of Self-Reported Injection Drug Use and Needle Sharing Behavior Among Soon-to-be-Released Adult Male Inmates. *Am. J. Health Studies* 20(2):65-70.
- Stephens T, Braithwaite R, Robillard A, Finnie R, Colbert S (2002). A community-based approach to eliminating racial and health disparities among incarcerated populations: the HIV example for inmates returning to the community. *Health Promotion Practice* 3(2):255-263.
- Stephens T, Braithwaite R, Tiggs C (2004). Correlates of inmates' self-reported HIV/AIDS risk behaviors, prior incarceration, and marijuana use. *Am. J. Drug Alcohol. Abuse* 30(2):287-98.
- Tercyak KP, Tyc VL (2006). Opportunities and Challenges in the Prevention and Control of Cancer and Other Chronic Diseases: Children's Diet and Nutrition and Weight and Physical Activity. *J. Pediatric Psychol.* 31(8):750-763.
- Thompson NJ, Potter JS, Sanderson CA, Maibach EW (1997). The relationship of sexual abuse and HIV risk behaviors among heterosexual adult female STD patients. *Child Abuse Negl.* 21(2):149-56.