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Sexual Risk-taking Mediates the Association between Impulsivity and Acquisition of Sexually Transmitted Infections among Hazardously Drinking Incarcerated Women

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Abstract

Background—A growing literature has identified associations between impulsivity and negative behaviors such as sexual risk-taking among high-risk and/or vulnerable populations, but few studies have linked impulsivity to biological outcomes of sexual risk-taking. The main purpose of this study was to document associations among impulsivity, sexual risk-taking, and biological measures of sexually transmitted infection (STI+) in a sample of hazardously drinking incarcerated women.

Methods—Two hundred forty-five hazardously drinking incarcerated women self-reported alcohol consumption and consequences, impulsivity, and sexual behavior.

Results—Biological testing revealed a 22.9% prevalence rate for STI+. In this sample, sexual risk-taking fully mediated the association between impulsivity and likelihood of STI+. In addition, individuals reporting sexual activity with multiple partners were significantly more likely to test STI+ than those reporting sexual activity with a primary partner.

Conclusion—These results support previous research on impulsivity by demonstrating that impulsivity leads to STI+ through risky behavioral choices. These findings also extend prior work by documenting this association using biologically confirmed measures in a vulnerable female population that carries multiple risk factors and thus warrants increased research attention.

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Introduction and Background

Impulsivity as a risk factor

Abundant research indicates that impulsivity, generally defined as the inability to inhibit one's behavior and the tendency to act without regard to consequence¹, as well as related traits including poor self-control, behavioral disinhibition, and novelty/sensation-seeking tendencies, are directly and indirectly associated with a variety of maladaptive behaviors including alcohol and drug use²⁻³, criminal activity, and other deviant behaviors⁴⁻⁶. Similar associations have been found in studies of related traits including poor self-control, behavioral disinhibition, and novelty/sensation-seeking tendencies⁷. Although some researchers argue that these seemingly related traits (and/or subfacets of impulsivity) are in fact separate constructs that relate to psychopathology in distinct ways^{3,8}, others conceptualize impulsivity and at least some other like traits to lie on a unidimensional continuum⁹.

Among substance users, impulsivity and related traits are associated with several negative indicators, including substance use severity, early age of onset, negative consequences, poor treatment prognosis¹⁰⁻¹², and adverse life events¹³. Impulsivity is considered a causal mechanism that triggers substance use, but evidence also suggests that prolonged use can, in turn, elicit and then maintain impulsive behavior¹⁴. Although much of the literature on impulsivity and related traits has focused upon its association with substance use and abuse, some researchers conceptualize impulsivity as an "externalizing" factor associated with a variety of clinical problems, of which maladaptive substance use is only one type¹⁵.

Impulsivity, related traits, and risky sexual behavior

One such additional clinical problem is sexual risk-taking. The association between impulsivity and risky sexual behavior has been demonstrated in many populations, including adolescents¹⁶, incarcerated youth¹⁷, and community drug users¹⁸⁻¹⁹. Perhaps not surprisingly, poor sexual impulse control predicts unprotected sexual intercourse²⁰, and elevated sexual sensation seeking directly increases sexual arousal and indirectly decreases condom use intentions²¹. However, individuals with low general, not specifically sexual, self-control exhibit failures in sexual restraint, such as inappropriate expression of sexual thoughts and difficulty resisting sexual offers from non-primary partners²². Personality traits such as sensation seeking and impulsivity also predict other risky sexual behaviors such as having unprotected sex, multiple partners, and sex with a stranger^{23,24}. If traits such as poor self-control and high impulsivity are indeed dimensions of a core vulnerability associated with several problematic behaviors¹⁵, then it stands to reason that individuals who exhibit high levels of this core vulnerability may be especially prone to engaging in high-risk sexual behaviors, which, in turn, increases their susceptibility to sexually transmitted infections (STIs).

Sexual risk behavior and STIs

The association between sexual risk behaviors and the acquisition, further transmission, and recurrence of STIs is well established. For instance, results from one study of 329 women recruited from an STI clinic and 83 of their male partners indicate that having a regular

partner who engaged in concurrent sexual intercourse with other partners significantly increased risk of STIs²⁵. Inconsistent use of condoms^{26,27}, greater number of lifetime sexual partners^{26,28–31}, and younger age of sexual debut^{27–28,30–31} are also associated with a higher rate of STI among young persons. Finally, testing positive for an STI predicts subsequent STI re-infection in many studies^{26–27,29,30}. Behavioral counseling has been shown to lessen sexual risk-taking among adolescents and adults, which, in turn, reduces STI incidence³².

Alcohol and drug use is well documented to increase the likelihood of sexual risk-taking behavior. Specific forms of substance use are especially implicated, most notably crack/cocaine use, in part due to accompanying high rates of exchange sex and visits to sites (e.g., crack houses) where such exchange sex is prominent^{19,33–35}. Injection drug use has also been associated with high-risk sexual behavior in many studies^{33,36}. Finally, many reports suggest an association between alcohol use and sexual risk-taking^{37–40}, particularly when drinking behavior occurs in sexual contexts⁴¹ and/or involves a new or casual partner^{42–44}. Alcohol consumption has also been related to an increased risk for STIs^{45–46}, although few studies have performed biological assays for STIs.

Incarcerated populations

Associations among impulsivity, sexual risk-taking, and risk for STIs may be particularly important to examine among incarcerated populations, especially incarcerated women, for several reasons. First, levels of impulsivity and poor self-control are known to be elevated among incarcerated persons². To the degree that these traits are considered a core vulnerability¹⁵ that predicts a number of maladaptive behaviors, this population may be at heightened risk for its negative sequelae. Second, elevated rates of substance use^{17,37,47} have been reported in incarcerated populations. In particular, hazardous drinking is common among incarcerated women^{48–49}. Given the strong connection between alcohol consumption and risky sexual behavior^{37–44}, drinking, especially at hazardous levels, may well contribute to these women's poor sexual decisions, in turn placing them at higher risk for STIs. Indeed, evidence indicates that sexual risk-taking behavior is quite common among incarcerated persons^{17,37,41}. Finally, elevated STI prevalence rates have been documented among incarcerated individuals, especially women. Prevalence rates among women entering correctional facilities obtained in clinical trials range from 2.5–13% for chlamydia, 2.3–10% for gonorrhea, and 22–47% for trichomonas^{50–53}. In one study of 1198 adult inmates, researchers found that women were twice more likely than men to report having been given an STI diagnosis by a medical professional⁴⁷.

Thus, even among other high-risk populations, incarcerated women can arguably be considered a particularly vulnerable group, given their elevated rates of trait impulsivity, often hazardous drinking levels, sexual risk-taking behavior, and high STI+ prevalence rates.

The present study

Although associations among trait impulsivity and/or poor self-control and sexual risk-taking behavior have been documented in previous research, few studies have explicitly examined this combination of factors among incarcerated women despite evidence that this

particular subpopulation may be especially susceptible to the negative consequences of their impulsivity and poor sexual decision-making. Biologically measured consequences such as STIs have not been included in studies linking self-control and sexual risk-taking among incarcerated women. If, in the presence of sexual risk behaviors, trait impulsivity does indeed predict risk for STIs, then such findings would provide concrete biological support for a hypothesized association between variables that have typically only been measured through self-report. They would also carry important public health implications and suggest potential targets for early clinical intervention in this high-risk population.

The purpose of this investigation was to corroborate the association between impulsivity and risky sexual behavior identified in previous research and to test the hypothesis that sex-risk behavior mediates the association between impulsivity and the likelihood of having an STI in an especially high-risk population, namely, incarcerated women who drink hazardingly. Rather than relying upon self-report measures of STIs, we utilized biological assays to confirm the purported associations among impulsivity, sex-risk behavior, and STIs.

Methods

Participants

Participants in this study were 245 women detained at the Women's Facility at the Adult Correctional Institute (ACI), Rhode Island Department of Correction (RI DOC), from February 2004 to June 2007. Participants were part of a randomized clinical trial of a brief intervention to reduce alcohol use and HIV risk, which was approved by the Miriam Hospital Institutional Review Board, the Office for Human Research Protection, and the RI DOC's Medical Research Advisory Group. A Certificate of Confidentiality was also obtained from the federal government. Complete details regarding logistical planning have been published elsewhere^{44,54}.

After undergoing the facility intake procedure, research assistants (RAs) approached all detained women regarding consent to be screened for a clinical trial, emphasizing that refusal would not positively or negatively affect their medical/other services or disciplinary status. Women who provided oral consent were screened confidentially, without remuneration, in a private room that was not under surveillance. Women were eligible for the clinical trial if they spoke English, had reliable contact information, and endorsed risky sexual behavior (defined as unprotected sex on at least three days in the past three months) and hazardous drinking (defined as either [a] four or more drinks at a time on at least three separate days in the previous three months or [b] a score of 8 or above, the hazardous drinking threshold, on the Alcohol Use Disorders Identification Test (AUDIT⁵⁵).

If an inmate met eligibility, informed consent was obtained. The RA then orally administered a 45-minute baseline battery that included measures of sexual risk-taking, substance use, and mental health symptoms. The battery was administered orally in part due to some illiteracy in our participant pool. Participants also provided vaginal swabs to test for trichomoniasis, gonorrhea, and chlamydia. Participants were remunerated \$20, in the form of a money order mailed to them upon release from the ACI. Any participant who tested positive for an STI received post-test counseling and medical treatment. All participants

received condoms, as well as information on local drug and alcohol treatment facilities and other community resources.

Measures

Demographic variables—Participants reported age in years and ethnicity (1 if racial or ethnic minority).

Alcohol consumption and associated consequences—Participants completed a Timeline Followback⁵⁶ covering the 90 days prior to the interview and the Alcohol Use Disorders section of the Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV⁵⁷ to determine the presence of a lifetime diagnosis of alcohol dependence. The AUDIT⁵⁵ (score range 0–40) was administered to determine study eligibility.

Impulsivity—To measure impulsivity, we administered the 24-item self-report measure of self-control developed by Grasmick and colleagues⁵⁸. Although some researchers conceptualize impulsivity and self-control as being separate constructs⁸, others consider them to lie on the same continuum⁹. Because the founders of the theory on which our measure is based⁵⁹ conceptualized self-control as a unidimensional construct, our analysis is based on this latter conceptual framework. The scale does include 4 items each assessing 6 elements of self-control (impulsivity; being self-centered; preferring simple tasks; risk-seeking; preference for physical rather than mental activities; temper), but only its global score is commonly used. Response categories range from 1 (“strongly disagree”) to 4 (“strongly agree”), with high scores indicating poor self-control, or high impulsivity. Psychometric analyses justifying our use of the global score are described below.

Principal components factor analysis and item analysis were used to examine the psychometric properties of the index. We considered multiple criteria in determining the number of factors to retain. Consistent with previous research^{58,60}, six principal components had eigenvalues greater than 1.0. However, also consistent with previous research, an examination of the scree plot suggested retaining a single factor^{61–62}. Velicer’s⁶³ minimum average partial and Horn’s^{64–65} parallel analysis were also consistent with a single factor model. Therefore, we used a single summary score from the full 24-item measure, which is also in accordance with Gottfredson and Hirschi’s⁵⁹ conceptualization of self-control as a unidimensional construct. In this sample, the internal consistency reliability for the scale was .863.

Sex-risk—In order to assess sexual risk-taking, we used a modified version of the Risk Assessment Battery (RAB) sex-risk index⁶⁶. The original RAB sex-risk index comprised 6 indicators: sexual orientation; number of male sex partners; number of female sex partners; frequency of visiting a crack house; the highest observed frequency from four items assessing exchange of sex, drugs, and money; and frequency of condom use. In this cohort, we excluded sexual orientation and number of female sex partners. Metzger et al.⁶⁷ have previously demonstrated the predictive validity of the RAB sex-risk index in identifying HIV seroconversion. RAB scale scores are often scaled on a range of 0 to 1 by dividing the

sum of item scores by the maximum possible score; we chose to follow this convention here. Though modified, we refer to this index as the RAB sex-risk index in this report.

Sexually transmitted infection (STI)—The primary outcome was a dichotomous indicator scored 1 if the participant tested positive for trichomoniasis, chlamydia, or gonorrhea on a biological assay. *C. trachomatis* and *N. gonorrhoeae* testing was performed using DNA amplification of endocervical swabs (Becton Dickinson BDProbe Tem™ ET; Becton, Dickinson and Company, Franklin Lakes, New Jersey). *Trichomonas vaginalis* testing was performed using sterile cotton swab collection and InPouch™ culture (Biomed Diagnostics, White City, Oregon).

Analytical Methods

All analyses used baseline data. Descriptive statistics were computed to summarize the background characteristics of participants. We present both product-moment and rank-order correlations to summarize bivariate associations. Structural equation models (SEMs) were estimated to test the hypothesis that a behavioral indicator of sex-risk mediates the effect of impulsivity on the likelihood of STI. Our initial models included age, ethnicity, and percent days heavy (4+ drinks) alcohol use as exogenous covariates. However, we present more parsimonious models excluding age and ethnicity because neither was a significant predictor of either sex-risk or the likelihood of having an STI, neither was associated significantly with impulsivity, and their inclusion had negligible influence on other parameter estimates in the models. We present 2 models that explicitly test the primary research hypothesis that the effect of impulsivity on STI is mediated by risky sexual behaviors. Full mediation was defined as follows: (a) the indirect effect of the predictor variable on the outcome variable via the mediation variable is statistically significant, and (b) after controlling for the mediator, the direct effect is near zero and not significant statistically. Partial mediation was defined as the presence of statistically significant indirect and direct effects.

Models were estimated using MPlus 5.1⁶⁸. Here, the dichotomous outcome is treated as a probit response. We used bias-corrected bootstrap resampling with 1000 replications^{69–70} and report 95% confidence interval estimates unstandardized parameter estimates. Parameter estimates with 95% confidence intervals not including 0 are considered statistically significant. We also report standardized coefficients.

Results

Table 1 presents the demographic characteristics, alcohol use/history, and sexual risk-taking of the sample. As shown, this cohort exhibited extensive involvement with alcohol; participants reported consuming 11.3 ($\pm$ 8.8) drinks per drinking day, the mean percentage of days on which participants reported consuming heavy (4+ drinks) quantities of alcohol was 42.7% ($\pm$ 33.2) and their mean AUDIT score of 20.6 ($\pm$ 10.1). The vast majority met clinical criteria for a lifetime diagnosis of alcohol dependence. This sample also reported high rates of sexual risk-taking. Observed scores on the RAB sex-risk index ranged from .05 to .94 with a mean of .41 ($\pm$.18) and a median of .34. One hundred one (41.2%) participants reported vaginal or anal sex with someone they described as a “casual” partner during the 90 days prior to the interview. Of the 56 participants (22.9%) who tested positive for STI, 7

(2.9%) tested positive for chlamydia, 6 (2.5%) for gonorrhea, and 48 (20%) for trichomoniasis. Five participants (2.0%) tested positive for 2 or more STIs.

Product-moment and rank-order correlations were of similar magnitude and yielded statistically consistent conclusions concerning the magnitude of observed bivariate associations (Table 2). Having an STI was significantly associated with both higher impulsivity and higher RAB sex-risk scores, but was not associated significantly with frequency of heavy alcohol consumption. Higher impulsivity was also associated significantly with higher scores on the RAB sex-risk index and with the frequency of heavy alcohol use. The associations involving age and ethnicity with other variables were substantively weak and not statistically significant.

Table 3 presents results for SEMs corresponding to Models A and B in Figure 1. Model A is just identified and thus fits the observed data perfectly. We first note that impulsivity has a statistically significant total effect ($b_{yx}=.022$, 95% CI .00;-.036) on the likelihood of having an STI. After adjusting for frequency of heavy alcohol use, impulsivity also had a statistically significant direct effect on sex-risk index scores ($b_{yx}=.005$, 95% CI .003-.006). However, the direct effect of impulsivity on sexually transmitted infection is not statistically significant ($b_{yx}=-.013$, 95% CI -.004;-.030) after controlling for RAB sex-risk scores and frequency of heavy drinking. Frequency of heavy alcohol use had an inverse and statistically significant effect ($b_{yx}=1.495$, 95% CI -1.097;-.070) on the likelihood of STI, while the RAB sex-risk has a positive and statistically significant ($b_{yx}=1.981$, 95% CI 0.997-2.2.789) direct effect on the likelihood of having an STI.

In Model B (Table 3, Figure 1), the direct effect of impulsivity on the likelihood of being STI+ is constrained to 0. This model directly tests the mediation hypothesis. Measures of model fit indicate this model fits the data well ($\chi^2=2.13$, $df=1$, $p=.145$, CFI=.979, TLI=.964, RMSEA=.044). Here, the total effect of impulsivity on STI status ($b_{yx}=.011$, 95% CI .005-.018) is statistically significant but fully mediated by the behavioral measure of sex-risk.

We also compared rates of sexually transmitted infection among participants who reported being sexually active only with partners they described as “main” partners in the 90 days prior to baseline to those who reported being sexually active with 1 or more “casual” partners. Participants having sex with casual partners had significantly ($\chi^2=13.56$, $df=1$, $p<.001$) higher rates of STI (34.7%) than those who were sexually active only with persons described as main partners, among whom 14.6% tested positive for STI.

Conclusions and Discussion

The purpose of this study was to examine associations among impulsivity, sexual risk-taking, and STIs in a high-risk sample of hazardously drinking incarcerated women. As has been demonstrated in previous research on impulsivity and related traits in high-risk populations², this study sample reported high rates of impulsivity, defined here as a global self-control construct that included the inability to inhibit one’s actions and the propensity to seek risk. Also consistent with previous research⁴⁷, this sample reported high rates of alcohol consumption and associated consequences, as well as sexual risk-taking behaviors

such as engaging in sex work and having unprotected sexual intercourse with multiple and/or casual partners. Thus, the women in this study carry two strong, independent risk factors for STIs and are, as such, notable members of an already high-risk population. The high STI rates reported in this study corroborate previous reports among incarcerated women⁵⁰⁻⁵³ and suggest that this sample of women is already experiencing the negative health consequences of their high-risk status.

As hypothesized, impulsivity was directly associated with sexual risk-taking, which, in turn, was associated with having an STI. Impulsivity was also directly associated with having an STI. These findings confirm previous studies regarding the role of impulsivity in predicting sexual risk-taking and negative sexual outcomes²³ and extend prior research by utilizing a biologically confirmed measure of STI. Further, results indicate that sexual risk-taking mediated the association between impulsivity and having an STI. This finding suggests that, although high impulsivity, sexual risk-taking, and STI risk are all independently associated with each other, when considered together, sexual risk-taking behavior is necessary to preserve the association between high trait impulsivity and the likelihood of a positive STI test. Thus, an inability to regulate one's actions and act on impulse leads to an STI through a particular behavioral choice, namely, sexual risk-taking. That this finding nonetheless emerged in a sample whose recruitment may have been biased toward the high end of the impulsivity scale indicates the robustness of the associations being examined.

These results also underscore the need for prevention efforts in this vulnerable population of incarcerated women. Trait impulsivity may develop early in life and therefore be minimally amenable to change in adulthood. However, preliminary results from behavioral counseling trials in primary care, STI, and psychiatric treatment centers³² suggest that, even among a high-risk population such as this, further sexual risk-taking, and, by extension, STI incidence and/or re-infection, could be reduced. Development of interventions that specifically target incarcerated women is imperative in light of the public health burden associated with their elevated pre-incarceration STI rates and high risk of recidivism following release.

Individuals who reported sexual activity only with main partners in the past 3 months had a notably high rate of STIs but were significantly less likely to test positive for an STI than those who reported sexual activity with casual partners. This finding bolsters previously reported associations between multiple lifetime sexual partners and STIs²⁸ by documenting the link with confirmed biological outcomes. In this population, unprotected sex with main partners carries a real STI risk, and our data further reinforce the important public health message regarding the increased STI risk associated with adding casual partners.

This study has some limitations. First, study enrollment and/or subsequent response patterns may have been susceptible to bias, given the nature of our sample and the fact that, other than STI testing, the study relied on self-report to gather information regarding sensitive topics. However, as described above, our study protocol made efforts to ensure an acceptable cost/benefit ratio, including minimizing coercion that might affect the potential for systematic bias in the level or pattern of response. In addition, self-report of sexual information has been validated in prior research²⁰, especially when standardized assessment instruments are utilized⁷¹. Second, our sample consisted exclusively of hazardous drinkers.

This may have restricted the range of impulsivity seen in the sample to the upper end of the self-control scale. However, in other work with highly impulsive groups of substance users^{13,18}, we have nonetheless found sufficient variability in impulsivity scores. In addition, the present analysis demonstrated mediation despite a potentially truncated range of impulsivity values. Future research should examine samples representing a wider range of alcohol consumption, as well as other forms of substance use.

Finally, our analysis was cross-sectional, precluding conclusions regarding temporal causality. However, impulsivity was operationally defined as a global trait, not a state-dependent characteristic. As such, it is possible that the trait measured in this study may have developed early in life and triggered future maladaptive behaviors. Such an explanation would be consistent with self-control theory, which conceptualizes self-control as a unidimensional factor that leads to criminal and deviant behaviors⁶¹. In addition, the present analyses support a mediational model in which the presence of an STI is predicated on the existence of poor trait self-control and sexual risk-taking. Thus, it is reasonable to suppose that impulsivity develops prior to the initiation of risky sexual behavior. However, prospective measurement is necessary to determine causal associations.

In conclusion, the present study supports previous findings regarding associations between trait impulsivity and sexual risk-taking among alcohol users and incarcerated persons. Our findings further the health implications of this association by including biological measurements of STI and demonstrating how a psychological trait leads to measurable clinical consequences via risky behaviors. Specifically, among hazardously drinking incarcerated women, risky sexual behavior activates the association between impulsivity and a gynecological infection. These findings contribute to a literature on a particularly vulnerable population of women who carry multiple risk factors and are already known to demonstrate many of the negative consequences of these risk factors. Results further suggest that adding casual sexual partners is directly associated with a greater likelihood of testing positive for an STI. Future research should examine these associations in longitudinal analyses in order to confirm temporal causality among these important public health risks.

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Model A: Just Identified SEM **Model B: Full Mediation Model**

Chi-Square = 1.65, df = 1, p = .200

CFI = .982

TLI = .945

RMSEA = .051

Figure 1.

Two Models Predicting the Likelihood of STI. Standardized coefficients are reported (n = 245). Although frequency of heavy alcohol use was entered into the model as an exogenous variable, it did not significantly affect the results and is thus not included in this figure.

Table 1

Background Characteristics (n = 245)

	Mean (SD)	n (%)
Age in Years	34.07 (8.86)	
Ethnicity (Minority)		70 (28.6%)
Any Sex Work (Yes)		66 (26.9%)
Heavy Alcohol Use	0.43 (0.33)	
Mean Drinks / Drinking Day	11.27 (8.76)	
AUDIT Score	20.63 (10.08)	
Lifetime Alcohol Dependence (Yes)		220 (89.8%)
MOD RAB Sex-Risk	.406 (.177)	
Any Casual Sex Partners		101 (41.2%)
STI+		56 (22.9%)

Table 2

Product-Moment (Below the Main Diagonal) and Rank-Order (Above the Main Diagonal) Correlation Coefficients (n = 245)

	1.	2.	3.	4.	5.	6.
1. STI (Yes = 1)	1.00	.15*	.27**	-.04	.04	-.06
2. Impulsivity	.15*	1.00	.31**	.24**	-.01	-.10
3. RAB Sex-Risk	.28**	.34**	1.00	.25**	.10	-.01
4. % Days Heavy Alcohol	-.03	.25**	.26**	1.00	.04	-.04
5. Ethnicity (Caucasian = 1)	.04	-.01	.08	.03	1.00	.03
6. Age	-.06	-.12	-.04	-.06	.02	1.00

*
p < .05,

**
p < .01

Table 3

Structural Equation Models Testing the Mediation Hypothesis.

EQUATION	MODEL A (Just Identified)		MODEL B (Full Mediation)	
	b_{yx} (95% CI)	β_{yx}^a	b_{yx} (95% CI)	β_{yx}^a
<u>RAB Sex-Risk on</u>				
Impulsivity	0.005* (0.003; 0.006)	.336	0.006* (0.004; 0.008)	.314
% Days Heavy Alcohol	.099* (0.035; 0.161)	.186	.099* (0.035; 0.161)	.185
<u>STI on</u>				
Impulsivity	0.013 (-0.004; 0.030)	.145	----	----
% Days Heavy Alcohol	-.495 (-1.097; 0.070)	-.160	-.517 (-1.123; 0.041)	-.170
RAB Sex-Risk	1.981* (0.997; 2.789)	.339	2.202* (1.218; 3.022)	.385
Model Fit ^b				
$\chi^2 = 2.13$, df = 1, p = .145				
CFI = .979				
TLI = .964				
RMSEA = .044				
<u>Total, Direct, and Indirect Effects of Impulsivity on STI</u>				
<u>Effects of Impulsivity on STI</u>				
Total Effect	0.022* (0.003–0.036)	.243	.011* (0.005; 0.018)	.121
Direct Effect	0.013 (-0.004; 0.030)	.145	----	----
Indirect Effect	0.009* (0.004; 0.015)	.098	.011* (0.005; 0.018)	.121

* Zero is not included in the 95% confidence interval estimated by bias-corrected bootstrap with 1,000 re-samplings.

^a β_{yx} are standardized effects.

^b Fit indexes are not reported for Model A which fits the observed data perfectly.