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PREDICTING SEXUAL ASSAULT PERPETRATION AMONG HETEROSEXUALLY ACTIVE YOUNG MEN

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ABSTRACT

Data from an online, community sample of young men were analyzed to test predictors of sexual assault perpetration. We used structural equation modeling to test the relative contributions of specific sub-types of childhood adversity to subsequent sexual aggression. Mediators included hostile masculinity, impersonal sexual behavior and attitudes, and substance use variables. Findings suggested that childhood sexual abuse had direct and mediated effects on sexual assault perpetration, but hostile masculinity was the only proximal factor significantly related to aggression. Childhood polytrauma was also associated with increased perpetration risk, suggesting that prevention efforts may be aided by increased attention to childhood maltreatment.

Persistently high rates of sexual assault perpetration have motivated a large body of research aimed at understanding and preventing men's sexual aggression. Although rates of sexual violence perpetration vary widely by sample and methodology, some recent studies find that over half of non-incarcerated men have used force or coercive tactics to gain sexual access to an unwilling partner at some point (Abbey, Wegner, Pierce, Jacques-Tiura, 2012; Parkhill & Abbey, 2008), and that the vast majority of perpetrators of sexual assault are male (Black et al., 2011). Despite these high community rates, however, most studies of sexual aggression have focused on college or adjudicated samples. In a recent review of studies regarding perpetration risk factors published between 1989-2008, less than 14% of studies of adult males used community samples, and most were geographically-specific (Tharp et al., 2013). Given persistently low reporting rates of sexual assault crimes by victims (Casey & Nurius, 2006), and the accompanying likelihood that most perpetrators remain "undetected" (Lisak & Miller, 2002), or unknown to the criminal justice system, refining our understanding of sexual assault perpetration in the general population is critical to informing community-based prevention and early intervention efforts.

Adverse Childhood Experiences (ACEs) as Antecedents of Perpetration

Over time, several models have been proposed to explain the etiology of sexual aggression, including but not limited to interactional models such as the confluence model of sexual aggression (Malamuth, Sockloskie, Koss, & Tanaka, 1991); ecological models that organize multi-level risk factors precipitating aggression (see for review, World Health Organization, 2002), and conceptual models such as the model of male peer support, (Schwartz & DeKeseredy, 1997). Some of these models, including iterations of the confluence and ecological models have increasingly examined childhood maltreatment and adversity as early factors precipitating risk for subsequent aggression. Research consistently demonstrates that experiencing abuse during childhood elevates subsequent risk for sexual assault perpetration (Malamuth et al., 1991; Tharp et al., 2013; White & Smith, 2004). Studies using a composite

construct, inclusive of different kinds of maltreatment, have linked child abuse with increased likelihood of perpetration (Abbey, Jacques-Tiura & LeBreton, 2011; Malamuth, Linz, Heavey, Barnes & Acker, 1995; Thompson, Koss, Kingree, Goree & Rice, 2011). In addition, a handful of studies have examined specific sub-types of childhood abuse and found evidence that particular forms of maltreatment contribute independently to risk. For example, child sexual abuse emerged as the sole adverse childhood experience associated with sexually coercive behavior and intentions, respectively, in a nationally representative sample of adolescents (Casey, Beadnell & Lindhorst, 2009), and among young men characterized as social drinkers (Davis et al., 2012). On the other hand, in a sample of college-aged men, White and Smith (2004) found that three types of childhood adverse experiences (sexual abuse, physical abuse, and witnessing intimate partner violence) each independently increased the likelihood of sexual assault perpetration in adolescence. Sub-types of childhood adversity may trigger differential pathways through which risk is actualized (see below for further discussion of potential mediating mechanisms). Research focusing on these potential pathways may therefore be optimally informative for early intervention initiatives when it includes separate, rather than composite, measures of childhood maltreatment factors. This would allow for a greater understanding of which types of adversity, and in which combinations, contribute to risk for subsequent perpetration.

Proximal Predictors of Perpetration

In addition to childhood adverse experiences, numerous proximal predictors of sexually aggressive behavior have been identified. In their influential confluence model of sexual aggression, Malamuth and colleagues (1991) posit endorsement of hostile masculinity and an impersonal approach to sexual relationships as two primary proximal and mutually reinforcing pathways to sexual assault perpetration, factors that are preceded by and perhaps mediate earlier risks including childhood maltreatment. Hostile masculinity is typically operationalized as an attitudinal construct reflecting the endorsement of traditional, rigid notions of masculinity,

coupled with hostility toward, suspiciousness of, and/or a need for dominance over women (Malamuth et al., 1991; Murnen, Wright & Koluzny, 2002). Impersonal sex is characterized as a non-intimacy based, 'scoring' approach to pursuing sexual partners in which obtaining frequent sexual contact is prioritized over emotional connection. Impersonal sex as a composite construct has been related to self-reported perpetration (Parkhill & Abbey, 2008), as have its contributing elements such as higher numbers of sex partners (Abbey et al., 2012) and positive attitudes towards casual sex (Zawacki, Abbey, Buck, McAuslan & Clinton-Sherrod, 2003).

Although both proximal pathways consistently predict perpetration, there are mixed findings across studies regarding their relative contribution. Consonant with the original conceptualization of these constructs as interacting to produce risk, some research demonstrates that the presence of high levels of both hostile masculinity and impersonal sex carries particular risk for sexual aggression (e.g. Wheeler, George & Dahl, 2002). Several studies have found that either alone predicts sexual assault perpetration (Abbey et al., 2011) or discriminates between non-aggressive men and those who initiate a pattern of sexual assault or repeat sexually aggressive behavior (Abbey & McAuslan, 2004).

Other research suggests that hostile masculinity may be the more potent risk pathway. In a latent profile analysis of sexual assault perpetration risk factors among a national, online sample, Greene and Davis (2011) found four distinct sub-groups of men. A group with high scores on hostile masculinity only, and a group with high scores across multiple risk factors (including hostile masculinity, impersonal sex, and alcohol use) reported significantly more sexual aggression than groups characterized by endorsement of none of these or of impersonal sex alone. Although the impersonal sex group had elevated rates of sexual aggression compared to the "no risk" group, this rate was significantly "well below the levels of the two other groups" (pg.1471), suggesting that hostile masculinity, but not an impersonal approach to sex, is a sufficient condition for sexual aggression risk. Similarly, Thompson, Swartout & Koss (2013) found that hostile masculinity and perceived peer support for sexual coercion more consistently

differentiated between sexually aggressive and non-sexually aggressive men over time than did number of sexual partners. This result suggests that pursuing more frequent, casual sexual partnerships does not preclude these sexual encounters from being mutually desired and respectful, and that impersonal sex may not be a sufficient precipitate of perpetration in the absence of domineering, callous, or misogynistic attitudes towards women. In a similar vein, Greene and Davis (2011) suggest that an impersonal sex orientation, on its own, may somewhat elevate risk of aggression through opportunity, while hostile masculinity may represent a more powerful or sufficient kind of risk for sexual aggression.

Over time, the contribution of other factors to sexual violence has been increasingly recognized in theory and included in etiological research, including alcohol and drug use. Because alcohol consumption by the perpetrator, victim, or both is present in over 50% of sexual assault situations (see for review, Abbey, Zawacki, Buck, Clinton & McAuslan, 2004), research on the alcohol-sexual aggression link has examined both situation-specific and more general drinking. Heavy or otherwise problematic alcohol use has been associated with self-reported sexual assault perpetration among men in some studies (see for review, Testa, 2002) but in some research general measures of heavy drinking do not reliably distinguish perpetrators from non-perpetrators (e.g., Thompson et al., 2013). Abbey and colleagues (2011) point out that men who drink heavily generally are likely to also drink heavily in sexual situations, and that the relationship between alcohol and sexual violence is likely to be related to situation-specific cognitive impairment because of drinking. Indeed, men who use alcohol concurrently with sexual situations are more likely to report sexual aggression (Parkhill & Abbey, 2008). Similarly, a controlled lab-based study (Davis et al., 2012) found that intoxicated men were more likely to perceive a female character in a story as sexually aroused, and reported more sexual entitlement and greater sexual aggression intentions than men receiving an alcohol placebo. Although this finding provides support to Abbey's suggestion that alcohol use is related to perpetration through situation-specific cognitive impairment, further testing of the roles

played by alcohol and drug use in the context of other risk factors for sexual aggression is needed, particularly across a variety of populations.

Linking Adverse Childhood Experiences and Proximal Predictors of Sexual Aggression

While substantial research has documented distal (adverse childhood experiences) and proximal risk factors for sexual assault perpetration, the knowledge base regarding the potentially complex mechanisms linking the two is still forming. Some links have been established between specific types of childhood adversity and the primary proximal risk factors summarized above. For example, experiencing childhood physical abuse and/or witnessing interparental violence have been associated with hostility, negative masculinity, and more traditional gender-role attitudes (Rosen & Martin, 1998; White & Widom, 2003). Childhood sexual abuse has been associated with increased numbers of sexual partners in adolescence among boys (Casey et al., 2009), as well as an acceptance of non-monogamy and frequent casual sex (see for review, Holmes & Slap, 1998). Physical abuse, sexual abuse and witnessing parental violence are all linked to later risk for substance use and misuse (Casey et al., 2009; Widom, Shuck & White, 2006). Still, a direct link between CSA and adulthood sexual aggression even in the presence of mediators has also been documented (Casey et al., 2009; Malamuth et al., 1995). Taken together, these findings from extant research suggest both that unique types of childhood maltreatment may be associated with slightly different subsequent pathways to aggression, and that our understanding of the mechanisms involved in this relationship is still emerging.

Purpose of this Study

In summary, research evidence strongly links experiences of child maltreatment and constructs such as hostile masculinity to risk for sexual assault perpetration but room remains to more fully explicate mechanisms linking specific types of adverse childhood experiences to sexually aggressive behavior that occurs much later. Examining child abuse to adult perpetration mechanisms is especially needed in heterogeneous community samples to

enhance the generalizability of this line of research beyond college and clinical samples. Such work regarding the nature and relative roles of risk pathways can deepen our understanding of the etiology of sexual aggression, and assist in the development of prevention or intervention programs tailored to participants' risk profiles. In this article we test a path model of sexual assault perpetration in a national sample of young men. In particular, we examine 1) the relative contribution of unique types of adverse childhood experiences (ACEs) to self-reported sexual assault perpetration in young adulthood, and 2) the role of more proximal associates of sexual assault perpetration as potential mediators of specific types of childhood adversity.

The proposed analytic model is presented in Figure 1. The inclusion of constructs and the hypothesized pathways are informed by findings from previous research described above, and the confluence model of sexual aggression (Malamuth et al., 1991). The confluence model is arguably the most examined current theoretical model of the etiology of sexual aggression. Although constructs included in tests of the confluence model have varied somewhat over time, most postulate that early adverse experiences are mediated by more proximal factors in the prediction of sexual perpetration. Thus, the Figure 1 analysis model hypothesizes that attitudinal and behavioral constructs more proximal to sexual aggression will mediate the contribution of unique sub-types of ACEs. Based on the literature reviewed above, we hypothesized that all three ACEs would increase the likelihood of problematic substance use. We also expected that childhood sexual abuse would increase mediators related to adulthood sexual attitudes and behavior. Finally, we expected that the two interpersonal violence ACEs (experiencing abuse and witnessing violence) would increase hostile masculinity.

Figure 1 about here

METHOD

Data used in these analyses came from a larger study of sexual scripts, sexual risk taking, and violence-related behavior among young, heterosexually active men. The University of Washington Institutional Review Board approved all procedures. The entire survey took place online, including recruitment, eligibility screening, informed consent, and data collection.

Procedures and Sample

Recruitment advertisements were posted from mid-December 2010 to mid-June 2011 on Craigslist, in a variety of geographic sites around the U.S., and on Facebook, to men within our target age group. Facebook advertisements featured pictures of men representing a range of racial/ethnic identities, and an invitation to share “your views in a web survey about relationships with women.” Potential participants who clicked on the advertisement were directed to an initial screening survey. Demographic inclusion criteria were: being 18 to 25 years old, male, a U.S. resident, and a U.S. resident during the teen years. Additionally, to be eligible a person had to have been physically intimate with a woman at least once (defined as touching below the waist or having oral, vaginal, or anal sex) and want to have sex with a woman in the future. Because an aim of the parent study was to examine sexual scripts and attitudes in a sample of young men that were diverse in terms of race/ethnicity, we over-sampled men of color. To do this, we established quotas for the maximum number of eligible people for each of five racial/ethnic categories (African American, Asian American, Latino, European American/White, and Multi-Racial). Once the number in a racial/ethnic category was met, additional potential participants from that group were ineligible. To augment initially slower recruitment among African American, Latino and Asian American men, we targeted Facebook and Craigslist ads to 14 urban locations around the U.S. with more concentrated populations of these race and ethnicity groups (based on census data), including Los Angeles, Atlanta, Chicago, Miami and Honolulu. Ads in each of these areas were live for one week. Thus, some men in the final sample were recruited through these more targeted ads, while others found the survey through non-geographically-specific recruitment.

To prevent the same individual from re-taking the survey, and to prevent individuals found ineligible from attempting entry by changing how they described themselves, we programmed the screening survey to keep a record of the IP addresses of respondents. If an individual entered the eligibility screening survey again from an already used IP address, the programming did not grant access to the main survey.

Measures

Abuse and witnessing intimate partner violence in childhood. Ten items from the Adverse Childhood Experiences (ACE) Study (Felitti et al., 1998) were used to assess maltreatment and witnessing intimate partner violence prior to age 18. All items had frequency-based response options ranging from 0 (*never*) to 4 (*very often*). Childhood physical abuse (CPA) was assessed as the mean frequency of two sets of behaviors committed by parents or caregivers; the respondent being pushed, grabbed, shoved or slapped, and being hit so hard that bruises or injury resulted. Child sexual abuse (CSA) was calculated as the mean of 4 experiences committed by someone 5 or more years older at the time such as an “older relative, family friend or stranger.” These items asked how often someone “touched or fondled you in a sexual way,” “had you touch their body in a sexual way;” “attempted to have oral, anal or vaginal intercourse with you;” or “actually had oral, anal or vaginal intercourse with you. Witnessing intimate partner violence in childhood (CIPV) was also calculated as the mean of 4 items assessing the frequency of observing a mother or stepmother be pushed or slapped, kicked or hit with a fist, hit repeatedly, or threatened with a weapon.

Traditional masculinity. Traditional masculinity was measured by eight items from the Adolescent Masculinity Ideology in Relationships Scale (AMIRS) (Chu, Porche & Tolman, 2005), which asks participants to rank their agreement with statements such as *guys should not let it show when their feelings are hurt* from 0 (*strongly disagree*) to 4 (*strongly agree*). Scores were the mean of the items and had a Cronbach’s alpha of .70.

Negative attitudes to women. Negative attitudes regarding women were assessed as the mean of six items from the Hostility Toward Women Scale (HTW; Cronbach's alpha = .63; Lonsway & Fitzgerald, 1995). Items had identical response options to the AMIRS, and included items such as *women are responsible for most of my troubles*.

Number of sex partners and casual sex. Two single items asked participants about their lifetime number of sex partners and lifetime number of single sexual encounters involving intercourse ("one night stands"). For each, participants provided a number.

Attitudes toward casual sex. *Attitudes toward casual sex* were measured by the mean of three items from the Sociosexual Orientation scale (Simpson & Gangestad, 1991) assessing respondents' endorsement of sex without love and having multiple casual partners during the same period of time. Response options for each item ranged from 0 (*strongly disagree*) to 4 (*strongly agree*). Cronbach's alpha for scores in the sample was .76.

Binge drinking. Binge drinking was a single item asking alcohol users how often the respondent typically has 6 or more drinks at one time. Responses ranged from 0 (*never*), to 4, (*daily or almost daily*).

Problems due to substance use. Problems because of use was assessed with a sum of the 10-item Short Inventory of Problems-Alcohol and Drugs (SIP-AD; Hagman et al., 2009), which asks respondents to indicate (*yes* or *no*) whether they had ever experienced problems such as financial issues or damaged relationships because of substance use. Cronbach's alpha for these scores was .96.

Sex and drinking concurrency. This was measured as the mean frequency with which participants reported using alcohol concurrent with sexual activity with two of their most recent partners. Response options ranged from 0 (*never*) to 4 (*always*).

Sexual assault perpetration. Sexual assault perpetration was measured with seven items from the Sexual Experiences Survey (Koss, Gidycz & Wisniewski, 1987). Two questions assessed whether participants had ever (*yes* or *no*) forced sexual contact such as kissing or

fondling with a woman 'when she did not want to' by using force, or through continual arguments; one assessed verbally coerced sexual intercourse by using continual arguments or pressure, and four items assessed attempted or completed unwanted vaginal intercourse (rape or attempted rape) by using physical force, or by incapacitating the victim via alcohol/drugs. We also included a single item assessing verbally coerced sexual intercourse with respondents' most recent "committed" sexual partner, assessing whether they had ever "pressured [their] most recent partner into having sex when she did not want to." We calculated a measure of types of sexual assault perpetration as the number or percentage of "yeses" on these eight sexual assault items, and this single, count variable constituted the outcome in the structural equation model described below. This approach to scoring the SES in the context of multivariate analysis captures variability in severity and types of sexual aggression (e.g. Abbey et al., 2011) and was calculated in a manner consistent with previous research examining the etiology of sexual assault perpetration (e.g. Parkhill & Abbey, 2008; White & Smith, 2004).

For descriptive purposes, and to enhance comparability across a wider range of research, we also created a four-category ordinal variable reflecting the "most serious" type of sexual assault reported. This variable was created to be consistent with previous categorizations of sexual aggression and was informed by processes used by Koss et al. (1987) and Abbey and colleagues (2007; 2011). Specifically, the four categories included 1) no sexual assault; 2) forced sexual contact, inclusive of men who engaged in unwanted kissing or fondling attained through arguments, pressure, threats or physical force, but who did not attempt intercourse; 3) verbally coerced sexual intercourse, incorporating men who used continual arguments or pressure to attain sex when their partners were unwilling, but did not use physical force or incapacitating methods, and 4) rape or attempted rape, inclusive of men who used physical force or incapacitation with drugs or alcohol to obtain sexual intercourse or try to do so. This ordinal variable was used in follow-up analyses to understand associations between childhood trauma and subsequent sexual aggression. The correlation between the count and

ordinal approaches to reflecting sexual assault perpetration was $r=.86$ ($p<.001$), indicating strong congruence between “severity” and number of types of assault reported.

Incarceration. For descriptive purposes, respondents were asked “how many months total have you been incarcerated in juvenile detention, jail, or prison?” Reasons for incarceration were not assessed, nor were arrests vs. convictions. Respondents could indicate “none,” “less than a month” or a number of months up to “48 or more.”

Analysis strategy

Using Mplus 7.0, we used structural equation modeling (SEM) to test the proposed analysis model outlined in Figure 1. We first calculated an intercorrelation matrix between analysis variables to inform the measurement model. Then, we conducted confirmatory factor analyses (CFA) to test the fit of the measurement model and to ensure adequate definition of latent variables. Once acceptable fit was achieved, we tested the full structural (path) model. We considered fit to be acceptable if the comparative fit index (CFI) and Tucker-Lewis index (TLI) were greater than .95, the residual mean squared error approximation (RMSEA) was less than .06 with a confidence margin greater than 95%, and the chi square test was non-significant ($p>.05$) (Byrne, 2011). We employed the robust maximum likelihood (MLR) estimator in both the measurement and structural models, which adjusts model parameters to account for multivariate non-normality of continuous data (Byrne, 2011). Erceg-Hurn & Mirosevich (2008) point out that the use of such estimators carries the benefit of accounting for non-normality while not jeopardizing interpretability. Once we achieved an acceptably-fitting model, we conducted significance tests of the indirect effects (the overall mediated pathway from the exogenous variables to the outcomes). To prevent the biasing of population parameters known to occur in findings when listwise deletion is used (Schlomer et al., 2010), we used Full Information Maximum Likelihood (FIML) to allow for inclusion of people with some missing data.

RESULTS

Sample Description

Following screening, 662 men entered the survey. Of these, 93 completed less than 25% of the survey and were excluded from analysis. An additional 14 participants were excluded because they responded to survey questions in ways that were nonsensical (e.g., providing conflicting information). The final sample thus consisted of 555 men. Of these, 19.8% were African American, 19.1% Asian American, 20.9% European American/white, 21.8% Latino, and 18.4% Multiracial or of other racial/ethnic backgrounds. Because the sampling was specifically designed to increase racial and ethnic diversity among participants, men of color are significantly over-represented in the sample relative to the general U.S. population. Participants' average age was 20.6 (SD 2.0). Seven percent currently had less than a high school education, 26% had completed high school or obtained their GED, 47% had some college or technical training (but no degree), 6% had a community college or Associates degree, and 14% had obtained at least a Bachelor's degree. The age, education level, and race/ethnicity of the men in the final sample did not differ significantly from the 93 men whose data was excluded due to leaving the majority of the survey blank. The majority (63%) had personal incomes under \$12,000 per year. Although characterizations of socioeconomic status are difficult for this age group, approximately 56% of the sample was enrolled either part or full-time in some form of undergraduate education at the time of the survey. This is higher than the 39% of 18-24 year-old men in the U.S. enrolled in college during 2011 (U.S. Department of Education, 2014). Finally, approximately 12% of the sample had ever spent any time in jail, juvenile detention or prison for any reason, and of these, 62% were incarcerated for less than a month (cumulative total) during their lifetime. Although type of incarceration cannot be parsed in this data and rates will likely increase as the men in the sample age, this incarceration rate is very roughly comparable to rates in the U.S. generally in which 11% of men experience incarceration at some point in their lifetime (Bonczar, 2003).

Approximately 32% of respondents (n=174) reported perpetrating at least one type of sexually aggressive behavior of any kind. For 5.4% (n=29), forced sexual contact was the most

serious type of sexual aggression reported, while 17.2% (n=93) reported verbally coerced sexual intercourse and 9.6% (n=52) reported completed or attempted rape as the most severe form of sexual assault they had perpetrated. Among men reporting some type of sexually aggressive behavior, 48% engaged in one type of sexual assault, 22% in two types, and 30% endorsed three or more types of sexual aggression on the sexual experiences survey. There were no differences based on the racial or ethnic group with which respondents identified and whether they had ever perpetrated any type of sexual assault ($\chi^2=5.55$, $df=4$, $p=.24$).

Respondents reporting any type of sexually assaultive behavior were no more likely to report time spent incarcerated for any reason than those without a history of sexual aggression ($\chi^2=2.66$, $df=1$, $p=.11$), although men specifically reporting rape or attempted rape were more likely than non-aggressive men to report some period of incarceration (30% and 10% respectively, $\chi^2=17.25$, $df=3$, $p<.01$).

Missing Data

In general, the amount of missing data on most variables was small (e.g., < 5% of the cases) and on two variables slightly larger (lifetime sex partners and lifetime one night stands; 8.6% and 8.8%, respectively). The noticeable exception was the variable reflecting sex and substance use concurrency which was missing on approximately 28% of cases. Independent t-tests revealed that people missing data on this variable had significantly fewer sex partners and reported perpetrating fewer types of sexual assault than people who did not have missing data on this variable. This pattern of missingness (missingness being associated with other variables in the analyses) plausibly meets the missing at random (MAR) assumption which is a prerequisite for the use of FIML (Schlomer, Bauman & Card, 2010).

Intercorrelations and Measurement Model

Table 1 summarizes descriptive statistics and bivariate correlations for all variables. Sexual assault perpetration was mildly or moderately correlated with all hypothesized predictors

except for binge drinking. Because of its significant relationship with and conceptual relevance to other constructs in the path model, binge drinking was retained in multivariate analyses.

Table 1 about here

Decisions about the construction of latent variables were based on theoretical and empirical considerations. Consistent with previous conceptualizations (e.g., Malamuth et al., 1991), a hostile masculinity latent variable was operationalized with two indicators: adherence to “traditional” notions of masculinity and negative attitudes towards women. Consistent with conceptualizations of impersonal sex as a non-intimacy based approach to sexuality (e.g., Parkhill & Abbey, 2008), a number of sex partners latent variable was constructed with two indicators: lifetime sexual partners and lifetime experiences of a single sexual encounter involving intercourse (“one night stands”). While attitudes toward casual sex is sometimes combined with number of sexual partners as an indicator of impersonal sex (e.g., Parkhill & Abbey, 2008), the correlations in this sample between attitudes toward casual sex and the two behavioral variables ($r = .24$ with number of lifetimes partners and $.26$ with one night stands) were relatively small. Given that this translates to only small amounts of shared variance (6% and 7%, respectively) we treated attitudes toward casual sex as an independent construct. We constructed a latent variable measuring problem substance use with two indicators: binge drinking frequency and problems experienced because of alcohol or drug use. Given literature suggesting that general substance use may function differently as a risk for sexual aggression than situation-specific sex-drinking concurrency (see for review, Testa, 2002), sex and drinking concurrency was treated as a separate, observed variable in the path model.

The Confirmatory Factor Analysis measurement model included all measured constructs as well as all latent constructs and their indicators. The initial fit was marginal ($RMSEA = .04$, $CFI = .98$, $TLI = .95$, χ^2 test of model fit = 40.66, $p = .02$). Based on modification indices, we

freed error terms between 1) lifetime sex partners and substance use problems, and 2) binge drinking and attitudes towards casual sex. The final measurement model evidenced acceptable fit ($RMSEA = .03$, $CFI = .99$, $TLI = .97$, $\chi^2 = 31.20$, $df = 22$, $p = .09$).

Structural (Path) Model

The structural part of the model, which is a test of the pathways, is depicted in Figure 2. A test of the proposed structural model revealed inadequate fit ($RMSEA = .06$, $CFI = .90$, $TLI = .81$, $\chi^2 = 104.5$, $df = 33$, ($p < .001$)). We then freed paths one at a time – based on modification indices – until achieving acceptable fit. A total of 4 paths were freed and are shown in the figure as dashed lines: from childhood sexual abuse to sexual assault perpetration, from witnessing IPV in childhood to both number of sex partners and sex-substance use concurrency, and from child sexual abuse to hostile masculinity. The final model had acceptable fit ($RMSEA = .03$, $CFI = .98$, $TLI = .96$, $\chi^2 = 40.97$, $df = 29$, ($p = .07$)).

In the final model, the three exogenous variables (the types of adverse experiences) were correlated significantly ($r_s = .32$ to $.48$, $p < .001$). Although two of the three types of early adverse experiences in childhood were related in expected ways to drinking, number of sex partners, and casual sex attitudes, none of these intermediary variables were significantly related to sexual assault perpetration. Of the other intermediary variables, only hostile masculinity was significantly related to sexual assault perpetration.

Figure 2 about here

Among early adverse experiences, only childhood sexual abuse was related to sexual assault perpetration either directly or indirectly. In addition to its statistically significant direct effects, tests of the indirect effects showed that child sexual abuse had a significant mediated effect on sexual assault perpetration through hostile masculinity ($b = .04$, $p = .01$). Although witnessing IPV in childhood was also related to hostile masculinity, a test of the indirect effect

on sexual assault perpetration was not significant. Approximately 20% of the variance in sexual assault perpetration was explained by the model.

Alternative Models

Given the significant bivariate correlations between sexual assault perpetration and impersonal sex-related variables including lifetime sexual partners, lifetime one night stands and attitudes towards casual sex, we ran alternative structural models to test whether shared variance between these variables was reducing their relationship to sexual assault perpetration in the multivariate model. We re-estimated the structural model two times, first without the number of sex partners latent variable, and second without the attitudes toward casual sex variable. Although fit statistics improved slightly on each run (likely as a result of fewer parameter estimates in the model), significance levels for relationships between constructs in the model did not change. That is, in the full model, neither sex partners nor attitudes toward casual sex were significantly related to sexual assault perpetration in the absence of the other. The full model with both impersonal sex-related variables is therefore the one presented here.

Follow-up Analyses

Given that all adverse childhood experiences had significant bivariate relationships with sexual assault perpetration (Table 1), but that only child sexual abuse was related to sexual assault perpetration in the full model, we conducted follow-up analyses to better understand the relative rates of perpetration of different kinds of sexual assault among men with varying childhood abuse histories. To do this, we used recommended cut-offs from the Adverse Childhood Experiences Study (Felitti et al., 1998) for designating men as having experienced significant physical abuse, sexual abuse, or witnessing IPV in childhood. Specifically, men were categorized as experiencing childhood physical abuse if they reported being “often” or “very often” pushed, grabbed, or shoved, or had ever received injuries because of abuse. Men endorsing any frequency of sexual abuse were categorized as having experienced sexual maltreatment in childhood. Finally, men who reported “often” or “very often” seeing their mother

or stepmother hit, slapped, shoved or kicked, or who had ever seen her repeatedly hit or threatened with a weapon, were categorized as witnessing IPV. Among the participants, 42% (n=229) met or exceeded the cut-off scores for experiencing physical abuse prior to age 18, 25% (n=134) for sexual abuse, 16.6% (n=90) for witnessing IPV, and 52% (n=289) for at least one of these types of abuse. Overall, while childhood maltreatment is associated with greater risk for later sexual assault perpetration, it does not explain it fully: 40% of the men who reported sexual assault perpetration reported no history of childhood maltreatment, while 60% recalled at least one type of adverse childhood experience.

To understand how different combinations of early adverse childhood experiences (ACEs) were related to perpetration, we organized men into groups based on the types of the aforementioned childhood maltreatment they had experienced. Similar to analyses by White and Smith (2004), these groups were: no abuse, physical abuse only, sexual abuse only, physical abuse and witnessing IPV only, physical and sexual abuse only, or experienced all types of abuse. We then conducted a chi-square analysis to examine rates of the most severe form of sexual assault perpetrated by men in different adverse childhood experiences groups. Findings are described in Table 2. Men who only witnessed IPV (n=9) or who experienced both sexual abuse and witnessing IPV (n=7) were too few to include in corresponding groups, and were excluded from the analyses.

Table 2 about here

The overall chi-square was statistically significant. Comparisons of percentages across ACE categories showed no significant differences in rates of forced sexual contact or verbally coerced sex among the childhood maltreatment groups. However, we observed significant differences for having never perpetrated sexual assault and for having perpetrated attempted or completed rape. In particular, men who reported experiencing all three types of ACES were

underrepresented among men who never committed any sexual assault compared to all other groups of men, except the group characterized by combined physical and sexual abuse. Men with a history of all three types of ACEs were also more likely to report perpetrating rape than participants in the no abuse, physical abuse only, or sexual abuse only groups. Additionally, more men who experienced at least two types of childhood abuse reported perpetrating rape than did men in the no childhood abuse group or the physical abuse only group.

DISCUSSION

This study tested a path model of sexual assault perpetration in a national sample of young men. Similar to previous literature, a high number of participants reported sexually aggressive behavior; 32% of men in this study perpetrated at least one type of sexual assault (inclusive of forced sexual contact). Although estimates of sexual assault perpetration rates vary based on measurement methodologies, this rate is similar to other comparably measured college samples (e.g., 30% of men in a college sample measured by Thompson et al. (2013)), and slightly less than some community samples (e.g., 43% in a Detroit, Michigan sample; Abbey et al., 2011), perhaps because of the age attenuation in our sample. More specifically, 9.6% of men in this sample reported using physical force or incapacitation through drugs and alcohol to rape, or attempt to rape, a woman. This rate sits at about the mid-range of similarly measured college samples; for example, Koss, Gidycz and Wisniewski (1987) documented that 7.8% of men in their college sample had a history of rape or attempted rape perpetration, and Thompson et al. (2013) documented a rate of 16% among college-enrolled men using an analogous measurement approach. Estimates from similarly measured community samples are less available in extant literature, but still suggest comparability with rates found in the current study – for example Abbey and colleagues (2011) documented an 11% rate of rape or attempted rape among men in an urban and semi-urban sample. Finally, although 30% of men reporting perpetrating rape or attempted rape had some previous contact with incarceration facilities (including for reasons other than sexual aggression), the vast majority of men reporting

some level of sexual aggression had not come into contact with jail or juvenile detention facilities. This suggests that, like many college-based samples, most participants reporting sexual aggression in this broad, community sample fall into the category of “undetected” aggressors (Lisak & Miller, 2002).

In our analyses, we sought to parse out the contributions of different types of childhood maltreatment to proximal risks for and to sexual assault perpetration in adulthood. The study had two key findings. First, child sexual abuse (CSA) was the only adverse childhood experience associated with perpetration directly, as well as acting indirectly through hostile masculinity in the multivariate model. Other adverse childhood experiences – witnessing IPV and undergoing physical abuse – did not have direct or indirect relationships with sexual aggression in the path model even though they had zero-order bivariate correlations with perpetration. Second, many proximal predictors of perpetration that have been significant in other studies were not significant here. Endorsement of hostile masculinity was associated with more sexual assault perpetration, consistent with the confluence model. However, associations between perpetration and high numbers of sexual partners, problem substance use, concurrent substance use and sex, and attitudes toward casual sex were not significant in this sample.

Childhood Maltreatment and Assault Perpetration: CSA’s Unique Role

Our first key finding was that different types of childhood maltreatment contributed differently to assault perpetration. CSA was both directly associated with perpetration and acted indirectly on it through hostile masculinity. This outcome supports previous findings that CSA in particular is an early risk factor for later sexually aggressive behavior (i.e., Casey et al., 2009). The substantial direct effect of CSA on sexual assault perpetration in the presence of potential mediators also reinforces the need to longitudinally examine mechanisms that place childhood sexual abuse survivors at risk for later sexually aggressive behavior. It may be that mechanisms not measured in these analyses, such as psychological sequelae of abuse, or peer, family or community factors, play pivotal roles in amplifying or reducing the risk generated

by early sexual trauma. For the sake of effective intervention with sexually maltreated youth and of reducing overall rates of sexual assault perpetration, it is important to further delineate developmental pathways between early victimization and later aggression. At the same time, we need to better understand the indirect relationship seen here between CSA and perpetration through hostile masculinity. The fundamentally disempowering experience of sexual abuse (which also stands in contrast to prevalent ideas about masculinity as embodying strength and dominance), may prompt young men to resolve this tension through the adoption of more rigid and 'traditional' notions of their own masculinity, exacerbating risk for a more domineering approach to interactions with women.

Although CSA carried effects among the distal variables in the path model, the role of the other childhood trauma factors and their cumulative effects (as seen in the supplemental analysis) are also important to understand. The supplemental analyses suggest that poly-trauma, particularly types inclusive of sexual abuse, is most clearly associated with assault perpetration. All types of childhood maltreatment were mutually inter-related, which may be why only CSA was found to have a role in the path model in which these variables controlled for each other's effects. One implication of the findings is that since CSA overlaps so often with child physical abuse (CPA), it would be wise to conceptually and clinically account for both. The bivariate link between CPA and later perpetration may arise in part because sexual abuse is so often accompanied by physical abuse for boys, as it was in this sample. At the same time, our supplemental analyses suggest that youth with complex trauma histories, inclusive of multiple types of adversity and maltreatment, are at particular risk, and are in need of prioritized attention in both interventive planning and future research.

Finally, it is important to remember that childhood maltreatment is far from the only contributor to perpetration. Over 40% of the men in our sample who used sexual aggression had no childhood history of abuse, a finding that also requires sustained scholarly attention to understanding the development of sexually aggressive behavior among men with no obvious

early risk factors, as well as a continued focus on universal violence prevention approaches that reach men and boys regardless of the presence or absence of risk-related antecedents.

Hostile Masculinity as a Key Predictor of Sexual Aggression.

Our second key finding was that that hostile masculinity predicted perpetration in this sample, but when tested together in a regression analysis a higher number of sex partners and positive attitudes towards casual sex did not (even though they were correlated univariately with perpetration). This finding lends support to some previous work (e.g., Greene & Davis, 2011) suggesting that endorsing a hostile, dominance-seeking form of masculinity may be a more powerful driver of sexual aggression than sheer quantity of sexual behavior, however casual or impersonal. It suggests the need for conceptually distinguishing between sexual behavior driven by callous misogyny, and non-coercive sexuality that is focused on variety and experience-seeking. Indeed, in a separate examination of the sexual scripts of men in this sample (their ideas about how sex and relationships “should be”), we found that many men endorsed a sexuality not tied to romantic intimacy, but at the same time placed an emphasis on a positive, mutual, consensual experience for both themselves and their female partners (Masters et al., in press). Thus, it may be important to more specifically elicit the sex-related cognitions or perceptions of cultural sexual norms related to an impersonal approach to sex which is inclusive of coercion, versus those associated with a mutually respectful, sex-positive approach that endorses non-monogamy and multiple partners over time. At its core, our finding suggests the importance of not conflating more sex with coercive sex as a risk factor for sexual aggression.

Measurement issues, particularly regarding our assessment of substance use problems and alcohol use concurrent with sex, may partially explain why we found no relationship between these constructs and assault perpetration. Our measure of sex and alcohol/drug use concurrency evaluated general past-year frequency of this behavior with recent partners and was not specific to the sexual assault event or events captured by the Sexual Assault

Experiences Survey items. As suggested by Davis and colleagues (2012), it may be the immediate and situation-specific impact of alcohol on men's sexual entitlement and ability to accurately assess potential partners' willingness that exacerbates risk for sexual aggression, rather than more global alcohol expectancies or drinking behavior. This more proximal effect on aggression is also supported in research on drugs other than alcohol (Swartout & White, 2010). The SIP-AD items are not specific to sexual assault events and do not allow us to separate the effects alcohol versus other drug problems.

Limitations

Limitations of the current study include sample characteristics and measurement issues. Participants were recruited and took part in the study online, and thus the sample comprised solely internet users. While a substantial majority of men in this age group are internet users (Pew Internet & American Life Project, 2013), and preliminary evidence suggests that Facebook membership generally mirrors the racial/ethnic composition of the U.S. population (Chang, Rosenn, Backstrom & Marlow, 2010), these results may not be generalizable to men who do not use these tools. Furthermore, volunteers for sexuality-related research tend to have more liberal sexual attitudes and more sexual experience than non-volunteers (Strassberg & Lowe, 1995), and so our sample may contain some bias. A breakdown of participants by region is not possible due to anonymous participation, and individuals in urban U.S. environments are likely over-represented in the sample. The sample is also not representative of the general population of young men in the U.S.; men of color and college-enrolled men are over-represented relative to the general population of 18-25 year old men in the U.S.

As the analyses described here addressed a secondary aim of a larger study in which the primary focus was understanding heterosexual men's sexual attitudes and behaviors, other limitations inevitably center on measures. Since the study was cross-sectional, we cannot be certain of the temporal ordering of the path model's attitudinal (e.g., hostile masculinity) and behavioral (e.g., sexual assault perpetration) variables. Also, we could not exactly replicate the

confluence model. Our study did not include measures of delinquency, one of the confluence model's key constructs; inclusion of this construct in our path model test may have altered our findings. Similarly, variables which have demonstrated relationships to sexual assault perpetration in previous research were not included in the larger study. For example, social network variables such as perceived peer support for sexual aggression, or perceived peer norms related to consent have been shown to be important correlates of sexually aggressive behavior (e.g. Fabiano et al., 2003; Thompson et al., 2012), but were not available in this study. The relationship between childhood maltreatment and other types of violence perpetration in adulthood, such as IPV, was also not measured here, and thus may have limited the extent to which relationships between child maltreatment sub-types and aggressive behavior in adulthood were surfaced in analyses. Finally, our measures of ACEs were retrospective, somewhat lessening their reliability.

Implications

Given the role of hostile masculinity in predicting offending, these findings support universal prevention aimed at preventing male sexual violence by redefining "healthy" masculinities that disentangle being a man from being dominant over women, particularly in relationships and sexual encounters. Indeed, a recent World Health Organization survey of gender-based violence prevention programs concluded that using a "gender-transformative" approach, with specific attention to critically evaluating traditional notions of masculinity, is a critical element of successful violence prevention programs (WHO, 2007). Prevention efforts may also benefit from integrating content that differentiates between a respectful, sex-positive approach to gaining sexual experience and a domineering, coercive approach. This kind of gender-transformative content may be a particularly beneficial component of indicated prevention efforts for sexually abused youth, given the link seen here between childhood sexual abuse and hostile masculinity.

Further, both the prevalence of CSA in our sample, and CSA's association with assault perpetration, underscore the need for improved approaches to primary prevention of CSA. Early detection and intervention with sexually abused youth, trauma-informed responsiveness to youth in pediatric and school settings, and indicated violence prevention programming aimed specifically at maltreated youth, could contribute to decreasing sexual assault by interrupting processes that can result in men with abuse histories becoming perpetrators. This is particularly true for youth with complex histories of maltreatment and multiple experiences of trauma. Given that juvenile detention and other incarceration facilities do not appear to be a common point of intervention for men in this sample (nor would we hope that these tertiary intervention systems would be the primary point of contact), it is critical to advocate for early intervention resources to identify traumatized youth and support healthy developmental trajectories.

This work also suggests directions for future research on sexual assault perpetration and men's sexual behavior and attitudes. First, many models of sexual assault perpetration have been tested with primarily white samples, including the confluence model, and these models may work differently in different communities. Online surveys such as this one can allow researchers access to diverse samples of participants. While this study has the strength of a more diverse sample than is typical, future research could profit from gathering an even larger sample that will provide the necessary statistical power to test multi-group models and to examine whether the observed relationships between variables are the same or different across racial/ethnic groups. Second, the strength of the association between hostile masculinity and perpetration points prevention researchers toward investigating distal risk factors in addition to childhood maltreatment for developing these potentially dangerous attitudes as boys grow into men. Third, a more nuanced understanding of men's cognitions around an impersonal approach to sex – one that differentiates negative attitudes and coercive behavior toward women from a focus on sexual variety and experience – would benefit research. Finally, the

mechanisms that link childhood maltreatment, especially sexual abuse, to sexual assault perpetration in adulthood require further inquiry. Improved understanding of pathways between childhood victimization, adult attitudes such as hostility toward women, and adult behaviors such as impersonal sex, can support interventions to decrease men's likelihood of assault perpetration in adulthood.

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Perpetrators of alcohol-involved sexual assaults: How do they differ from other sexual assault perpetrators and non-perpetrators? *Aggressive Behavior*, 29, 366-380.

Figure 1. Proposed structural model predicting sexual assault perpetration.

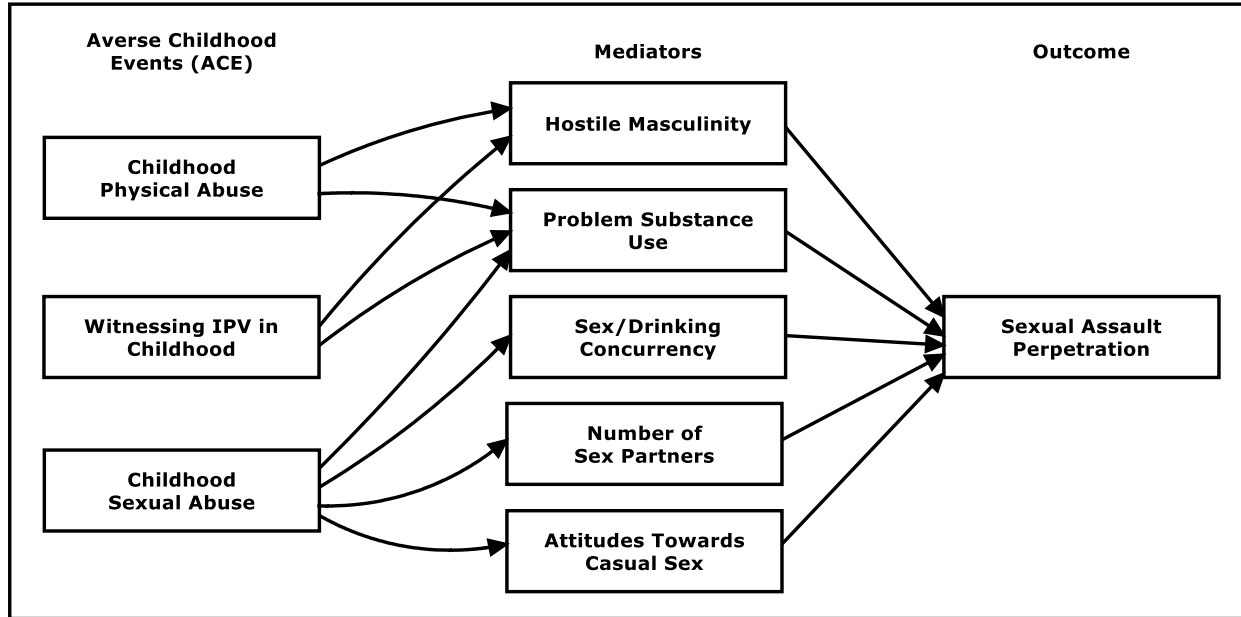


Table 1. Descriptive statistics and bivariate correlations for all measures in the final model

	1	2	3	4	5	6	7	8	9	10	11	12
1. SA perpetration		.15***	.23***	.36***	.24***	.15***	.14**	.10*	.10*	.17**	.08	.17***
2. Child physical abuse			.48***	.32***	.10*	.13**	.13**	.14**	.04	.08	.10*	.23***
3. Child witness IPV				.32***	.17***	.13**	.21***	.17***	.10*	.17**	.14**	.22***
4. Child sexual abuse					.16**	.12**	.24***	.22***	.16***	.20***	.11*	.21***
5. AMIRS						.38***	.14**	.12*	.31***	.17**	.14**	.13**
6. HTW							.08	.08	.20***	.13*	.09*	.12**
7. Lifetime sex part.								.65***	.24***	.09	.16***	.08
8. Lifetime ONS									.26***	.17***	.18***	.15***
9. Casual sex attitudes										.31***	.29***	.13**
10. Sex/drinking co- occurrence											.49***	.34**
11. Binge drink												.40***
12. Problems b/c of drugs/ alc.												
Mean	.09	1.07	.32	.33	1.47	1.94	9.55	2.80	2.14	1.04	1.21	2.32
SD	.17	1.10	.70	.73	.62	.62	13.37	4.65	1.04	1.04	1.06	2.81
Range	0 - 1	0 - 4	0 - 4	0 - 4	0 - 3.75	0 - 4	0 - 63	0 - 22	0 - 4	0-4	0-4	0-10

* p < .05, ** P<.01, ***p< .001

Table 2. Rates of sexual assault perpetration by groups based on adverse childhood experiences

	No abuse n = 253 (48.0%)	Physical abuse only n=113 (21.4%)	Sexual abuse only n=45 (8.5%)	Physical abuse and witness IPV n=35 (6.6%)	Physical and sexual abuse n=43 (8.2%)	All types of abuse n=38 (7.2%)	χ^2
Most severe perpetration							
No perpetration	186 (73.5%) _a	75 (66.4%) _b	30 (66.7%) _c	24 (68.6%) _d	25 (59.5%)	17 (44.7%) _{a,b,c,d}	66.09*** (df = 15)
Forced sexual contact	10 (4.0%)	11 (9.7%)	2 (4.4%)	1 (2.9%)	3 (7.1%)	2 (5.3%)	
Verbally coerced sexual intercourse	47 (18.6%)	22 (19.5%)	9 (20.0%)	3 (8.6%)	5 (11.9%)	5 (13.2%)	
Rape/attempted rape perpetration	10 (4.0%) _{abc}	5 (4.4%) _{def}	4 (8.9%) _g	7 (20.0%) _{ad}	9 (21.4%) _{be}	14 (36.8%) _{cfg}	

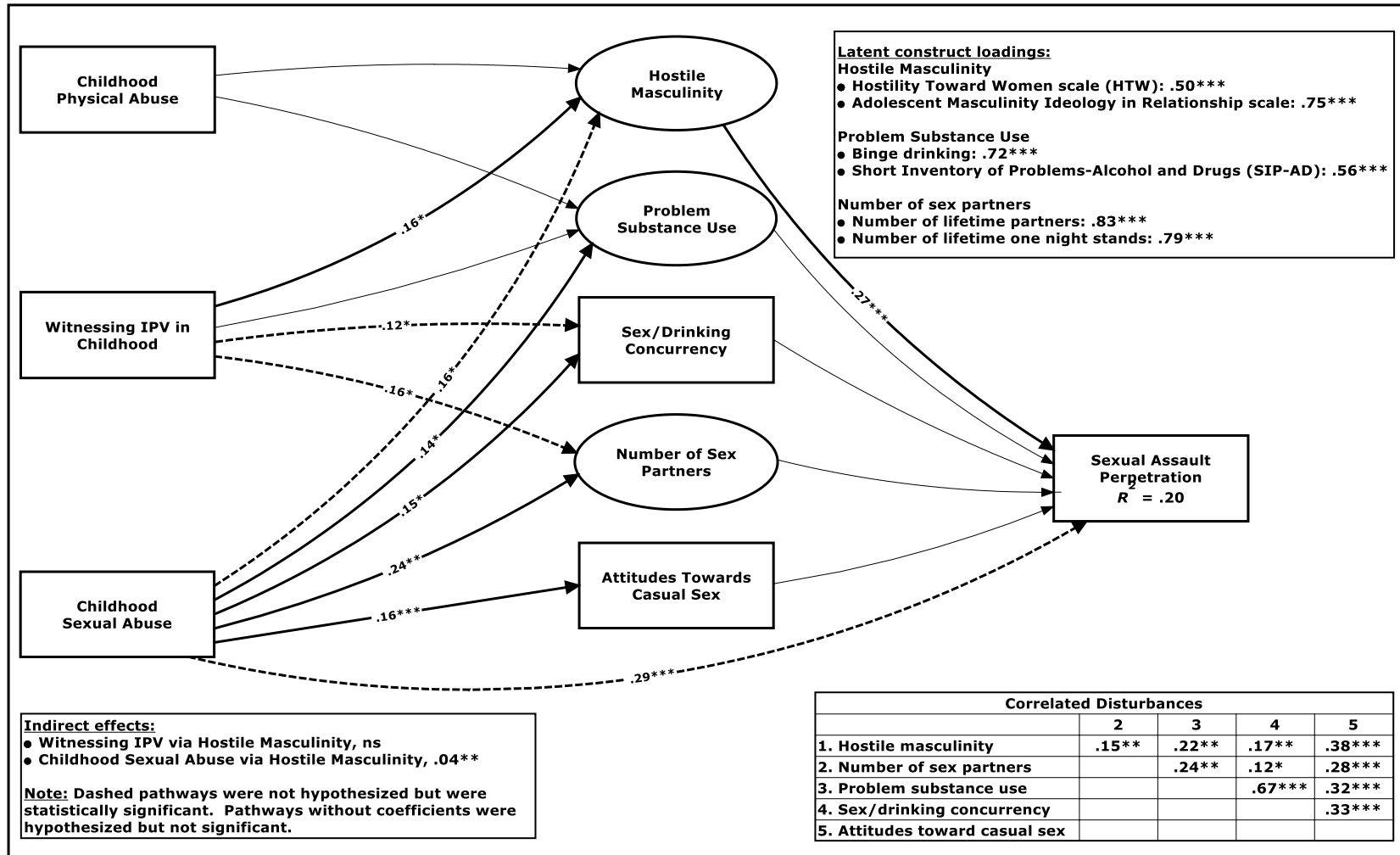
*** p < .001

Notes: Percentages total within columns.

The groups of men who experienced witnessing IPV only, and witnessing IPV and experiencing sexual abuse only, were too small to include in these analyses.

Percents in the no sexual assault perpetration and rape/attempted rape rows sharing the same subscript are significantly different at p < .05.

Figure 2. Structural model (all lines) predicting sexual assault perpetration.



BIOGRAPHICAL STATEMENTS

Erin Casey, PhD, MSW is an Associate Professor of Social Work at the University of Washington, Tacoma and Co-Director of the Mobilizing Men for Violence Prevention Research Collaboration. Erin's research interests include examining ecological approaches to violence prevention, including engaging men proactively as anti-violence allies, and exploring intersections between violence, masculinities, and sexual risk.

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