RESEARCH ARTICLE

Factors predictive of sexual violence: Testing the four pillars of the Confluence Model in a large diverse sample of college men

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Abstract

This article focuses on the characteristics of sexually violent men who have not been convicted of a crime. The objective of this study was to test the four key interrelated pillars of the Confluence Model. The first key pillar posits the interaction of Hostile Masculinity and Impersonal Sex as core risk predictors. The second pillar entails a "mediated structure" wherein the impact of more general risk factors is mediated via those specific to aggression against women. The third pillar comprises a single latent factor underlying various types of sexual violence. The fourth pillar expands the core model by including the secondary risk factors of lower empathy, peer support, extreme pornography use, and participation in alcohol parties. An ethnically diverse sample of 1,148 male students from 13 U.S. colleges and universities completed a comprehensive survey that assessed the hypothesized risk factors and self-reported sexual violence, which included noncontact sexual offenses, contact sexual coercion, and contact sexual aggression. A series of multiple regression analyses were conducted before testing structural equation models. The results supported the integration of the four pillars within a single expanded empirical model that accounted for 49% of the variance of sexual violence. This study yielded data supporting all four key pillars. These findings provide information about non-redudant risk factors that can be used to develop screening tools, group-based and individually tailored psychoeducational and treatment interventions.

KEYWORDS
Confluence Model, campus sexual assault, interventions for sexual aggression, sexual violence risk factors

1 | OVERVIEW

This article concerns sexual violence, defined by the World Health Organization (2011) as "Any sexual act, attempt to obtain a sexual act, unwanted sexual comments or advances, or acts to traffic or otherwise directed against a person's sexuality using coercion" (p. 1). Sexually coercive tactics by males against females' sexual choice have been prevalent throughout human history (Brownmiller, 1975).

Such sexual violence has important consequences, including negatively impacting the well-being, quality of life, and education of college students (Fedina et al., 2018). Although some level of sexual violence appears to have occurred in virtually all societies, there are large differences both among men within a society as well as among societies in the frequency and risk for such violence, depending on the different configuration of individual and cultural factors (Sanday, 1981).

The reduction of sexual violence may benefit from identifying the key factors that contribute to differences among men in their likelihood of committing such acts. Indeed, the failure to incorporate such knowledge in current prevention and intervention programs on college campuses may have resulted in programs mandated by Congress doing more harm than good (Malamuth et al., 2018), seemingly due to reactance effects (Reynolds-Tylus et al., 2020). Except where otherwise indicated, we will use in this article the terms "sexual violence" and "sexual aggression" interchangeably.

The present study is part of programmatic research on the Confluence Model of sexual aggression, which has been developed to help elucidate such key factors. It was the first model to present an empirical framework for a multifactorial integration of the characteristics of men from the general population relatively likely to commit sexual aggression (e.g., Malamuth et al., 1991; Malamuth, 1986, 2003) and has been described as the most commonly used etiologic model of sexual aggression in men not convicted of such crimes (LeBreton et al. 2013). It shares some similarity to the General Aggression Model (Anderson & Bushman, 2002) with both suggesting the role of general antisocial factors interacting with specific situational factors.

The four interrelated "pillars" of the Confluence Model have been described in several early publications (e.g., Malamuth & Briere, 1986; Malamuth et al., 1993, 1996) and are amplified upon below. Though these four pillars have each been tested in various individual studies, they have not previously been put to empirical tests within a single integrated model, which is the aim of the present study.

1.1 | Detailed description of the four pillars

The first pillar tested emphasizes the synergistic convergence of various risk factors as being critical to their impact, with emphasis on certain core risk factors representing the fusion of aggressive and sexual motives. Although many correlates of sexual aggression have been reported in the literature, the Confluence Model has identified those considered most important. Some are theorized to be relatively more crucial both due to their formative developmental role and due to their creating the fundamental motivation to aggress sexually. The secondary risk factors described below are theorized to primarily function as disinhibitory/inhibitory and opportunity factors with significant influence only if the primary factors are relatively high.

Within the model, the core risk factors are organized into two largely independent constellations or aggregates of characteristics, labeled "Impersonal Sex" (IS) and "Hostile Masculinity" (HM). The IS pathway reflects a developmental history of growing up in an abusive, violent, or troubled home environment, an adolescent pattern of antisocial or delinquent behavior and friendships, that culminated in a relatively "impersonal" (i.e., detached) orientation towards sexual relations that is generally stable throughout a man's life. This constellation is theorized to "set the stage" for coercive sex by virtue of its underpinnings in supportive attitudes and beliefs about women, sexuality, and relationships. The HM path is a personality profile combining two inter-related components: (a) A narcissistic, insecure, defensive, hypersensitive, and hostile-distrustful orientation, particularly, towards women and (b) sexual gratification from controlling or dominating women.

Generally, relatively high levels of the characteristics of both constellations are considered as predicting risk. The interaction of both constellations is considered as the "core" of the model that predicts the risk for sexual aggression (e.g., Malamuth et al., 2012). In other words, if a man is relatively high on the factors comprising both constellations of characteristics, he is particularly at risk for being sexually aggressive, but the interaction suggests that this is more than an additive increase in risk but a multiplicative one. This prediction is tested in the current study.

The second pillar tested herein emphasizes the mediation structure of the Confluence Model. It specifies that relatively general risk factors that predict various types of antisocial behavior (e.g., psychopathy) impact sexual aggression via the mediation of relatively "domain-specific" factors pertaining to aggression against women. These latter "specialized" risk factors include sexual arousal to dominance, hostility towards women, attitudes supporting violence against women, and an impersonal sexual orientation (Malamuth & Hald, 2017; Malamuth, 2003).

The third pillar encompasses the argument that similar risk factors may predict other hostile forms of dealing with conflict with women and other forms of aggression specifically against women. This conceptualization is based on feminist theories that embed sexual coercion within the framework of a general ideology in which male dominance and female submissiveness are perceived as natural and justified and which adheres to a perception of male-female relationships as fundamentally adversarial (e.g., Sanday, 1981). Some theorists have written about the concept of "femicide," the killing of women "because they are women" and distinguished such killings and other violent and discriminatory acts against women from those directed at other targets (e.g., Corradi et al., 2016; Radford & Russell, 1993). The present study examines not only two forms of contact sexual aggression (labeled sexual coercion and sexual aggression) but also includes an assessment of noncontact sexual aggression.

The fourth component includes the role of secondary risk factors that add to the prediction of sexual aggression above and beyond those achieved by the core factors alone. In addition to assessing the core components of HM and IS, we included as part of the expanded model the factors of participation in alcohol parties, extreme pornography consumption, and perceived peer support for sexual aggression. In keeping with earlier theory and research, we also included an additional second factor that may inhibit actual aggression, namely, empathy. Individually, all of these factors have been shown in previous research to predict sexual aggression (see Malamuth & Hald, 2017 for a review) but have not been included within the same model.

It is important to note that though the Confluence Model suggests that men who are at risk for committing sexual aggression would generally be high on both HM and IS (hence the prediction of an interaction effect representing the synergistic combination of both of these), the Confluence Model does not similarly argue that each of the secondary factors needs to be relatively high for all those

at risk. For example, for some, lower empathy without high attendance at alcohol parties or perceiving peer support may add to the risk. For others, perception of peer support or attendance at alcohol parties would add to the risk. Hence, we do not predict higher-level interactions representing multiple risk factors to necessarily be found.

1.2 | An alternative model: The Dark Triad

Another model that has been proposed to account for the characteristics of sexual aggressors is the "Dark Triad." Jones and Paulhus (2011) defined this model as including three components: (1) *Psychopathy*: Characterized by callousness, impulsive thrill-seeking, and criminal behavior (e.g., "People who mess with me always regret it"); (2) *Machiavellianism*: Marked by strategic manipulation (e.g., "There's a sucker born every minute"); and (3) *Narcissism*: Associated with grandiosity, egocentrism, and sense of personal entitlement (e.g., "I insist on getting the respect that I deserve"). Although there have been recent criticisms of this model (e.g., Miller et al., 2019), it continues to be widely used generally and specifically in the area of sexual aggression (e.g., Brewer et al., 2019). This model overlaps in some ways with Confluence Model in the Narcissism aspect and obviously with Psychopathy in that both include this factor, but it is unique in adding the Machiavellianism component (Jonason et al., 2017). The Confluence Model conceptualizes such general factors' impact on sexual aggression indirectly, (i.e., being mediated by more specialized mechanisms). In contrast, the Dark Triad Model views the impact as nonmediated on both noncontact sexual offenses (e.g., Ziegler-Hill et al., 2016) and sexual aggression generally (e.g., Figueredo et al., 2016; Koehn et al., 2019). Figueredo et al. (2016) demonstrated that the association between the Dark Triad and sexual aggression was best modeled by a single latent factor encompassing all three components as manifest indicators.

1.3 | Summary

In summary, in the present study we tested all of the four key components of the Confluence Model. We sought to replicate the predictive utility of the "core" of this model, which primarily includes the interaction of the central constellations of HM and IS, and a mediated structure of the general and specific risk factors. We then tested the elaborated model with the added inculdsion of the secondary risk factors described above. Moreover, we not only included an assessment of what has generally been encompassed in research on sexually coercive and aggressive behaviors but also included noncontact sexual offenses. No previous research has tested the predictions of all four pillars and associated risk factors within a unified integrative model, which is the goal of the present research. Such analyses can also show whether these added risk factors yield redundant prediction or whether the use of multiple factors further adds successfully to the prediction.

2 | METHOD

2.1 | Participants

A total of 1,223 surveys were administered, 52 were omitted due to validity concerns, such as substantial sections that were incomplete. An additional 23 surveys were omitted based on participants being significantly older than the typical sample population (over 30 years) and potentially affecting the generalization from the sample, gender discrepancies (indicated male and female on different sections of the survey), or validity issues based on completion time, resulting in a final sample of 1,148 male students from 13 U.S. colleges and universities. There was wide geographical distribution of the participating schools and 44% identified as Caucasian, 19% as Asian, 15% as Hispanic/Latino, 10% as African American, 10% as multiracial, and about 2% "other." The mean age of the sample was 20.09 (SD = 2.16). One-third of the participants (33%) were Freshmen, 26% were Sophomores, 24% were Juniors, 17% were Seniors, and less than 1% were graduate students.

2.2 | Procedure

The data collected were part of a national study to develop an intervention protocol (see Lamade et al., 2018 for details). The questionnaire was administered in person, using paper and pencil. Participants were separated by a minimum of one desk and the questionnaires were generally administered in groups of 10–30 participants, with a range of 2–60. Fairleigh Dickinson University's IRB served as primary IRB and provided oversight. All participating data collection sites also had their internal IRB boards review the project. All site investigators and administrators received training on the administration protocol by the project managers. All surveys were anonymous and participants were instructed to not write any identifying information (e.g., name, id number) on the survey. At most sites, a waiver of documentation of consent (i.e., a check box in lieu of printed name and signature) was permitted. For sites where a signed consent was obtained, the signed consent forms were collected and maintained separately from surveys, and there was no way to link the consent forms to surveys. Additionally, there was no way to triangulate any individual data components to identity participants. A DOJ-issued privacy certificate was also issued for this study.

Participants were debriefed in a separate room and were handed a sheet with campus and local mental and physical health resources, as well as contact information of the IRB and the primary investigator (P.I.).

2.3 | Measures

We included virtually all of the factors typically assessed in Confluence Model research (e.g., Malamuth et al., 1991) except for the assessment of early home environment of abuse. Despite the

importance of this factor, in light of a large number of factors assessed we included only those in a relatively more proximate time frame, namely, since the teenage years.

The assessments of the risk factors were embedded within a larger survey. The full questionnaire took, on average, 1 h to complete. The predictor variables assessed consisted of the following:

2.3.1 | Hostile Masculinity Scale

HM has in the past typically been assessed relatively thoroughly by multiple, long, reliable, and validated scales totaling about 40–50 items or more and at times embedded within a longer set of items to disguise their purpose (e.g., the Dominance as a Sexual Motive embedded within other items of the Nelson Sexual Functions scale). To enable a more succinct measuring instrument, Malamuth (2005) constructed the Hostile Masculinity scale by taking a few key items from each of the factors previously shown to constitute this constellation. These include hostility towards women, dominance as a motive for sex, and attitudes supporting of aggression against women. Malamuth (2005) found that this scale predicts sexual aggression as successfully as the longer versions of the scales both in cross-sectional and longitudinal research. We used all 28 items of this relatively short scale (Cronbach's α = .86).

2.3.2 | Impersonal Sex Scale

In past research, this factor was often measured by only a couple or a few items. To improve this assessment, we constructed here a measure consisting of 12 items, 11 that assess the number of partners, attitudes toward monogamy, causal sexual, having friends with benefits, a need (or lack of) for an emotional connection with sexual contacts (e.g., I could enjoy having sex with someone I was attracted to physically, even if I didn't feel anything emotionally for that person"). Also included was one item from Short Dark Triad (Jones & Paulhus, 2014) (i.e., I enjoy having sex with people I do not know) (Cronbach's α = .87). The items were answered on 4-point scales, indicating "definitely not," "maybe," "probably," and "definitely yes."

2.3.3 | Peers behavior supportive of sexual aggression

For the Peer Influence scale, we used all six items from Steinberg & Monahan (2007). These items were on a Likert scale ranging from 1 (*not at all*), 2 (*a little bit*), 3 (*a good bit*) to 4 (*a lot*). (Cronbach's α = .75).

2.3.4 | Extreme pornography use

We used seven items inquiring about the frequency of what may be considered "extreme" pornography consumption, with content

including rape depictions, S&M/bondage, sex with animals, child pornography, and snuff (women being murdered in a sexual context) portrayals. Participants indicated if they had ever viewed each of these types of pornography and the average frequency with which they had, from 0 (*Never*), 1 (*once or twice*), 2 (*Rarely, 10% of the time*), 3 (*Occasionally, 25% of the time*), 4 (*Fairly Often, 50% of the time*) to 5 (*Very Often, 75% of the time*). (Cronbach's α = .74).

2.3.5 | Empathy

All 16 items of the Toronto Empathy Questionnaire (Spreng et al., 2009) were utilized (Cronbach's α = .84).

2.3.6 | Psychopathy

The present study used the eight items comprising the Psychopathy scale developed by Jones and Paulhus (2014), which they described as "characterized by callousness, impulsive thrill-seeking, and criminal behavior" (p. 249) (Cronbach's α = .69). There is the conceptual overlap between the dimension of Psychopathy captured by Jones and Paulhus in their "dark triad" and factors included in the Confluence Model (Malamuth, 2003). Psychopathy, generally conceived, is broader in scope in certain areas, including many interpersonal traits, such as conning, pathological lying, callous, superficially charming, and manipulative, whereas the Confluence Model also assesses factors specifically relevant to aggressive behaviors toward women in addition to including Psychopathy.

2.3.7 | Delinquent behavior as teenager

This scale was based on previous research (Prentky, Malamuth, & Lamade, *Assessing delinquent behavior*, unpublished). It included 13 items assessing Conduct Disorder/Delinquent Behavior Scale (Cronbach's α = .80). Items include a history of bullying, stealing/theft, fighting, vandalism, gang involvement, truancy, and causing property damage as a teenager. Participants were asked to write the number of times they engaged in each type of delinquent behavior. Responses were collapsed on a Likert scale ranging from 1 (*not at all*) to 4 (*a lot*).

2.3.8 | Alcohol parties

We used 13 items from the Environmental–Situational Experiences Scale (Lamade & Prentky, unpublished) that included questions about directly having experienced and heard about parties where students were intoxicated, and sexual activities occurred. For each item, participants were asked how many times they directly witnessed this on a scale from 1 (*not at all*) to 5 (*a regular occurrence*). For other items, they were asked how often they had conversations related to

sex, drinking, and parties with their peers on a scale from 1 (*not at all*), 2 (*occasionally*), 3 (*somewhat frequently, at least a weekly basis*), 4 (*frequently, multiples times per week*) to 5 (*a regular occurrence*) as well as the number of peers they had these conversations with (Cronbach's α = .89).

2.3.9 | Outcome measure of sexual violence

We used a modified version of the Sexual Experiences Scale Short Form Perpetration (SES-SF) (Koss et al., 2007). Data pertaining to the reliability and validity of this instrument have been reported by Johnson et al. (2017). However, as described below, we used a nonstandard way of scoring and classifying this assessment in an attempt to both include a variety of noncontact and contact sexually coercive and aggressive acts along a single dimension and to weigh them in terms of their relative degrees of perceived "violation." The reader is encouraged to also check the original publication for the standard scoring and classification approach.

The scoring of the items we used included classifying them into three groups, reflecting Noncontact Sexual Offenses, Contact Sexual Coercion, and Contact Sexual Aggression subscales. The items are listed in Table 1 presented in Section 3 below. Subscale Noncontact Sexual Offenses is composed of items 1–11, excluding items 3 and 6, due to their ambiguity. Examples of items include, "sending sexually obscene materials by mail or phone," "posting sexual/nude photos of someone on social media without their permission," and "masturbating in front of someone without their permission," The next two subscales relied on items 12 through 18. These included such descriptions as "I fondled, kissed, or rubbed up against the private areas of someone's body," "I had oral sex with someone", "I put my penis or I put my fingers into a woman's vagina." All of these contact items clearly indicated that such acts were done without the victim's consent. The classification into the Noncontact Sexual Coercion or Noncontact Sexual Aggression categories was based on the type of tactics used. This measure was followed by five types of tactics.

For operationalizing the Contact Sexual Coercion subscale we used tactics a and b, which consisted of such tactics as "telling lies, threatening to end the relationship, threatening to spread rumors, making promises that I knew were untrue…" and "… getting angry but not using physical force when they said they didn't want to." For the Contact Sexual Aggression subscale, we included tactics c through e. These included "taking advantage when they were too drunk or out of it to stop what was happening," "threatening to physically harm them or someone close to them," "using force, for example holding them down with my body weight, pinning their arms, or having a weapon." In Section 3 herein, we list all of these items and the frequency of various responses.

We sought to create an overall sexual violence outcome measure that included all of these behaviors but gave greater weight to more serious acts of sexual aggression. To achieve these goals, items were given a multiplier based upon the type of sexual aggression, correspomdinmg to the type of act (indicated by differing numbers in the questionnaire) and the type of tactic used (indicated by the letters in the questionnaire). For SES items 1–12 (i.e., Noncontact Sexual Offenses) no multiplier was applied to the variables. For SES items 13 and item 16, referring to completed attempt (item 13) and failed attempt (item 16) to coerce a woman to perform oral sex, a multiplier of 2 was applied to the variable. For SES items 17 and 18, referring to failed forced attempts to put the man's penis or fingers or objects into a woman's vagina (item 17) or anus (item 18), a multiplier of 3 was used. For SES items 14 and 15, completed forced acts of putting the man's penis, fingers, or objects in the woman's vagina or anus, a multiplier of 4 was used.

The α coefficient for the Noncontact Sexual Offenses measure was .87, for the Contact Sexual Coercion measure it was .86, for the Contact Sexual Aggression measure it was .94, and for the entire SES-SFP scale including all three indicators, it was .85. Below, we will use the label Sexual Violence to include all of these noncontact and contact coercive/aggressive behaviors within the same rubric.

3 | RESULTS

Table 1 presents the frequencies of Noncontact Sexual Offenses, Contact Sexual Coercion, and Contact Sexual Aggression. Table 2 presents the intercorrelations among the various predictors, as well as with the outcome measures. The simple correlations revealed that, as expected, each of the three types of dependent outcome indicators (Noncontact Sexual Offenses, Contact Sexual Coercion, and Contact Sexual Aggression) were significantly correlated with all of the predictor variables. Table 3 shows the intercorrelations for the factors included in the Dark Triad Model.

3.1 | Multiple regression analyses

A single scale of Sexual Violence was created by combining all three outcome behaviors, yielding an α coefficient of .85, supporting the appropriateness of such a measure. Multiple regression analyses were conducted to examine the hypothesized added predictive value of the secondary factors. We conducted the analyses by first entering HM, IS, Teenage Delinquency, and the interaction of HM by IS all-yielding significant betas at the $p < .001$ levels. Separate regression analyses revealed additional significant prediction of Lower Empathy, Alcohol Parties, and Peers' Influence on Sexual Violence, as well as the interaction of these factors with HM but no significant three-way interactions. Extreme Pornography also entered significantly as the main effect, but neither its interaction with HM nor three-way interactions materialized in these analyses. We also conducted a regression analysis that combined all of these "secondary" variables into a single composite: That is, the sum of Extreme Pornography, Empathy (negatively weighted to be in the same direction as the other variables), Peer Approval, and Alcohol Parties. We also included here the variable of teenage

TABLE 1 Incidence of Noncontact Sexual Offenses, Contact Sexual Coercion, and Contact Sexual Aggression among men (N = 1,147)

Item #	Item	# Y	%
SES1	I stared at someone in a sexual way or looked at the sexual parts of their body after they had asked me to stop.	319	28.1
SES2	I made teasing comments of a sexual nature about someone's body or appearance after I was asked to stop.	309	27.2
SES3	I sent sexual or obscene materials such as pictures, jokes, or stories in the mail or by phone. Note that this item was not used.	664	58.5
SES4	I made sexual or obscene phone calls to someone when they had not agreed to talk with me this way.	113	10.0
SES5	I showed someone pornographic pictures when they had not agreed to look at them.	250	22.0
SES6	I made sexual motions to someone, such as grabbing my crotch, pretending to masturbate, or imitating oral sex without their permission. Note that this item was not used.	390	34.4
SES7	I took photos or videotapes of someone when they were undressing, nude, or having sex, without their permission.	147	13.0
SES8	I posted pictures of someone nude or having sex on social media without their permission.	45	4.0
SES9	I watched someone while they were undressing, nude, or having sex, without their permission.	205	18.1
SES10	I showed someone the private areas of my body without their permission.	187	16.5
SES11	I masturbated in front of someone without their permission.	44	3.9
SES1–11	Noncontact Sexual Offenses computed by adding all of the above items, except for SES3 and SES6.	622	54.8
12	I fondled, kissed, or rubbed up against the private areas of someone's body, or removed some of their clothes without their consent by:		
12a	Telling lies, threatening to end the relationship, threatening to spread rumors about them, making promises about the future I knew were untrue, or continually verbally pressuring them after they said they didn't want to.	120	10.7
12b	Showing displeasure, criticizing their sexuality or attractiveness, getting angry but not using physical force after they said they didn't want to.	120	10.7
12c	Taking advantage when they were too drunk or out of it to stop what was happening.	109	9.7
12d	Threatening to physically harm them or someone close to them.	41	3.6
12e	Using force, for example holding them down with my body weight, pinning their arms, or having a weapon	43	3.8
13	I had oral sex with someone or someone performed oral sex on me without their consent by:		
13a	Telling lies, threatening to end the relationship, threatening to spread rumors about them, making promises about the future I knew were untrue, or continually verbally pressuring them after they said they didn't want to.	69	6.1
13b	Showing displeasure, criticizing their sexuality or attractiveness, getting angry but not using physical force after they said they didn't want to.	71	6.3
13c	Taking advantage when they were too drunk or out of it to stop what was happening.	70	6.3
13d	Threatening to physically harm them or someone close to them.	31	2.8
13e	Using force, for example holding them down with my body weight, pinning their arms, or having a weapon.	31	2.8
14	I had put my penis or I put my fingers or objects into a woman's vagina without her consent by:		
14a	Telling lies, threatening to end the relationship, threatening to spread rumors about them, making promises about the future I knew were untrue, or continually verbally pressuring them after they said they didn't want to.	57	5.1
14b	Showing displeasure, criticizing their sexuality or attractiveness, getting angry but not using physical force after they said they didn't want to.	49	4.4
14c	Taking advantage when they were too drunk or out of it to stop what was happening.	61	5.4
14d	Threatening to physically harm them or someone close to them.	20	1.8
14e	Using force, for example holding them down with my body weight, pinning their arms, or having a weapon.	20	1.8
15	I had put my penis or I put my fingers or objects into someone's anus without their consent by:		
15a	Telling lies, threatening to end the relationship, threatening to spread rumors about them, making promises about the future I knew were untrue, or continually verbally pressuring them after they said they didn't want to.	33	2.9

TABLE 1 (Continued)

Item #	Item	# Y	%
15b	Showing displeasure, criticizing their sexuality or attractiveness, getting angry but not using physical force after they said they didn't want to.	N/A	N/A
15c	Taking advantage when they were too drunk or out of it to stop what was happening.	34	3.0
15d	Threatening to physically harm them or someone close to them.	21	1.9
15e	Using force, for example holding them down with my body weight, pinning their arms, or having a weapon.	21	1.9
16	Even though it did not happen, I tried to have oral sex with someone or make them have oral sex with me without their consent by:		
16a	Telling lies, threatening to end the relationship, threatening to spread rumors about them, making promises about the future I knew were untrue, or continually verbally pressuring them after they said they didn't want to.	59	5.3
16b	Showing displeasure, criticizing their sexuality or attractiveness, getting angry but not using physical force after they said they didn't want to.	61	5.5
16c	Taking advantage when they were too drunk or out of it to stop what was happening.	53	4.7
16d	Threatening to physically harm them or someone close to them.	19	1.7
16e	Using force, for example holding them down with my body weight, pinning their arms, or having a weapon.	21	1.9
17	Even though it did not happen, I tried to put my penis or I tried to put my fingers or objects into a woman's vagina without their consent by:		
17a	Telling lies, threatening to end the relationship, threatening to spread rumors about them, making promises about the future I knew were untrue, or continually verbally pressuring them after they said they didn't want to.	49	4.4
17b	Showing displeasure, criticizing their sexuality or attractiveness, getting angry but not using physical force after they said they didn't want to.	53	4.7
17c	Taking advantage when they were too drunk or out of it to stop what was happening.	39	3.5
17d	Threatening to physically harm them or someone close to them.	15	1.3
17e	Using force, for example holding them down with my body weight, pinning their arms, or having a weapon.	16	1.4
18	Even though it did not happen, I tried to put in my penis or I tried to put my fingers or objects in someone's anus without their consent by:		
18a	Telling lies, threatening to end the relationship, threatening to spread rumors about them, making promises about the future I knew were untrue, or continually verbally pressuring them after they said they didn't want to.	30	2.7
18b	Showing displeasure, criticizing their sexuality or attractiveness, getting angry but not using physical force after they said they didn't want to.	35	3.1
18c	Taking advantage when they were too drunk or out of it to stop what was happening.	31	2.8
18d	Threatening to physically harm them or someone close to them.	16	1.4
18e	Using force, for example holding them down with my body weight, pinning their arms, or having a weapon.	16	1.4
12a,b–18a,b	Subscale Contact Sexual Coercion computed by adding scores on items 12 through 18, tactics a and b.	215	19.0
12c–e to 18c–e	Subscale Contact Sexual Aggression computed by adding scores on items 12 through 18, tactics c–e.	182	16.1
19	Do you think you may have ever raped someone?	21	1.9

Abbreviation: SES, Sexual Experiences Scale.

delinquency, as it had a direct effect on the composite outcome in the structural equation model described below. Three 2-way interaction terms were created between HM, IS, and the secondary composite variable, as well as a three-way interaction term. In keeping with the individual regressions (except for Extreme Pornography), these findings showed that the composite of all the secondary variables added to the overall prediction even after all of the other variables were added via the interaction with HM.

3.2 | Structural equation modeling

The results were analyzed in Mplus using the MLR option (maximum likelihood estimation with robust standard errors). The core theoretical model (without the addition of the secondary factors) is presented in Figure 1. Because the addition of all of the interactions found in regression analyses would partition the variance well beyond what may be reasonable, we tested models with somewhat different roles, representing more "main effects" of various

TABLE 2 Correlation matrix of observed variables (N = 1,147)

Variables	1	2	3	4	5	6	7	8	9	10	11
1. Alcohol parties	–										
2. Extreme porn use	.02	–									
3. Empathy	−.04	−.09**	–								
4. Peer pressure/approval	.33***	.21***	−.20***	–							
5. Psychopathy	.24***	.13***	−.34***	.28***	–						
6. Adolescent delinquency	.16***	.20***	−.10**	.24***	.31***	–					
7. Impersonal sex	.40***	.08**	−.07*	.25***	.32***	.19***	–				
8. Hostile masculinity	.20***	.19***	−.29***	.33***	.49***	.20***	.23***	–			
9. Noncontact sexual offenses	.31***	.27***	−.14***	.39***	.27***	.30***	.26***	.32***	–		
10. Contact sexual coercion	.16***	.21***	−.13***	.25***	.21*****	.25*****	.19***	.26***	.53***	–	
11. Contact sexual aggression	.16***	.20***	−.15***	.23***	.12***	.21***	.08**	.32***	.51***	.71***	–
M	1.85	−0.001	43.80	2.57	2.43	1.95	−0.004	2.56	2.06	3.42	9.05
SD	0.81	0.63	8.08	0.79	0.60	2.47	0.63	0.50	3.14	13.30	50.81

*p < .05.
**p < .01.
***p < .001.

secondary factors contributing to outcome factor via mediation by the core of the HM and IS factors.

For the outcome latent factor of Sexual Violence, we used three categories: (1) All of the Noncontact Sexual Offenses items (SES Items 1 to 11, excluding 3 and 6), (2) The weighted Contact Sexual Coercion items 12 through 18, which describes various levels of forced sexual behavior using such tactics as deception and verbal abuse (SES item sets a and b), and (3) the weighted Contact Sexual Aggression items that describe attempting or engaging in various levels of unwanted sexual

TABLE 3 Correlation matrix of observed variables in Dark Triad Model (N = 1,144)

Variables	1	2	3	4	5	6
1. Machiavellianism	–					
2. Narcissism	.23***	–				
3. Psychopathy	.50***	.25***	–			
4. Noncontact sexual offenses	.12***	.10**	.30***	–		
5. Contact sexual coercion	.10**	.05	.23***	.53***	–	
6. Contact sexual aggression	.03	.01	.14***	.51***	.71***	–
M	3.16	3.17	2.42	2.05	3.43	9.05
SD	0.65	0.56	0.59	3.14	13.30	50.81

*p < .05.
**p < .01.
***p < .001.

behavior by taking advantage of someone during intoxication, by using physical threat, or by physical force (SES item sets c–e). To test the reliability of these indicators, Cronbach's α was calculated for each. To reduce the number of items included in the reliability estimations, we took the items for SES 12–18 and collapsed the items by "tactic" used to achieve compliance (e.g., all deception items were collapsed and averaged into a single observed variable). Therefore, the coercion indicator was tested using two variables representing deception and verbal coercion, though the aggression indicator was tested using three variables representing taking advantage while intoxicated and threat of force/use of force. As indicated earlier, the Cronbach's α was acceptable for all three subscales of Noncontact Sexual Offenses, Contact Sexual Coercion, and Contact Sexual Aggression and their combination. Due to skewness within the variable distributions (Skewness for Noncontact Sexual Offenses, Contact Sexual Coercion, and Contact Sexual Aggression was 2.4, 5.8, and 9.7 respectively), each indicator was log-transformed before being entered into the structural equational model, which reduced the degree of skewness.

This model contains eight observed variables and 20 free parameters (df = 15). The model is thus overidentified (i.e., df > 0), critical for estimating all of the model parameters. In addition, because the model is recursive, it is identified (Kline, 2010). Jackson (2003) has found evidence to suggest that the ideal ratio of participants to free parameters in a model is 20:1, with a minimum ratio of 10:1. Given that the current proposed model has 20 free parameters, the ideal sample size is 400; the current sample well exceeds this recommendation (n = 1,144). The tested model demonstrated mostly adequate fit, χ^2 (15, N = 1,144) = 65.11, p < .001, comparative fit index (CFI) = 0.967, Tucker–Lewis index (TLI) = 0.945, root mean square error of approximation (RMSEA) = 0.054, 90% confidence interval (CI) (0.041, 0.068), standardized root mean square
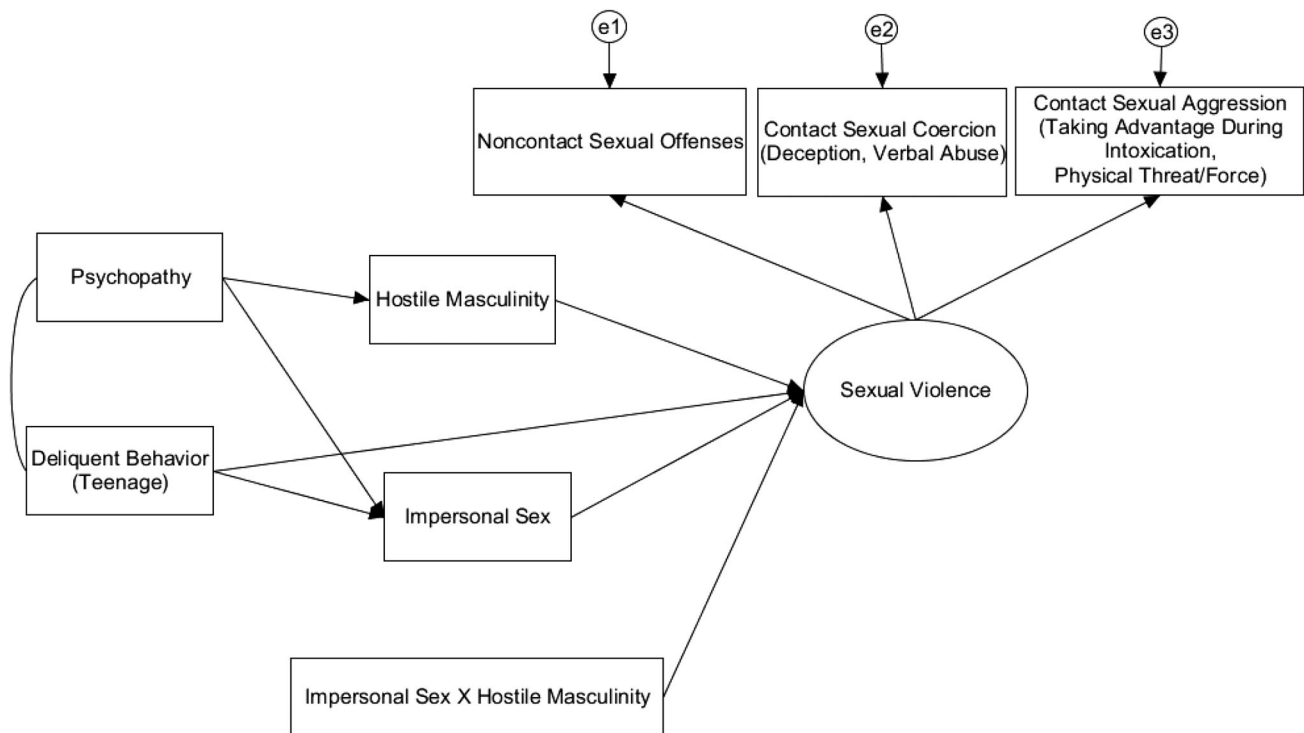
FIGURE 1   Specification of Core Confluence Model

residual (SRMR) = 0.039. The model explained 28% of the variance in the Sexual Violence construct. It should be noted that the loadings of the three manifest variables on the latent Sexual Violence construct suggest that these are appropriately included within the single construct.

Posthoc modification indices were examined and it was revealed that there was a significant correlation between the error terms of the Contact Sexual Coercion and Contact Sexual Aggression indicators ($p < .001$). Brown (2015) suggests there should be sufficient justification for allowing errors to correlate and, indeed the literature suggests that there are common factors underlying unexplained variance in these two indicators that could not be fully captured in this model. Therefore, the error terms were allowed to covary and the model was a rerun. The revised model showed excellent fit χ^2 (14, $N = 1144$) = 33.29, $p < .05$, CFI = 0.987, TLI = 0.977, RMSEA = 0.035, 90% CI (0.02, 0.05) SRMR = 0.026 (see Figure 2 for the full path model with a coefficient weight and p values). The total amount of variance of the latent construct of Sexual Violence accounted for by the core model was 37%.

In addition to the core model, an expanded model including additional risk factors was also tested. Furthermore, an interaction term was specified between HM and Peer Approval. Given the latent variable structure was identical to the previous model and our theoretical reasoning for including it was the same, we also specified a correlated error between the Contact Sexual Coercion and Contact Sexual Aggression indicators. The expanded theoretical model can be seen in Figure 3. This model had 13 observed variables and 29 free parameters, with a model df = 31. Like before, the ratio of sample size to free parameters also exceeded the recommendations put forth by Jackson (2003). The tested model demonstrated adequate fit, χ^2 (31, $N = 1130$) = 80.41, $p < .001$,

CFI = 0.972,   TLI = 0.955,   RMSEA = 0.038,   90% CI   (0.028,   0.048) SRMR = 0.025. All direct effects in the model were statistically significant, with the exception of the path from adolescent delinquency to IS that was marginally significant ($\beta = .05$, $p = .054$). The total indirect effect of Psychopathy on Sexual Violence was significant in the expanded model ($\beta = .13$, $p < .001$). The total indirect effects of Extreme Pornography ($\beta = .02$, $p < .01$), Peer Approval ($\beta = .05$, $p < .001$), Empathy ($\beta = -0.01$, $p < .001$), and Alcohol Parties ($\beta = .04$, $p < .001$) were all significant but had low effect sizes. The full model with path coefficients and R^2 can be seen in Figure 4. The total amount of variance of the Sexual Violence latent construct accounted for by the expanded model was 49%.

As further exploratory analyses, we conducted analyses in which we used only Noncontact Sexual Offenses, Contact Sexual Coercion, or Contact Sexual as outcome variables rather than the latent construct of Sexual Violence. We found that with both the Contact outcomes, the expanded model yielded virtually the same results as with the combined outcome measure, with all of the paths and interactions being similarly significant. With the Noncontact Sexual Offenses outcome only, all paths were also significant except that none of the interaction effects were significant. This may be due to a lower threshold for eliciting noncontact behaviors with the exponential aspect of the interactions not being necessary for such outcomes.

3.3 | Illustrative graphs

The following two analyses were done to illustrate the patterns of the data underlying the SEM model shown above. First, in keeping with prior
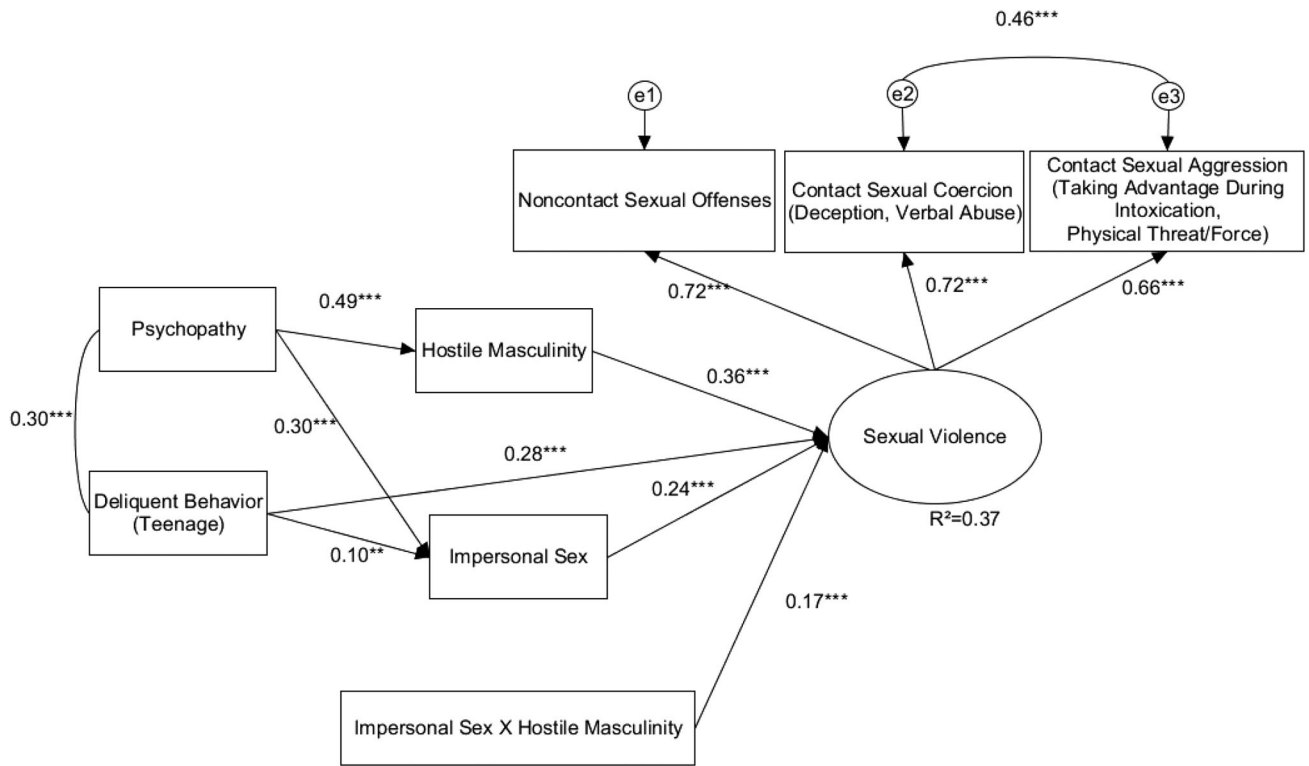
*p < .05. **p < .01. ***p < .001.

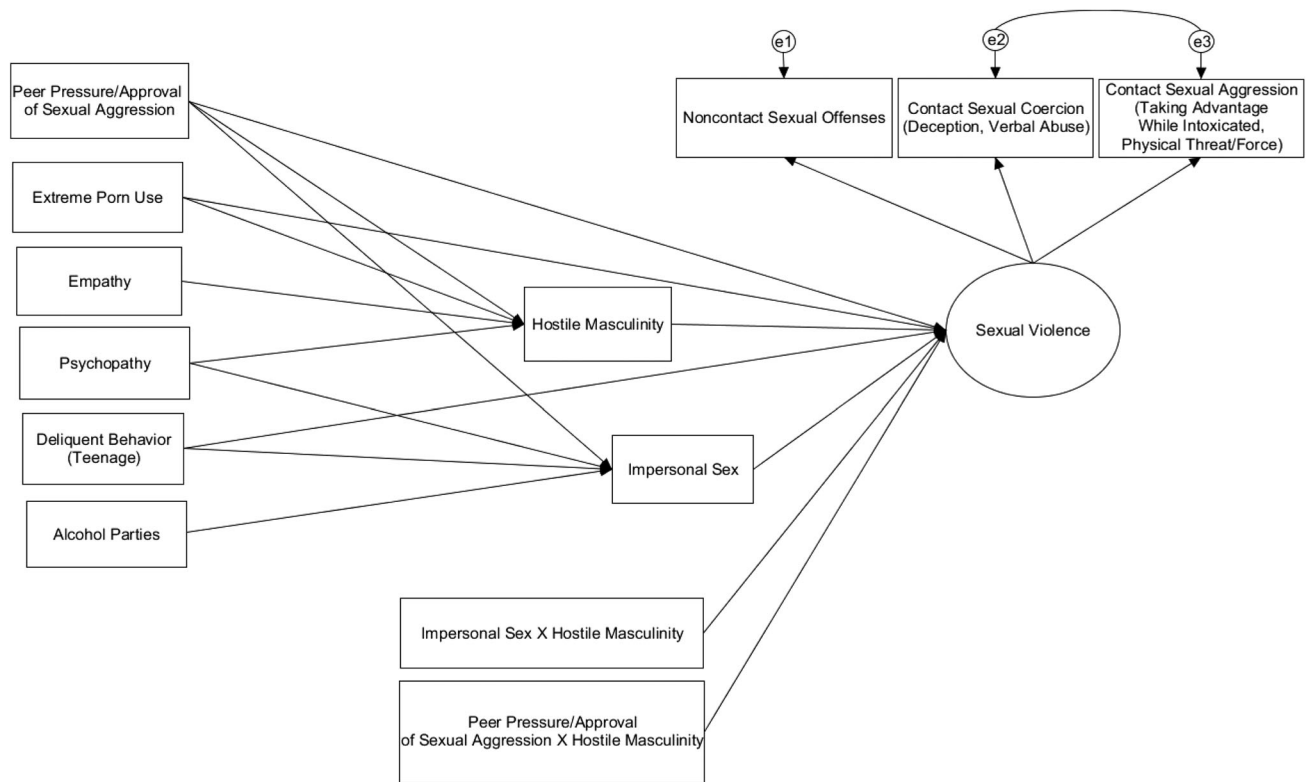**FIGURE 2** Tested Core Model Model with posthoc modification
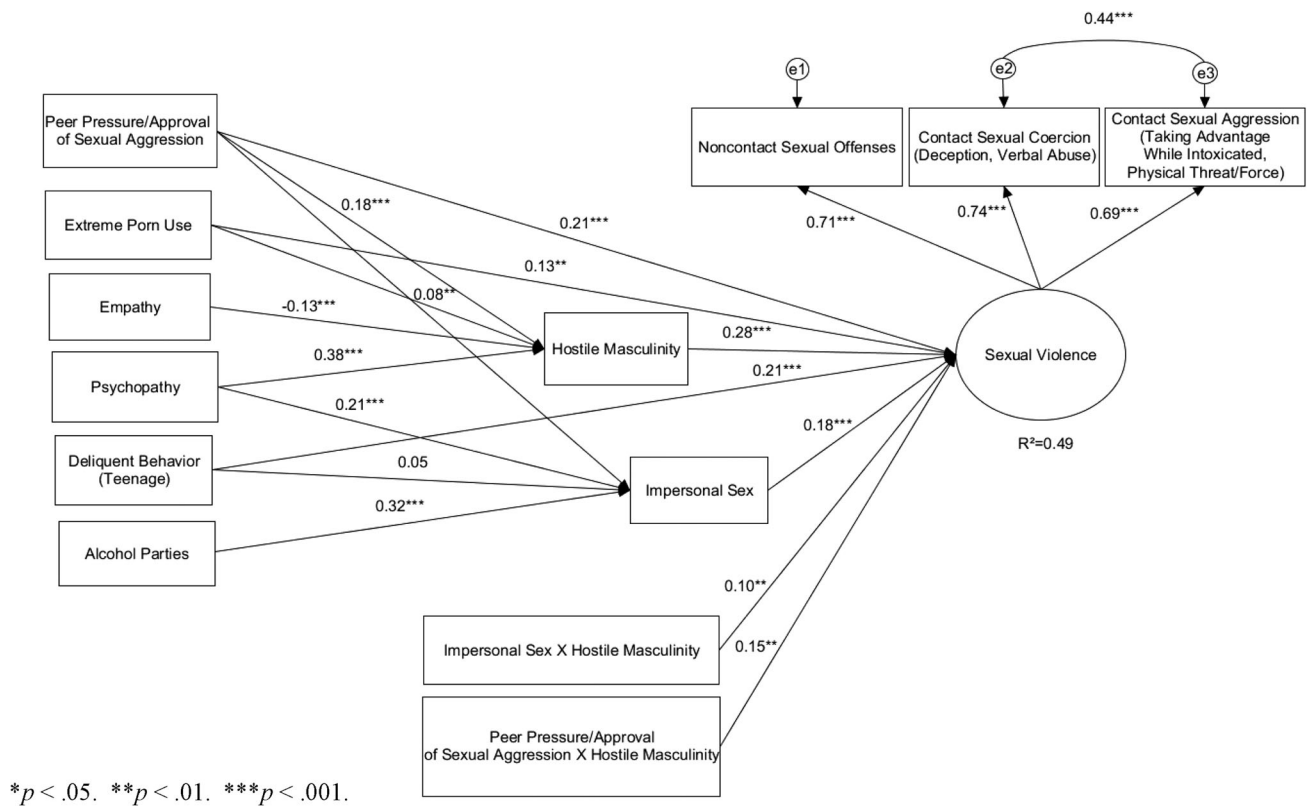

FIGURE 3 Expanded Theoretical Model

FIGURE 4 Tested Expanded Model

p < .05. **p* < .01. ***p* < .001.

research on the Confluence Model, risk scores were calculated using the three factors that had direct significant paths into the outcome Sexual Violence factor in the core model. Groups of relative risk were created based upon percentiles of the total score on each of the three factors of HM, IS, and Adolescent Delinquency. Each variable was z-standardized and then centered above zero by adding a constant of three to make all values positive, as no value fell more than three standard deviations below the mean. Then the cross-product of all three variables was created to obtain a risk score. These scores were then used to create four risk groups based upon 25th percentile cutoffs: That is, 0–25 (low risk), 26–50 (moderate risk), 51–75 (high risk), and 76–100 (very high risk). These four levels are shown on the X-axis of Figure 5. For the Y-axis, an aggregate Sexual Violence score was created by taking the average of the three indicators of our latent variable for Sexual Violence to create a single composite score. An average of Sexual Violence was then calculated for each risk group and plotted within the graph (see Figure 5). In keeping with previous findings, the illustrative graph shows some increase in levels of Sexual Violence from very low risk (M = 0.20) to low risk (M = 1.00) to moderate risk, (M = 1.60) but a very dramatic increase from moderate risk to the High-Risk Group (M = 6.99) wherein all of the three risk levels are at the top ¼ of the distribution (i.e., the confluence of all three risk factors). Looking at the 95% CIs for each group, we can see that the high-risk group (95% CI [5.00, 9.49]) exhibit significantly higher reported Sexual Violence than the moderate (95% CI [0.97, 2.41]), low (95% CI [0.43, 1.99]), and very low-risk groups (95% CI [0.14, 0.26]). These data replicate and extend nicely the findings of various other

similar analyses in earlier research (e.g., Malamuth et al., 1991, 1995; Malamuth, 1986) and show clearly the nonlinearity of the increase in scores of the outcome factor of Sexual Violence when all of the three predictor variables are at relatively very high levels (i.e., in the top quartile).

Additionally, a second set of risk scores were also created in an analysis that included two of the factors in the expanded model that showed significant effects, that is, Alcohol Parties and Peer Approval factors. As before, the additional variables were z-standardized and centered above the mean by adding a constant of three, and an expanded risk score was created by taking the cross-product of the centered HM, IS, Alcohol Parties, and Peer Approval variables. Using these scores, four risk groups were created using 25th percentile cutoffs. Furthermore, to achieve a greater level of data granularity, adolescent delinquency was broken into groups by 25th percentiles, and an average Sexual Violence score was computed for each risk group by each Adolescent Delinquency group, for a total of 16 subgroups. The plotted subgroup means can be seen in Figure 6. To test for significant differences, we again calculated 95% CIs for each risk group. To simplify and reduce the number of statistical tests that would compound our type 1 error, we collapsed all levels of Adolescent Delinquency together within each risk group. We can see that the high-risk group (95% CI [4.70, 8.54]) exhibit significantly higher reported Sexual Violence than the moderate (95% CI [0.90, 3.35]), low (95% CI [0.46, 2.18]), and
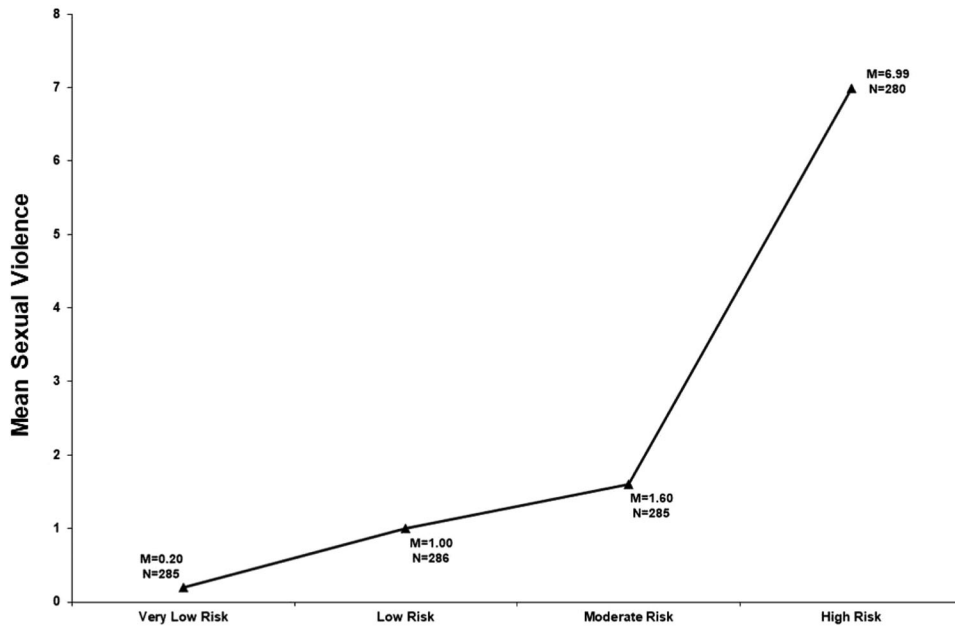
FIGURE 5 Core Confluence Model risk by composite Sexual Violence

very low-risk groups (95% CI [0.14, 0.28]). In showing the nonlinear patterns, this graph clearly illustrates the interaction effects of both the expanded risk classification and the role of the Adolescent Delinquency.

3.4 | Testing the "Dark Triad" Model

To provide a better context for evaluating the models described above, we also tested the ability of the Triad Model to predict the same outcome measure of Sexual Violence. In keeping with the findings and recommendations of Figueredo et al. (2016), we created a single latent variable with all three manifest variables as indicators

of the latent construct of the Dark Triad. In examining its ability to predict the outcome measure, it was found to account for 14% of the variance in Sexual Violence.

4 | DISCUSSION

4.1 | Support for the four pillars

We found empirical support for all of the four key pillars of the Confluence Model within the integrated model tested herein. Corroborating the first key pillar, we replicated the "core" structure hypothesizing that the primary motivational factors may be
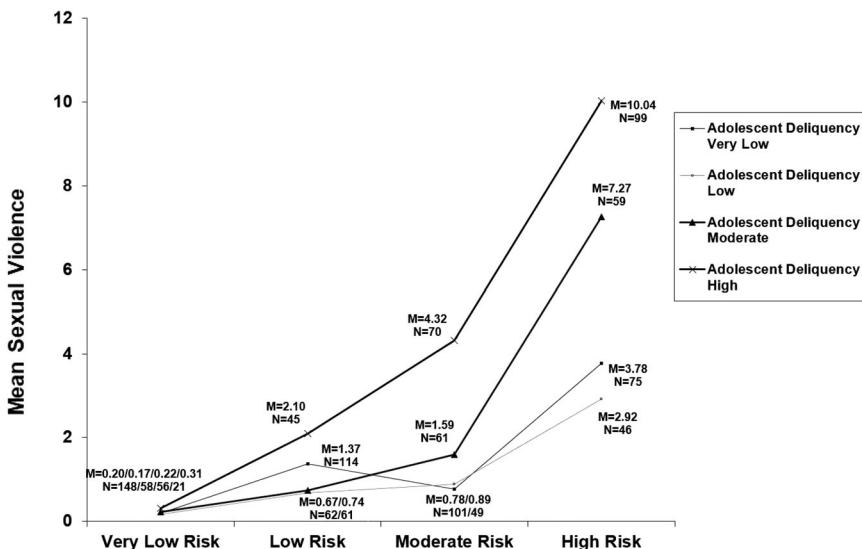

FIGURE 6 Expanded Confluence Model risk by composite Sexual Violence

organized into two major constellations, namely, the HM and IS constellations. As predicted, we found that the interaction of these two constellations predicted the latent outcome of self-reported Sexual Violence. Such a successful replication of the core of the model is indeed encouraging, particularly at a time when many "classic" findings in many other areas of psychological research have often not been successfully replicated (e.g., Camerer et al., 2018). Moreover, this is especially impressive as interaction effects are among the effects least likely to replicate (Baranger, 2019; Hainmueller et al., 2019) and it is estimated that for interaction effects to obtain significance, it may be necessary to have 16 times the sample size as to estimate main effects (Gelman, 2018).

In keeping with the second key pillar, we found that the Confluence Model that included a mediational structure was also generally well supported. In particular, the risk prediction by Psychopathy, the general antisocial personality factor, on the outcome variable of Sexual Aggression was mediated via the "specialized" factors of HM and IS. These data help integrate much of the research literature on both men from the general population and criminal samples of sexual aggressors (see Malamuth & Hald, 2017). They are consistent with the idea that there is a general "G"-like factor of antisocial tendencies akin to that found in intelligence research or the "P" factor suggested for a general psychopathology factor (Ronald, 2019). The impact of these factors on Sexually Violent behavior is mediated by more specific factors particularly relevant to Sexual Violence against women. Furthermore, we suggest that the general antisocial component of this model may more readily be relevant to the relatively extreme acts that are successfully prosecuted (i.e., identified criminals). These criminals may be generally antisocial individuals who commit a wide variety of antisocial and aggressive acts. For men not convicted of a crime, which constitute our samples, a more moderate degree of this general antisocial component may play a role as a prelude to the development of the more "specialized mechanisms" we have identified in Confluence Model research.

In keeping with the third pillar, we found support for the inclusion of Noncontact Sexual Offenses, Contact Sexual Coercion, and Contact Sexual Aggression in a single latent factor labeled Sexual Violence and for the ability of the "specialized" risk factors to predict all of these outcomes. This suggests that though Contact Sexual Coercion and Aggression are outcomes of the risk factors, they also reflect a general hostile orientation of how some men interact with women, particularly in sexual conflict situations. In previous research, it has been shown that these "specialized" risk factors predicted such nonsexual behaviors as laboratory aggression and domineering in conversations against female but not male targets (Anderson & Anderson, 2008; Malamuth & Thornhill, 1994; Malamuth, 1988).

Nonetheless, it is likely that there are subgroups of individuals that need to be delineated in future research. The structural equation approach used here is useful for describing the sample as a whole but there may be "hidden subgroups" within the larger population that may be identified in future research. In previous studies that have specifically examined the question, we have consistently found that those at the highest levels of sexual aggression score relatively high on all of the risk factors (e.g., Malamuth, 1986). As suggested by Malamuth (2003), for those not high on all the risk factors, various combinations of the risk factors may be predictive of differing types and levels of sexual aggression and other antisocial outcomes. One can speculate, however, that there may be, for example, be some men who are primarily opportunistic, and even though they are not relatively high on the constellation of HM, they may take advantage of an intoxicated woman when they themselves are somewhat intoxicated and engage in sex with her even though she cannot give consent. As their behavior is still predatory, we predict that they would show some elevation on the risk factors, possibly though less than those who actually use physical force. Statistically refined approaches such as cluster analysis (Seifert & Bulcock, 1996), particularly when focusing on both Noncontact Sexual Offenses and differing levels of Contact Sexual Coercion and Sexual Aggression, may enable identifying sub-groups of men with differing levels and configurations of the risk factors. A step in this direction of better identifying subgroups has been accomplished by Zinzow & Thompson (2015) in their longitudinal research. They found both common characteristics differentiating all perpetrators from non-perpetrators (e.g., rape supportive beliefs) but certain characteristics (high scores on childhood adversity and on general antisocial characteristics) were particularly evident in men who actually used physical force as compared to those who used verbal forceful tactics only or those who incapacitated their victims (e.g., by use of high levels of alcohol). Such information may be particularly useful for informing intervention and policy decisions.

In terms of the fourth pillar, the data supported the expanded or elaborated version of the model that added key secondary factors encompassed within the disinhibition and opportunity factors of the Confluence Model conceptualization. With the separate regression analyses with the exception of Extreme Pornography (which only showed the main effect), the two-way interactions between each of the secondary factors (Empathy, Peer Approval, and Alcohol Parties) and HM did significantly add to the prediction of the Sexual Aggression outcome after adding the main effects of HM, IS, Teenage Delinquency, and the interaction of HM by IS. It would, thus, appear that these factors do indeed contribute to Sexual Violence above and beyond the core factors, but that they do so by interacting with relatively high levels of HM.

Similarly, in using structural equation modeling (SEM), the expanded model successfully tested included the contribution of additional secondary factors of low Empathy, high use of Extreme Pornography, and frequent attendance at Alcohol Parties, all of which were found to have non-redundant statistically significant roles in the prediction model. However, except for the interaction of Peer Approval with HM, in this structural equation model, the role of those secondary factors was represented as being mediated via HM and IS rather than as interaction effect. It seems unlikely that all of the interaction effects found in the regression analyses would have emerged as significant in the single model represented in the SEM model. What we can say with considerable confidence from both the regression analyses and the SEM model is that there is a significant role for these several secondary factors.

In addition to providing support for the fourth pillar of secondary factors, these findings highlight the centrality of the HM factor in

the model as well its role as a moderator of peers' support for Sexual Violence. Also, the significant interaction that did enter in the regression analyses and in SEM of the Peer Approval suggests the importance of this factor. It is in keeping with a recent finding that decreases over time in perceptions of the frequency of peer's teen dating violence was associated with males' own reduced teen dating violence (Shorey et al., 2018).

In summary, using a latent model of Sexual Violence that included the manifest indicators of two forms of contact sexual aggression (coercion and aggression) as well as of noncontact sexual offenses, the elaborated Confluence Model was able to account for 49% of the latent variance whereas the "core" model accounted for 37% of such variance. In contrast, a model using the three components of the Dark Triad accounted for 14% of the variance in the same outcome measure. These findings constitute an important advance in this literature by demonstrating the benefit of incorporating and integrating the various strands of the Confluence Model literature. The results also provided considerable support for the existence of a common latent variable underlying all three of these overt manifestations of sexual misconduct.

4.2 | Applications to campus sexual aggression

The successful identification of risk factors for Sexual Violence can be used in three areas of application: Screening, interventions for large groups, and individually tailored interventions. The consistent findings in research on the Confluence Model can lead to the development of improved assessment tools of males at risk for sexual violence and for improving interventions. Malamuth's (2005) development of a relatively brief questionnaire substituting for the various lengthier questionnaires assessing the components of HM is a first step in that direction. A more comprehensive tool for practical assessment of all of the key elements of the model is currently under development using the questionnaires employed in this study. An example of the way such a tool may be effectively used is in screening individuals to determine who is at relatively high-risk. Although such an approach raises ethical issues and is not likely to be feasible in institutions such as public educational settings, it may be possible for the military service academies or the military itself. It keeping with this possibility, it may be noted that in 2014 the U.S. House of Representatives passed a bill that required the military to use psychological screening for psychiatric risk, particularly suicide risk.

With regard to interventions, it may be desirable to target university programs more specifically to the individuals identified by such a screening tool rather than the broader population, which is what is currently typically done. Little harm is likely from such a focus, whereas as noted at the beginning of this article, the current failure to consider potential "boomerang" effects in high-risk men may result in current interventions doing more harm than good (Malamuth et al., 2018). We have embarked on a research program to help develop more effective interventions to reduce boomerang

effects and in early research have found encouraging results using affirmation introductions for both high rape myth acceptance females and males in terms of their perceptions of and reactions to real-life rape acts (e.g., Huppin & Malamuth, 2020).

In designing such interventions, it may be useful to differentiate between relatively "static" risk factors that are not easily amenable to change, such as sexual arousal to dominance vs. "dynamic" factors that can more easily be modified through interventions. To address the former, interventions might focus on having men recognize that such risk factors can be effectively managed and ensuring that they do not affect one's actual behaviors (e.g., "I can be turned on by fantasized rape but that does not mean I would be by actual sexual coercion"). Relatively "dynamic" risk factors more amenable to change may include consumption of alcohol and attendance at parties where alcohol is used excessively and perceptions of peer attitudes. From a public health perspective, cultivating practices and attitudes contrary to such risk factors, as well as enhancing empathy, may be effective areas to emphasize more in preventative interventions once techniques designed to reduce defensiveness and reactance have been implemented as well. One such application is the STARRSA (Science-based Treatment, Accountability, Risk Reduction for Sexual Assault) program (Lamade et al., 2018). STARRSA begins with an assessment of risk factors for sexual aggression. Both the psychoeducational and treatment interventions then select appropriate modules that target those risk factors of that individual student.

5 | LIMITATIONS

This was a cross-sectional study focusing on associations among variables and therefore causal inferences cannot be drawn with confidence. Longitudinal studies that begin assessment at an early age would add a great deal to this study area. This would be particularly important in assessing the role of such factors as childhood victimization, which is an important factor in the Confluence Model but was not assessed in the current study. Though the SEM model tested had excellent fit, it is certainly possible various other models using these factors could fit equally or even better, as in the case in SES modeling generally. Although the sample was diverse and large and obtained from several colleges throughout the country, participants were not randomly selected. The representativeness is therefore not clear, although the fact that these findings are highly consistent with an earlier study using a representative sample (Malamuth et al., 1991) and a substantial number of other studies in several Western nations (Malamuth & Hald, 2017) speaks to the reliability of the findings and conclusions. An additional limitation is a reliance on self-report in the present study, although the consistency with findings using reports from significant others (Malamuth et al., 1993, 1995) and laboratory physiological and behavioral measures (e.g., Malamuth et al., 1986; Malamuth, 1983, 1988) also provides a nomological network of support for the model tested herein. Finally, the study is limited by the focus here only on

heterosexuals and male perpetrators against female victims. Research has shown that sexual aggression is also a major problem within the LGBTQ community and that some of the same risk factors as found among heterosexuals (e.g., DeKeseredy et al., 2017; Krahe et al., 2001), as well as the overall Confluence Model (Troche et al., 2019), may be applicable in these populations as well. Finally, we recognize that the individualized interventions we propose address the micro-level of the individual perpetrator rather than the systemic level of changing rape culture that contributes to the indoctrination of people with these propensities and that a comprehensive approach requires changes at both the macro and micro levels.

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CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

PEER REVIEW

The peer review history for this article is available at https://publons.com/publon/10.1002/ab.21960

DATA AVAILABILITY STATEMENT

Christopher Seaman confirms that he had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

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