

# Characteristics of Aggressors Against Women: Testing a Model Using a National Sample of College Students

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Structural equation modeling was used to study the characteristics of college men ( $N = 2,652$ ) who aggressed against women either sexually, nonsexually, or both. According to the model, hostile childhood experiences affect involvement in delinquency, leading to aggression through two paths: (a) hostile attitudes and personality, which result in coerciveness both in sexual and nonsexual interactions, and (b) sexual promiscuity, which, especially in interaction with hostility, produces sexual aggression. In addition, sexual and nonsexual coercion were hypothesized to share a common underlying factor. Although its development was guided by integrating previous theory and research, the initial model was refined in half of the sample and later replicated in the second half. Overall, it fitted the data very well in both halves and in a separate replication with a sample for whom data were available about sexual but not about nonsexual aggression.

Most research on men's sexual and nonsexual aggression<sup>1</sup> against women has focused on identifying correlates of these behaviors rather than on developing or testing causal models (for reviews see Hall, 1990; Sugarman & Hotaling, 1989). The present study develops and tests a model of the developmental patterns and current characteristics of male college students committing either or both types of aggression. We submit that even though these two types have been studied in separate lines of research, they share some common causes. Below, we first briefly discuss research on sexual and nonsexual coercion and then describe the model tested.

## Sexual Aggression

Researchers studying sexual aggression have typically focused on instances in which a man attempts to or actually does coerce a woman into sexual acts. Most studies find that between 15% and 25% of male college students engage in some level of sexual aggression.

Researchers have differed considerably in the characteristics identified as related to sexual aggression and their respective causes. This may be due to the use of theories, instruments, and convenience samples sensitive to detecting certain correlates

while largely ignoring others. Most of the work has emphasized either childhood experiences such as sexual abuse (Groth, 1979), general delinquent inclinations (Ageton, 1983), sexual precociousness and promiscuity (Kanin, 1977), attitudes supporting violence against women (Burt, 1980), or power and hostility motives (Malamuth, 1986). Additionally, these studies have typically focused on analyzing direct effects only. Although there have been models geared to theoretically integrate several factors (e.g., Marshall & Barbaree, 1984) and some success in empirical prediction using multivariate models (e.g., Malamuth, 1986), the present study is intended to advance research by accomplishing the following three interrelated goals: (a) We developed a model incorporating related factors typically investigated separately; (b) we tested and refined it, analyzing both the direct and indirect effects of these factors on sexual and nonsexual aggression; (c) we assessed the common variance between these two types of coercion.

## Nonsexual Aggression

Research indicates that many youths have participated in "nonsexual" verbal (e.g., yelling) and physical (e.g., hitting) aggression in their dating relationships. Among college students, about 30% report at least one experience with physical aggression in a dating relationship, as aggressors, victims, or both (Sugarman & Hotaling, 1989). We recognize that such aggression may center around sexual issues, such as the perception that one's partner flirted with someone else (e.g., Walker, 1989), but it can be distinguished from the type specifically aimed at coercing sexual acts. Some data suggest that courtship aggress-

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<sup>1</sup> The terms *aggression*, *coercion*, and *violence* are used interchangeably herein.

sion may lead to later aggression in marriage, often of a more serious nature (e.g., O'Leary et al., 1988).

Although some have applied general theoretical perspectives (e.g., psychoanalytic, social learning) to the area of nonsexual aggression between men and women, at this stage in the development of theory, more restricted models are likely to prove more helpful in guiding research (O'Leary, 1988). The present model is restricted to aggressors' characteristics (although it will, we hope, serve as a building block of a more general theory) rather than also including the dynamics of the interaction itself. Such aggressor characteristics have been considered a major cause of aggression between intimates (e.g., O'Leary, 1988). In fact, some data suggest that both sexual and nonsexual coercive behavior against women may be more a function of individuals than of relationships (Stets & Pirog-Good, 1989).

### Description of the Model

Our primary goal was to develop a parsimonious model encompassing "central" causes of aggression against women. If successful, it would (a) aid understanding of coercion's causes, (b) be a building block for developing and refining future models, and (c) serve as a context for testing hypotheses regarding the role of other less central factors.

The proposed model was guided by our earlier work (e.g., Malamuth & Briere, 1986) placed within a framework suggested by an "ecological approach" to human development (Bronfenbrenner, 1979). This approach describes several systems, in which smaller units are embedded within and influenced by larger ones. In moving from smaller to larger levels we include (a) individual childhood developmental factors (i.e., the ontogeny) such as certain home experiences, (b) social units such as peer groups (i.e., the exosystem), and (c) broader cultural values and belief systems (i.e., the macrosystem). The immediate setting (i.e., the microsystem) influences whether behavioral inclinations originating in the above three systems will be "released" in behavior.

Within this general framework, we developed a model with the following interrelated principles and hypotheses:

1. Depending on the interaction among biological, cultural, and individual factors, some people are more likely to use certain tactics of manipulation (Buss, Gomes, Higgins, & Lauterbach, 1987) or bases of power (Raven, Centers, & Rodrigues, 1975) to influence others, although the target of manipulation and contextual factors can affect their choice of tactics (Buss et al., 1987). Here we focus on coercion. Our model hypothesizes a common factor underlying coercion targeted at women, whether of a sexual or nonsexual nature. Such a factor is particularly likely because both of these generally occur in privacy, a potentially crucial element (Straus, 1977).

2. The ontogeny of coerciveness can often be traced to early home experiences and parent-child interactions. These lay the foundation for enduring cognitive (Dodge, Baites, & Petit, 1990), emotional/attachment (Kohut, 1977), and behavioral (Patterson, DeBaryshe, & Ramsey, 1989) responses. Certain home environments, such as those that include violence between parents (O'Leary, 1988) and child abuse, especially sexual abuse (Fagan & Wexler, 1988), may lead to developmental processes later affecting aggression against women. These include the development of cynical, adversarial, and hostile "schemata"

(Huesmann, 1988) concerning male-female and intimate relationships. They may also include feelings of shame (especially about sex) and inadequacy, which are masked by self-protective aggrandizing, anger, and an exaggerated need to control intimates.

3. Children in hostile home environments frequently associate with delinquent peers (the exosystem) and engage in a variety of antisocial behaviors (Patterson et al., 1989). Such delinquency experiences<sup>2</sup> may affect various characteristics mediating aggression against women. For example, they may encourage hostile cognitions, including those originating in the home environment. They (as well as certain home environments) may also interfere with the mastery of critical developmental skills, such as dealing constructively with frustration, learning to delay gratification, forming a prosocial identity, negotiating disagreements, and other "developmental tasks" (Newcomb & Bentler, 1988). This may result in accelerated adoption of adult roles, including sexual behaviors, but without the necessary growth and development typically needed to ensure success with these roles. It may also therefore lead to being domineering and coercive rather than negotiating desired outcomes.

4. In the present research we were particularly interested in how such delinquent experiences may affect two trajectory paths relevant to aggression against women. The first occurs when delinquency affects attitudes, rationalizations, motivations, emotions, and other personality characteristics that increase the likelihood of coercive behavior (Patterson et al., 1989). Although a subculture of delinquent peers may be particularly conducive to the development of such behavior, a general cultural environment (the macrosystem) may also foster or reinforce attitudes and personality characteristics conducive to violence against women (Burt, 1980). In particular, subcultures and societies that regard qualities such as power, toughness, dominance, aggressiveness, and competitiveness as "masculine" may breed individuals hostile to women and to qualities associated with "femininity." Consequently, they are likely to be more controlling and aggressive toward women (Brownmiller, 1975). Sex may be one of the arenas where such motives are acted out, but they may be expressed also in nonsexual controlling and coercive behaviors, particularly by those who in childhood or adulthood have felt powerless in other ways (Dutton, 1988).

5. The second path, hypothesized to be particularly relevant to sexual aggression, occurs when delinquent tendencies are expressed in sexual "acting out" (Elliott & Morse, 1989; Newcomb & Bentler, 1988). As noted earlier, processes such as accelerated adoption of adult roles are likely to result in such precocious sexual behavior. Boys who develop a relatively high emphasis on sexuality, particularly sexual conquest, as a source of peer status and self-esteem may use various means, including coercion, to induce girls into sexual acts. Of course, some boys and men may have the same orientation to sexuality and may engage in similar coercive tactics without necessarily having had a visible delinquent background (Kanin, 1977). Moreover,

<sup>2</sup> Although we describe delinquency in social learning terms, it could also be an early marker of inborn tendencies later expressed in coerciveness (Ellis, 1988).

some men may have a promiscuous sexual orientation without using coercive tactics. We hypothesized that the degree to which a person possesses characteristics of the hostile path described above will influence whether a high level of sexual promiscuity leads to sexual aggression. No similar prediction was made for nonsexual coercion because sexual promiscuity was not expected to play as major a role in this behavior. However, we anticipated an effect on the common variance between these two types of aggression because men who commit sexual aggression would be expected to be affected by the sexual promiscuity path regardless of whether or not they also commit nonsexual aggression.

The model we described posits that the hostility path "moderates" (Baron & Kenny, 1986) the relationship between sexual promiscuity and sexual aggression.<sup>3</sup> Because such an interaction effect is problematic to test using structural equation modeling with latent variables (cf., Bollen, 1989, but see Kenny & Judd, 1984), we first tested a simplified model evaluating the "main" effects of sexual promiscuity and of the hostility path. Supplementary analyses were then conducted to test the hypothesized interaction effect.

6. Contributors to coercive behavior are likely to be expressed also in other aspects of men's relationships with women (Malamuth & Briere, 1986). We predicted that higher scores on the hostility factor would result in more social isolation from women.

In summary, the model's central aspects include the hypothesis that a hostile home environment increases involvement in delinquency, which affects coerciveness against women through two paths: (a) hostile attitudes and personality characteristics that contribute to coerciveness, in both sexual and nonsexual interactions with women as well as in social isolation from them, and (b) a high level of sexual promiscuity, which, particularly in interaction with hostility, leads to sexual aggression.<sup>4</sup> Finally, sexual and nonsexual coercion were hypothesized to share a common underlying factor.

## Method

### *Sampling Procedures*

As described in detail in Koss, Gidycz, and Wisniewski (1987), an attempt was made to survey a representative sample of the U.S. college population. Because topics such as rape are controversial, some schools and individuals targeted by a systematic sampling plan refuse to participate. Therefore, no design could be expected to result in a purely random sample. However, the present sample is probably the closest approximation to a random sample of the college population as could be obtained within the constraints imposed by the topic's sensitivity.

On the basis of enrollment data provided by the U.S. Department of Education, schools were randomly selected to participate. If a school did not agree, a replacement was obtained using previously matched homogeneous clusters. Of the institutions in the final sample, 19 were first choices and 13 were replacements. Within schools, a random selection was made of classes, with appropriate alternates. Participants completed anonymous questionnaires. Only 1.5% chose not to participate.

About 4 out of 10 Americans attend college (U.S. Bureau of Statistics, 1990). This is an age group particularly at risk both for sexual (e.g., Shields & Shields, 1983) and nonsexual (Straus & Gelles, 1990) aggression. Therefore, the current sample appears to have considerable gener-

alizability to a large proportion of the general population that is of the age of particular interest. Furthermore, studies in this area attempting to replicate key findings for students in general population samples have usually found similar data (e.g., Murphy, Coleman, & Haynes, 1986). However, caution is needed in generalizing from the present sample to men identified by the judicial system because the latter group might have engaged in more extreme and brutal acts or be more likely to have aggressed against strangers rather than acquaintances or intimates.

### *Subjects*

The original sample consisted of 2,972 men with a mean age of 21. Eighty-six percent were White, 6% Black, 3% Hispanic, 4% Asian, and 1% Native American. Koss et al. (1987) have presented detailed analyses showing that this sample is representative of the college population. Here we included only heterosexuals or bisexuals, and we eliminated those with missing data on the dependent measures. For the sexual aggression measure, there remained 2,652 subjects; for those also completing the nonsexual aggression measure, the sample dropped to 1,713 men. For the predictor variables, missing data were replaced by the sample mean for each variable calculated across all observations. This is generally a conservative procedure because substituted values support the null hypothesis of no mean differences between groups.

The major reason that about 30% of the sample did not complete the nonsexual aggression measure seems to relate to its appearing on the questionnaire's last page. In contrast, the sexual aggression measure appeared near the middle. Although the questionnaire had been pre-tested for a typical class session, at some schools the time available to respondents was shorter than at others. As well, some questions, such as those concerning sexual aggression, used a funnel format, so that those indicating having engaged in certain behaviors provided more information about them. Consequently, they needed more time. This may have resulted in difficulty in completing the questionnaire within the time allotted at some schools. Evidence supporting this reasoning showed that subjects who did not complete the entire questionnaire had significantly higher scores on measures such as sexual aggression than did those who completed it.

Because the difference between completers and noncompleters could therefore not be assumed to be random, we compared the model's fit for these two groups using the sexual aggression measure only. The fact that, as described below, the fit was very similar contributes to our confidence in the findings' generalizability. Also, we compared the rates of nonsexual aggression in the present study with those of national norms and found similar distributions. For example, in a random national sample, Straus & Gelles (1990) found that 27.1% of the men between the ages of 18 and 24 engaged in some form of physical aggression against their partner within a 12-month period. The rate of such physical aggression in the present sample was 27.7%.

### *Structural Equation Modeling*

Model specification and evaluation included both a measurement model linking observed variables with their latent constructs and a structural model describing the interrelations among latent constructs.

<sup>3</sup> Malamuth and McIlwraith's (1988) data supported a similar hypothesis about hostility moderating the relationship between sexual fantasies and use of *Penthouse* magazine.

<sup>4</sup> We have also tested the role of "releasers" such as alcohol and pornography. Because of their minor role in our model and because we also wished to compare possible "causal" versus "symptomatic" effects, these analyses are reported elsewhere (Malamuth, Sockloskie, & Koss, 1991).

The conceptual domains assessed and their measured indicators are described next.

## Measures

### Overview

The model included 16 measured variables and five latent factors. All but two manifest variables (i.e., parental violence and child abuse) were used as indicators of the latent constructs, named *delinquency*, *sexual promiscuity*, *attitudes*, *hostile masculinity*, and *coerciveness*. We later examined the substantive invariance of the model after applying four additional variables as controls.

### Home Environment

Two measured variables assessed retrospective reports about childhood home experiences:

**Parental violence.** Subjects indicated how often, when they were growing up, their parents used physical blows against each other (e.g., hitting or kicking) within an average month. The 6-point scale ranged from *never* to *over 20 times*.

**Child abuse.** It has often been reported that aggressors against women were themselves sexually abused (Groth, 1979). The data regarding physical abuse are less consistent. There are, however, some data suggesting that when both sexual and physical abuse occur, this may be especially likely to lead to later aggression against women (e.g., Fagan & Wexler, 1988). A composite score, which emphasized sexual abuse, was constructed in light of this literature.

Using subjects' responses to several interrelated items, we defined sexual abuse as sexual experiences before age 14 with someone who was at least 5 years older (Finkelhor, 1986). Virtually all definitions of sexual abuse recognize that sexual contact even in the absence of coercion constitutes sexual abuse when it involves this type of age discrepancy because children are "deemed to lack the capacity to consent to such relationships" (Finkelhor, 1986, p. 26). Sexual abuse was a three-level variable: no report of abuse, sexual experience without physical contact (e.g., showing sex organs), and sexual experience with physical contact (e.g., intercourse).

Physical abuse was defined by how often the respondent's parents hit him. We used similar phrasing to that described above for violence between parents. Although the original variable had six levels, it was reduced to three: If the subject reported that in an average month neither of his parents hit him, he was assigned a 0 (*none*), once or twice, a 1 (*low*), and 3 or more times, a 2 (*high*).

The five-level composite was created with the lowest two levels focusing on sexual abuse only, whereas the higher levels incorporated the degree of physical abuse. No sexual abuse equaled 1; sexual abuse without physical contact equaled 2; sexual abuse with physical contact, but no physical abuse, equaled 3; sexual abuse with physical contact and a low level of physical abuse equaled 4; and sexual abuse with physical contact and a high level of physical abuse equaled 5.

### Delinquency

Two manifest variables indexed the delinquency latent construct. The first asked whether, when subjects were growing up, they had friends who got in trouble with the law for minor offenses (e.g., fighting or running away). Such an item correlates highly with more elaborate self-reports of delinquent activity (Elliott & Voss, 1974) and has been described as the "best single predictor of total self-report delinquency" (Hindelang, Hirschi, & Weis, 1981, p. 205). It has been shown to be strongly correlated not only with whether the person has engaged in delinquent behavior, but with other dimensions of delinquency, including the frequency and persistence over time of offending (Smith,

Visher, & Jarjoura, 1991). Although we recognize that in future research it would be important to replicate the present findings with more elaborate assessments of delinquency (one replication with a somewhat more developed measure is described later in this article), it is noteworthy that in the present sample the percentage of people classified on the basis of this item as revealing some delinquency (i.e., 29%) is very similar to that reported in national probability samples of youths (e.g., Smith et al., 1991).

The second variable asked the respondent whether he had run away from home for more than 24 hr. Positive responses have been associated with a high level of delinquency (Gibbons, 1970).

### Sexual Promiscuity

Two measured variables, age of first sexual intercourse and the number of sexual intercourse partners since the age of 14, measured the latent variable labeled sexual promiscuity (SP). The first was open-ended, later recoded as a 10-level variable ranging from *before the age of 14 to 22 or never*. If a person was below the age of 22 and reported not having engaged in intercourse, the respondent's current age was coded for this variable. The number of sexual intercourse partners since age 14 was assessed using an 8-point scale ranging from *none* to *more than 50 people*.

These two variables have been used frequently to assess sexual acting out (Elliott & Morse, 1989) and are key dimensions used by evolutionary psychologists to define an "r" strategy of reproduction (Ellis, 1988). Newcomb and Bentler (1988) found that early sexual involvement was a strong predictor of a life-style pattern characterized by more promiscuous and more frequent sexual behavior. Other studies suggest that early sexual involvement often is associated with and seems to temporally follow general deviance and problem behaviors (Elliott & Morse, 1989).

### Attitudes Supporting Aggression

Burt (1980) developed scales measuring attitudes contributing to sexual violence. As indicators of the latent factor of attitudes supporting aggression against women, we used her three scales most used by researchers. These were the 19-item Rape Myth Acceptance (RMA) scale (yielding here an alpha coefficient of .81), the 6-item Acceptance of Interpersonal Violence (AIV) scale ( $\alpha = .57$ ), and the 9-item Adversarial Sexual Beliefs (ASB) scale ( $\alpha = .80$ ). On the basis of theoretical and empirical grounds, ASB was used as a manifest indicator of both the attitudes and hostile masculinity latent constructs, in effect partitioning its variance between these two latent constructs.

### Hostile Masculinity

Three scales were the indicators of a hostile masculinity (HM) latent factor. The first, negative masculinity, was included as a personality measure associated with coerciveness in general. The other two, hostility toward women and ASB, although expected to share variance with negative masculinity, measure characteristics specifically associated with coercion against women.

**Negative masculinity.** A recurring theme in formulations of personality development is illustrated by Bakan's (1966) proposal that two fundamental modalities characterize living organisms. Agency reflects a sense of self and is manifested in self-assertion and protection. Communion, in contrast, implies selfless concern with others and a desire to be at one with other organisms. Bakan further identifies agency with masculinity and communion with femininity, although these characteristics coexist in both genders and should be balanced or mitigated to some degree. Either unmitigated is destructive. Similar views have been expressed in models of the "macho man" in which the stereotypi-

cally masculine characteristics are exaggerated in contrast to stereotypically feminine characteristics (Mosher & Tomkins, 1988).

We used Spence, Helmreich, and Holahan's (1979) 8-item Negative Masculinity scale ( $\alpha = .79$ ), designed to measure Bakan's (1966) "unmitigated agentic" style of self-functioning. Subjects indicated on 5-point scales ranging from *not at all like me* to *very much like me* whether brief statements applied to them (e.g., "I am a bossy person"; "Most people are out for themselves. I don't trust them very much.")

Buss et al.'s (1987) data support this scale's use for assessing personality characteristics associated with coercion against women. These investigators measured the manipulation tactics people use to elicit and terminate the actions of others. In their data, the use of coercive tactics correlated well with self- and observer ratings of characteristics similar to those described by the Negative Masculinity scale. As well, data supporting this scale's concurrent validity were reported by Watson, Biderman, & Boyd (1989), who found that it correlated highly with the maladaptive components of narcissism.

**Hostility Toward Women.** The HM construct was also indicated by the 30-item Hostility Toward Women (HTW) scale ( $\alpha = .80$ ; Check, 1985). Reliability and validity data were presented by Check (1985). Subjects indicated whether the statements were true or false. Examples are "I feel upset even by slight criticism by a woman," and "I rarely become suspicious with women who are more friendly than I expected."

### Social Isolation

Subjects reported about their relationships with women. On three 5-point scales ranging from *not at all* to *very much*, they indicated the extent to which they make friends, get close to women, and maintain relationships. These were manifest indicators of the latent construct social isolation.

### Coerciveness

The latent construct of coerciveness against women was measured by two scales, one assessing sexual and the other nonsexual aggression.

**Sexual aggression.** Koss and Oros's (1982) 10-item scale assessed sexual aggression ( $\alpha = .70$ ). Koss and Gidycz (1985) have presented data regarding its reliability and validity. Although most studies have only asked subjects to indicate whether they had ever committed any of the coercive acts described, here they also indicated the frequency of such behavior since the age of 14 as well as within the last school year. We used the former frequency data, but the results are very similar if the latter frequencies are used instead. Each of the 10 items composing this scale were coded 1 if the subject never committed the act, 2 if only once since the age of 14, 3 if twice, and so forth, up to a maximum of 6 if 5 or more times since age 14. The inclusion of frequency information made the assessment of sexual and nonsexual aggression similar because both included a frequency component.

**Nonsexual aggression.** The 10-item Conflict Tactics Scale measured both verbal and physical aggression ( $\alpha = .87$ ) by including behaviors such as arguing heatedly, yelling or insulting, pushing, hitting the other person, and hitting them with something hard. (We used the original version of the scale, which did not include items such as using guns, because with the type of population studied here such behaviors are very seldom reported.)

Using 5-point scales ranging from *never* to *more than once a month*, subjects indicated the frequency with which they engaged in such behaviors against a woman during the last school year in the context of conflict or disagreement. A number of studies have shown considerable correspondence between subjects' own ratings of their use of coercive tactics and their partners' reports about such behaviors (e.g., Buss et al., 1987; Straus & Gelles, 1990), thereby validating such self-reports.

### Transformations

Behaviors such as sexual aggression and physical violence in the child's home environment are not expected to be normally distributed in a representative sample, such as the one used in the present study. Indeed, initial examination of the distributions of these variables showed that they were considerably skewed and kurtotic. For the purposes of the statistical analyses reported below, the data for these two variables were transformed using a base 10 log transformation. It is noteworthy that the results are virtually identical if the transformation is not used.

### Control Variables

There are a number of background characteristics that were not the focus of the present research but that could be confounded with the variables we studied. Included here were subjects' current age, race, income, and geographical location. The possible contributions of these variables were statistically controlled through the use of residual scores that partialled the effects of these variables. Current age was an open-ended question. Race was "dummy" coded. Family income was a six-level variable. For geographical location, we examined the possibility that the South might have higher rates of rape as a result of the "Southern culture of violence" (Baron & Straus, 1989) and what appear to be unusually high rates of rape in nonrandom samples reported from universities in that region (e.g., Frank, 1989).

## Results

### Overview of Structural Equation Analyses

Structural equation models with latent variables using the EQS computer program (Bentler, 1989) were used to evaluate the hypotheses of interest. All models used maximum likelihood as the method of estimation. It is important to note that several of the variables in the current analyses are not normally distributed (despite the log transformation used for the two most skewed), which violates an assumption of the maximum likelihood method. Even though it has been noted that substantive conclusions are robust to the violation of nonnormality (Newcomb & Bentler, 1988), we used a relatively newly developed feature of EQS—the robust option—which provides an alternative method of estimating the standard errors of parameters when multivariate normality does not hold (Bentler, 1989). The robust option also provides the Satorra-Bentler scaled test statistic (Satorra & Bentler, 1988), which more closely approximates the chi-square distribution of the overall fit statistic than do the usual test statistics based on the assumption of multivariate normality. Unlike the asymptotically distribution-free methods that have been proposed for structural equation modeling with nonnormal data (e.g., Browne, 1984), the robust option has the advantage of correcting model test statistics and standard errors without requiring an extremely large sample size. Unless otherwise indicated, all the analyses reported below used the Satorra-Bentler chi-square statistic, and the tests of the significance of parameters were computed using the robust standard errors. In none of the analyses were error variables allowed to covary, resulting in a generally more conservative test of the models.

Multiple methods exist for evaluating model fit in structural equation modeling. Typically, a goodness-of-fit statistic that has a chi-square distribution under the null hypothesis is used. As with all goodness-of-fit statistics, one is looking for small values

of the test statistics relative to the number of degrees of freedom available for the test. Colloquially, this can be thought of as accepting the null hypothesis. However, large data sets will have much statistical power, which increases the probability of detecting trivial differences. Considering the size of the data sets employed here, it is not expected that any of the models will be accepted according to the chi-square test statistic. Because any model necessarily represents a simplification of observed data, discrepancies between models and data that are not substantively interesting may, nevertheless, lead to a rejection of the null hypothesis of model fit, particularly in samples of the size considered here (Tanaka, 1987).

As an alternative to statistically based determinations of model fit, numerous comparative fit indices have been proposed in recent years. The EQS computer program provides two such indices: the Normed Fit Index (NFI; Bentler & Bonnett, 1980) and the Comparative Fit Index (CFI; Bentler, 1990). The former takes on values between zero and one with increasing values indicative of better data-model congruence relative to a baseline null model (typically a model that assumes all observed variables to be mutually uncorrelated). The recently developed CFI has the advantage "in reflecting fit relatively well at all sample sizes, especially in avoiding the underestimation of fit sometimes found in true models with NFI" (Bentler, 1989, p. 93). Following Bentler and Bonnett (1980), models with associated NFI values of .90 and above will be viewed in this article as being acceptable as description of the data.

To best take advantage of the large sample size available in this study, a split-half cross-validated strategy was employed. Observations were randomly assigned to either an initial model development sample or a cross-validation sample. An attempt was made to replicate the model developed in the first sample in the cross-validation sample. For parsimony, however, we present the results for the total sample after demonstrating the replicability of the model in both halves of the sample.

### *Model Development and Replication*

On the basis of our hypotheses, we first generated an initial model of aggression against women, using measures of both sexual and nonsexual aggression. We expected a meaningful degree of shared variance between these two dependent variables. This common variance is represented in the model by a latent variable called *coerciveness*. Two independent latent constructs, *hostile masculinity* and *sexual promiscuity*, were hypothesized to affect the shared variance between sexual and nonsexual aggression. (However, we hypothesized that the unique variations within each of these types of aggression would be differentially affected by these latent predictors.) Several additional variables were included to examine antecedents of sexual promiscuity and of hostile masculinity. The former was expected to be predicted by *delinquency*, which was hypothesized to be influenced by the early home environmental factors. The latter was expected to be predicted by attitudes supporting coercion, which was hypothesized to be influenced both by the early environmental factors and *delinquency*. Finally, we included a latent measure of *social isolation* from women, which we anticipated would be increased by hostile masculinity.

Using the framework just described, we explored our a priori

model using half of the sample only. We tested possible direct as well as indirect paths and made some minor changes when they made theoretical sense (e.g., added an inverse path from sexual promiscuity to social isolation). The model that emerged was then successfully replicated in the second sample half, except for minor discrepancies. As noted earlier, for parsimony of presentation we will describe the results using the total sample because that provides the most stable parameter estimates. However, we present the major inferential statistics for all three analyses (i.e., the two halves and the total sample) and also note any discrepancies (i.e., unless otherwise indicated, the relationships were also similar in the analyses using the two halves as in the total sample results presented here). Summary statistics for the 16 observed variables are presented in Table 1.

Using the fit indices, the model was found to fit the data very well in all three analyses.<sup>3</sup> In the first sample half, it yielded  $\chi^2(94, N = 857) = 154, p < .001, NFI = .93,$  and  $CFI = .96$ . In the second sample half, the corresponding statistics were  $\chi^2(94, N = 856) = 143, p < .001, NFI = .93,$  and  $CFI = .97$ , whereas in the total sample,  $\chi^2(94, N = 1,713) = 235, p < .001, NFI = .94,$  and  $CFI = .96$ .

Using the total sample, the measurement model results are shown in Table 2. All hypothesized factor loadings were significant. Figure 1 shows the results for the structural model, depicting the significant regression paths between the latent variables with their respective regression coefficients (standardized). Residual variances are also included.

As can be seen in Figure 1, a number of direct significant paths were found to influence the latent construct *coerciveness*, accounting for a total of 78% of its variance. However, as can be seen in the error variances of the sexual and nonsexual aggression, considerably smaller percentages of the variances were accounted for within the manifest dependent variables (i.e., 26% of the sexual aggression and 23% of the nonsexual aggression). The paths included one from the latent construct *hostile masculinity* (HM) to *coerciveness*, as well as a separate path from the unique variance of one of HM's manifest indicators, *negative masculinity*, into *coerciveness*. This indicates that there are relationships between *coerciveness* and (a) the shared variance of the three manifest indicators of *hostile masculinity* and (b) the unique variance that *negative masculinity* does not share with the other two manifest HM indicators. As noted earlier, these two indicators concern responses to women specifically, whereas *negative masculinity* does not.

A second path to the latent construct *coerciveness* is from the construct *sexual promiscuity*, which also has a separate negative path to the manifest indicator of nonsexual aggression. These paths suggest that *sexual promiscuity* is related to the common variance between sexual and nonsexual aggression in a positive direction, but is inversely related to the unique variance in nonsexual aggression. The cumulative effect of *sexual promiscuity* on nonsexual aggression appears to be virtually nil, given the magnitudes of the positive path via *coerciveness* and the negative direct path.

<sup>3</sup> There are a number of model variations that fit the data as well as the version presented. An example is one with a "second-order" latent construct labeled *impulsivity* (Prentky & Knight, 1986) with the constructs *delinquency* and *sexual promiscuity* as indicators of it. We selected the current version because it seemed the most parsimonious.

Table 1  
Descriptive Statistics of the Observed Variables

Variable	M	Range	SD	Skew	Kurtosis
V1. Parental violence	0.05	0-0.78	0.20	0.90	8.84
V2. Child abuse	1.25	1-5	0.72	3.38	11.21
V3. Delinquent peers	1.29	1-2	0.45	0.93	-1.15
V4. Runaway	1.04	1-2	0.19	4.80	20.99
V5. Age of first intercourse	4.10	1-10	2.69	0.33	-1.03
V6. Number of partners	2.21	1-8	1.49	1.86	3.56
V7. Make friends	4.02	1-5	0.88	-0.68	0.01
V8. Close to women	3.51	1-5	0.98	-0.21	-0.52
V9. Maintain relationships	3.61	1-5	1.02	-0.48	-0.30
V10. Nonsexual aggression	6.91	0-50	7.33	1.67	3.48
V11. Sexual aggression	0.43	0.40-1.05	0.20	0.93	9.71
V12. Negative masculinity	8.60	0-29	5.28	0.70	0.31
V13. Hostility toward women	7.29	0-30	4.79	1.01	1.17
V14. Adversarial sexual beliefs	22.19	9-43	6.27	0.02	-0.48
V15. Rape myth acceptance	22.71	11-55	7.12	0.72	0.66
V16. Acceptance of violence	12.86	6-30	3.83	0.40	0.15

As expected, hostile masculinity was strongly influenced by attitudes supporting aggression. This latter variable was in turn influenced by delinquency, although this path only approached conventional levels of statistical significance in the replication half sample.

Sexual promiscuity was, as expected, strongly influenced by delinquency, which in turn was affected by both the parental violence and child abuse variables. However, in the replication half sample, the path from parental violence to delinquency only approached significance.

Table 2  
Factor Structure of the Measurement Model, Standardized Solution

Variable	Standardized factor loading	Residual variance
V1. Parental violence	1.00	0
V2. Child abuse	1.00	0
Delinquency		
V3. Delinquent peers	.36	.87
V4. Runaway*	.35	.88
Sexual promiscuity		
V5. Age of first intercourse	-.52	.73
V6. Number of partners*	.74	.45
Social isolation		
V7. Make friends*	.68	.54
V8. Close to women	.85	.29
V9. Maintain relationships	.60	.64
Coerciveness		
V10. Nonsexual aggression	.73	.77
V11. Sexual aggression*	.51	.74
Hostile masculinity		
V12. Negative masculinity	.45	.79
V13. Hostility toward women*	.83	.31
V14. Adversarial sexual beliefs	.33	.49
Attitudes		
V14. Adversarial sexual beliefs	.45	.49
V15. Rape myth acceptance	.79	.37
V16. Acceptance of violence*	.62	.62

Note. All factor loadings are significant at  $p < .001$ .

\* Parameter fixed in original model for identification purposes.

The social isolation latent construct was influenced by both hostile masculinity and sexual promiscuity. As expected, the results showed that greater scores on the hostility factor were associated with more social isolation. Understandably, higher sexual promiscuity was associated with lower social isolation.

We also calculated the total effects on the key construct of

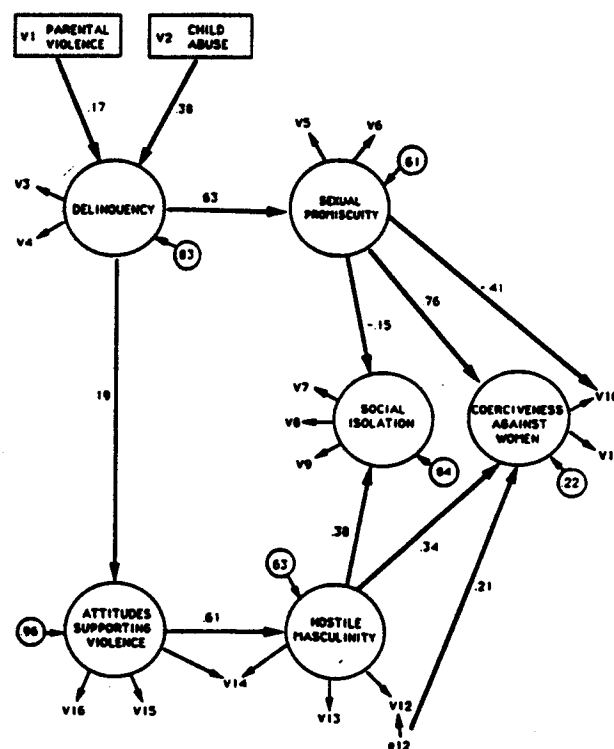


Figure 1. Significant regression paths in the final structural, or path, model using the total sample. (Manifest variable labels and information regarding the measurement model are provided in Table 2. Regression coefficients are standardized, and all are significant at  $p < .001$ . Residual variances are in circles.)

interest, coerciveness, and its manifest indicators, sexual and nonsexual aggression, for variables hypothesized to indirectly affect such aggression. Both delinquency and attitudes significantly ( $p < .001$ ) affected coerciveness and the two manifest variables. Although neither child abuse nor family violence significantly affected coerciveness, both significantly affected ( $p < .01$ ) sexual and nonsexual aggression. (The difference in significance appears to be attributable to the different magnitudes of the standard errors of coerciveness compared with sexual and nonsexual aggression.)

### *Interaction of the Sexuality and Hostility Factors*

As noted earlier, we hypothesized that the degree to which a person possesses characteristics of the "hostile" path will moderate the extent to which sexual promiscuity leads to sexual aggression. To address this hypothesis, we used hierarchical or moderated multiple regression (MMR; see Bissonnette, Ickes, Bernstein, & Knowles, 1990, for a recent discussion). The goal of these analyses is to assess directly the hypothesized moderator effect associated with characteristics of the hostile path that cannot be easily operationalized within the structural modeling framework. For this purpose, we first created for each subject component scores on hostile masculinity and on sexual promiscuity. We did this by converting the individual indicator variables of each of these latent factors into  $Z$  scores, and then we combined them and divided by the square root of 2 to yield a component score that has a mean of 0 and a standard deviation that is close to 1. (We recognize, of course, that this procedure provides only an approximation of the latent factor scores.) Then we used MMR to assess the interaction effect between HM and sexual promiscuity (SP), which was significant for sexual aggression,  $F(1, 1709) = 69.87, p < .0001$ , but not for nonsexual aggression,  $F(1, 1709) = .03, p = ns$ . Later in this article we illustrate the form of this interaction. Given the large sample size and high power associated with the test of this statistically significant interaction, the eta-squared value for the sexual aggression effect was also calculated and found to be .04. In other words, this interaction effect uniquely accounts for an additional 4% of explained variation in the prediction of sexual aggression.

### *Comparing Excluded Versus Nonexcluded Subjects*

The analyses reported above used only subjects who had data for both sexual and nonsexual aggression ( $n = 1,713$ ). Because the full sample originally gathered was designed to be a random sample of the college population, we were concerned that the exclusion of subjects with missing data on nonsexual aggression might have affected the conclusions' generalizability. To assess this possibility, we compared the model described above using the 1,713 subjects who had data for both sexual and nonsexual aggression (referred to below as Group A) versus the 939 subjects who had data on sexual aggression only (Group B). Obviously, this comparison could be made only for sexual aggression. We constrained all regression paths and disturbances to be equal between the two groups.

Only 5 parameters (out of the 29 constrained) differed significantly between the two groups ( $p < .05$ ), and all of these may be considered noncritical differences. The difference between the

two groups that is perhaps most important occurred in the path from delinquency to attitudes. It was significant although relatively modest in magnitude in Group A only and differed significantly between the two groups. (Similarly, this path had only approached statistical significance in the earlier analysis using the replication half.) For the entire model, the analyses yielded an NFI of .94, a CFI of .97, and the amount of sexual aggression variance accounted for was 20% in Group A and 25% in Group B. These findings indicate that the fit of the model was comparable in the two groups.

We also used the MMR approach to test the interaction between hostile masculinity and sexual promiscuity for Group B subjects. A significant effect similar to that found with Group A subjects was also found here  $F(1, 935) = 13.75, p < .0002$ , although with a somewhat smaller eta-squared of .01.

To illustrate this interaction for both Groups A and B, we analyzed the combined sample ( $N = 2,652$ ). We divided subjects along the dimensions of hostile masculinity and sexual promiscuity using the component scores described above. Three levels were used for each dimension by dividing subjects into those who were (a) at or below one standard deviation from the mean (i.e., the low level), (b) between one standard deviation below and one above the mean (the medium level), and (c) above one standard deviation from the mean (the high level). We then conducted a  $3 \times 3$  analysis of variance on the sexual aggression scores. For the purposes of this analysis we did not use the log transformation of the sexual aggression data, although the conclusions are the same either way. As expected, this analysis yielded effects for hostile masculinity,  $F(2, 2643) = 36.66, p < .0001$ ; sexual promiscuity,  $F(2, 2643) = 84.55, p < .0001$ ; and the interaction,  $F(4, 2643) = 11.28, p < .0001$ . These effects had associated eta-squared values of .03 for the hostile masculinity main effect, .06 for the sexual promiscuity main effect, and .02 for the interaction of these effects. The form of the interaction is shown in Figure 2.

We conducted follow-up analyses within each level of sexual promiscuity using trend analyses and Scheffé tests for individual comparisons among means. Within the low level of SP, no significant effects were found. Within the medium level of SP, a linear trend fitted the curve within statistical error, and all groups were found to differ significantly from each other. Within high SP, a quadratic term fitted the curve, and the highest level of hostile masculinity differed significantly from the other two levels, which did not differ significantly from each other. It is noteworthy that the group that was relatively high on both sexual promiscuity and hostile masculinity ( $M = 5.24, n = 88$ ) was significantly higher in sexual aggression than were all other groups in a manner reminiscent of the synergistic pattern described by Malamuth (1986). It is also noteworthy that the data pattern is very similar to that just described when analyses are performed separately for Groups A and B.

Although these analyses illustrate the manner by which the fusion of SP and HM appear to characterize relatively high sexual aggressors, we also sought to illustrate the differences along these dimensions between men who were relatively high in nonsexual and sexual aggression compared with those high on one of these types of aggression only. For this purpose, we created four groups using, of course, the sample with data for both aggression measures ( $n = 1,713$ ). Subjects were divided into two levels (low vs. high) on the dimensions of sexual and



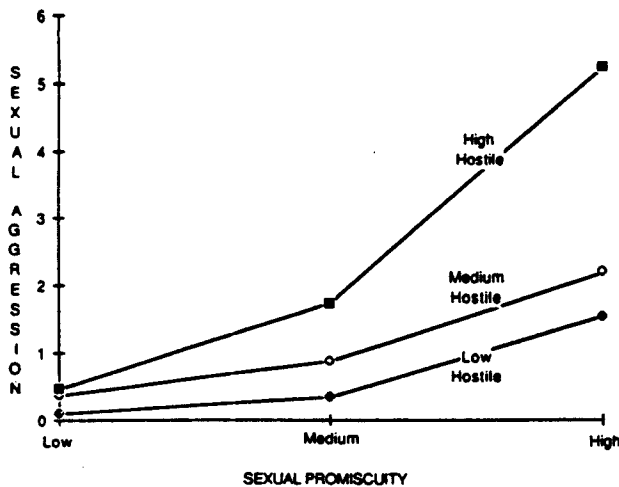


Figure 2. Mean levels of sexual aggression as a function of hostile masculinity and sexual promiscuity using all subjects with sexual aggression data ( $N = 2,652$ ).

nonsexual aggression. We first converted scores on these two aggression dimensions to Z scores. Then we divided subjects at one standard deviation above the mean, with those scoring below that point classified as relatively low on each of the aggression dimensions and those scoring above it as relatively high. The four groups thus created included (a) low on both sexual and nonsexual aggression ( $n = 1,076$ ); (b) high nonsexual aggression only ( $n = 414$ ); (c) high sexual aggression only ( $n = 120$ ); and (d) high on both types of coercion ( $n = 103$ ).

A  $2 \times 2$  multivariate analysis of variance (MANOVA) was run using the sexual and nonsexual aggression groups as the independent variables and scores on sexual promiscuity and hostile masculinity as dependent variables. The results showed very strong multivariate and univariate main effects, except for the effect of nonsexual aggression on sexual promiscuity, which was significant but much weaker. Means are shown in Figure 3. Comparisons among means using Scheffé tests showed that on sexual promiscuity, all groups differed from each other except for the group high on both sexual and nonsexual aggression versus the group high on sexual aggression only. On hostile masculinity, all groups significantly differed except that the group high on sexual aggression but low on nonsexual aggression did not differ from the group high on nonsexual aggression and low on sexual aggression. These data suggest that men who are high on both types of aggression indeed manifested very high levels of both HM and SP (i.e., about one standard deviation above the mean on both dimensions). Those high only on nonsexual aggression manifested moderately elevated levels of HM but were close to the average on the SP dimension. In contrast, men who were high only on sexual aggression were relatively high on SP and showed moderately elevated levels on the hostility dimension. Finally, those low on both types of aggression were relatively low on both SP and HM.

#### Control Variables

Analyses of the model controlling for the variables age, family income, region, and race yielded very little change from the

original model. Running the model with the residual scores resulted in an NFI of .95 and a CFI of .97. All the paths that were significant in the original model were significant here as well, and their coefficients were of a similar magnitude. These data suggest that the relationships observed in the model are not due to any confounding with these control dimensions.

#### Discussion

In this study, we sought to test a parsimonious model of central characteristics of sexual and nonsexual aggressors against women. We hoped that it would help integrate several areas of research and explain the interrelationships among variables emphasized by different investigators. Our model appears to successfully achieve these goals. The data suggest that studies focusing on such factors as hostile home environments, general delinquency, sexual promiscuity, and hostile personalities have identified important parts of the puzzle, but that a comprehensive theory needs to take all of these into consideration. This conclusion differs from that suggested by some investigators (e.g., Ageton, 1983) who have argued that only one major factor (e.g., general delinquency) need be considered. Our conclusion, is, however, consistent with our earlier research (e.g., Malamuth, 1986), which has emphasized multifactorial models.<sup>6</sup> The present work progresses beyond that earlier work by identifying the interrelations among relatively distal (e.g., home experiences, adolescent delinquency) and proximate (e.g., current hostile masculinity) factors and by assessing their relationships to both sexual and nonsexual coercion. The successful replication of the model in the two halves of the sample (as well as with subjects who had completed the sexual but not the nonsexual aggression measure) and the fact that it was not significantly altered when we used control variables add to our confidence in the findings' reliability. However, because this model is based on cross-sectional retrospective data, it is important to replicate the findings in a longitudinal context.<sup>7</sup>

<sup>6</sup> To more directly evaluate the utility of a model similar to that developed here to Malamuth's data (1986), we reanalyzed his prediction of sexual aggression data ( $N = 155$ ). We evaluated a model with Acceptance of Interpersonal Violence as the attitudes measure. It had a path into a latent hostile masculinity factor, indicated by Hostility Toward Women and dominance as a motive for sex. Early sexual experience was used as the rough equivalent of sexual promiscuity. The error term between sexual experience and sex dominance was allowed to covary. Direct paths were included from hostile masculinity and sexual promiscuity into sexual aggression. The overall model fit was excellent,  $NFI = .98$ ;  $\chi^2(4, N = 155) = .69, p = ns$ ; and 42% of the sexual aggression variance accounted for. In MMR regression analyses, the interaction between sexual experience and the component score derived for hostile masculinity significantly predicted sexual aggression, replicating the findings of the present paper.

As part of a longitudinal study, we are also now again assessing men from Malamuth's (1986) study as well as their current female partners. Although we are still collecting data, preliminary analyses indicate that sexual aggression strongly predicts behaviors about 10 years later. These behaviors include relationship distress and violence as reported by the men and their partners, as well as hostile responses revealed in videotaped problem-solving interactions as rated by blind observers.

<sup>7</sup> A caveat is also needed about self-report measures. It has been suggested that social desirability may explain associations between willingness to report various undesirable responses (Hall, 1990). Ni-

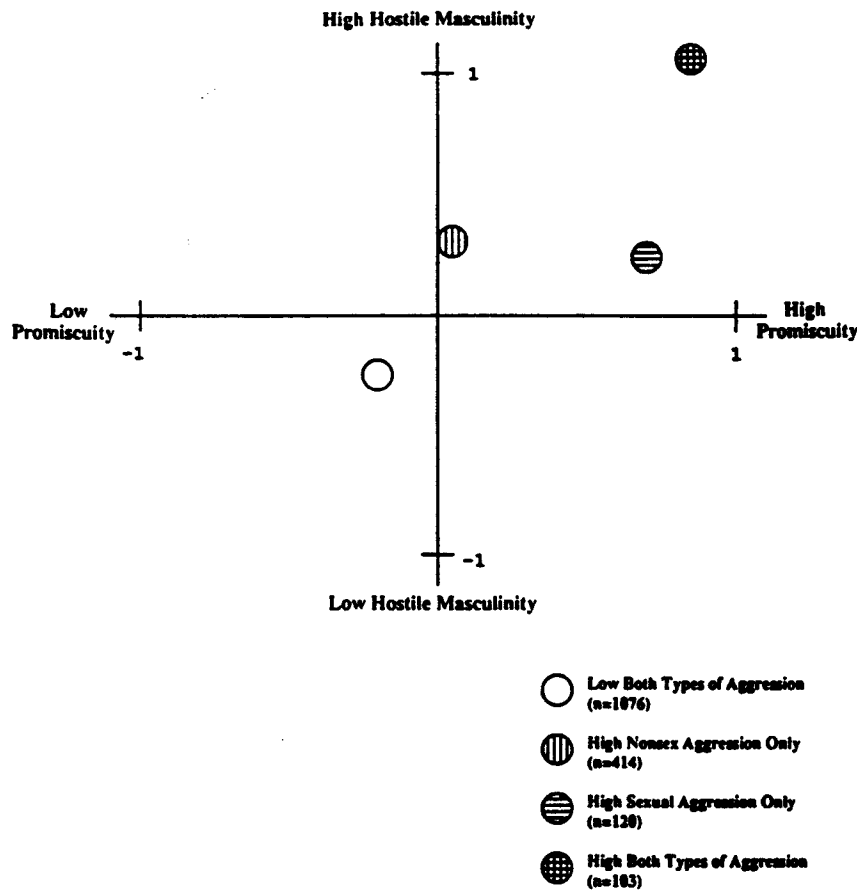


Figure 3. Means of hostile masculinity and sexual promiscuity dimensions (created by summing manifest indicators) for subjects classified as scoring high or low on sexual aggression and on nonsexual aggression.

The assertion that our model identifies key characteristics of sexual aggressors (and to some extent, nonsexual aggressors) is consistent with Frank's (1989) research. After surveying the rape literature, he identified 50 of the most promising risk variables and measured them in both male college students and prisoners of a similar age. After finding that almost all these variables correlated with sexual aggression, he used factor anal-

yses to derive four primary dimensions: (a) rape-supportive attitudes, (b) sexually aggressive friends, (c) forced sex fantasies and proclivities, and (d) sexual activity level or mild sexual aggressiveness or both. These correspond quite well with our four major latent constructs of attitudes, delinquency (particularly delinquent peer associations), hostile masculinity, and sexual promiscuity. The fact that his empirically driven approach converges with our more theoretically based research strengthens the conclusions of both studies. However, some caution might be needed in generalizing from Frank's study because of the extremely high rates of self-reported sexual aggression among his student sample.

cholson and Hogan (1990) point out that such associations may reflect a response style contaminating measures that should be controlled or content overlap between scales that should not be removed. They conclude that the evidence clearly favors the latter interpretation, although the debate continues (Walsh, 1990). Howard (1990) similarly concludes that self-reports are no better or worse than any other measurement, but that researchers should not rely exclusively on any single strategy. Fortunately, in the "aggression against women" area there has been convergence of conclusions with studies using differing measures, including physiological assessments (Malamuth, 1986), observable laboratory aggression (Malamuth, 1988), and ratings by significant others (Straus & Gelles, 1990). As well, direct assessments of possible social desirability "contamination" suggests that this is not a serious problem with general population samples who respond in confidence (Straus & Gelles, 1990).

The findings we obtained supported the model in which a hostile home environment affects delinquency, which in turn influences the sexuality and hostility paths. The part of the model that received only equivocal support was the path between delinquency and attitudes. It did not reach traditional levels of statistical significance in the replication half nor in analyses using the "excluded" sample, although it was significant in the original half and in the total sample. These data suggest that the hostility path may be less a function of the home environment and delinquency antecedents than we postulated. It may be better understood in the context of the ma-

crossystemic or cultural factors we described earlier. Of course, other origins could also be relevant. For example, this path might be viewed by Ellis's (1988) sociobiological model as reflecting the drive to control that he argues is a major cause, in interaction with the sexual drive, of sexual aggression. However, some aspects of our data are inconsistent with Ellis's model. For instance, the relatively negligible role he ascribes to attitudes does not fit well with the present findings, where attitudes constituted a relatively important element of the "hostility path," albeit their influence on coercion was indirect.

Our findings on sexual aggression suggest that it results from the combination of relatively high levels of hostile masculinity and sexual promiscuity. The data most directly supporting this conclusion were obtained when hierarchical regression analyses were used to test the predicted interaction. They suggested that when those with higher levels of hostile masculinity engage in promiscuous sex, it is more likely to be coercive, compared with those relatively low on hostile masculinity. The data are not consistent with a simple sex-drive explanation arguing that those more driven are more likely to engage in both mutually consenting and coercive sex. Had the latter been true, we would have expected that at all levels of hostile masculinity, higher sexual promiscuity would be associated similarly with more sexual aggression.

As expected, a similar pattern was not found for nonsexual aggression. It appeared to be largely a function of the hostile masculinity path. Data supportive of the relevance of such a personality configuration to this type of coercion were reported by Hamberger and Hastings (1990). They found that recidivism following treatment for spouse battering was predicted by higher narcissism (as noted earlier, a characteristic correlating highly with the negative masculinity scale used as an indicator of hostile masculinity). In our research, this personality configuration was also quite strongly related to social isolation from women. These data are consistent with reports that hostile, controlling men who engage in nonsexual aggression against their partners are often highly dependent on their partners and have few friendships or close relationships with others (Shupe, Stacey, & Hazlewood, 1987).

Support was also found for the inclusion of a latent factor underlying both sexual and nonsexual aggression against women. Although to our knowledge this has not been directly shown previously, a careful examination of the literature shows indications of such a factor. For example, among Burt's (1980) scales, Acceptance of Interpersonal Violence (AIV) is primarily composed of items regarding the use of physical aggression by a man against his wife (e.g., a man is never justified in hitting his wife) and items referring to sexual aggression (e.g., being roughed up is sexually stimulating to many women). The fact that her factor analyses supported the inclusion of these items in the same scale suggests a high level of association among them, at least at the attitudinal level.

It would be fruitful, therefore, to study sexual and nonsexual aggression against women within the same framework, rather than in largely unrelated lines of research, the pattern to date. Such research may also benefit from more general analyses of social influence. Included here should be analyses of coercion against various targets in diverse settings and reliance on this influence strategy within the context of other tactics (e.g., Buss et al., 1987). It is likely that our theoretical understanding will

be advanced by developing general principles of human influence as well as models specifically focusing on narrower instances of the use of coercion, such as aggression against women. Rather than arguing whether violence against women "is at the core of all violence in the world" (Walker, 1989, p. 695) or whether it can only be understood "within the context of the larger questions of motivations and predispositions toward violence in general" (Mills, 1990, p. 675), we suggest that the development of models in this area consider the influences of at least three types of factors: (a) those contributing to any type of coercion (e.g., general hostility), (b) those more uniquely causing sexism and violence against women (e.g., sexual arousal to dominance over women), and (c) those promoting aggression against targets perceived as "weaker," "outgroups," and so forth (e.g., ego-defensiveness).

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