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A Person-Centered, Longitudinal Approach to Sexual Victimization

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Objective: Little research has drawn attention to distinct patterns of sexual victimization across time, although previous findings strongly indicate heterogeneity. Using longitudinal data, we tested a series of latent class growth models in an attempt to find meaningful patterns of sexual victimization frequency among female college students. ***Method:*** A sample of women (n = 1,580) answered questions at 5 time points concerning their childhood, adolescent, and collegiate sexual experiences. Latent class growth analysis was used with frequencies of sexual victimization at each of the 5 time points as indicators. ***Results:*** A 4-class model was selected on the basis of its fit to the data and its interpretability. The 4 classes are interpreted as *low/none*, *moderate-increasing*, *decreasing*, and *high-increasing* trajectories of sexual victimization. Negative childhood experiences—childhood sexual abuse, witnessing domestic violence, and parental physical punishment—partially explained latent trajectory membership. ***Conclusion:*** Possible implications of this research include the development of more specialized primary, secondary, and tertiary sexual assault prevention programs based on the victimization trajectories indicated by these analyses.

Keywords: victimization, sexual aggression, person-centered analyses, longitudinal analyses, sexual assault prevention

A primary goal of sexual victimization research is to prevent it from happening—to prevent perpetrators from perpetrating, to prevent victims from being victimized. Prevention programs on college campuses traditionally aim to stop violence before it occurs by teaching women how to avoid dangerous situations and defend themselves and teaching men how to better control their behaviors. Evaluations of these programs suggest that they are effective for some, but not all, female college students (Lonsway, 1996; Yeater & O'Donohue, 1999). Traditional programs are not as effective for women who have a history of victimization as they are for those without previous assault experiences (Rothman & Silverman, 2007). This disparity suggests that sexual assault prevention would benefit from a more tailored approach that focuses on specific strategies aimed toward specific groups of victims. With prevention efforts in mind, the goal of the present study is to assess the extent to which meaningful patterns exist across time with respect to women's frequency of sexual victimization.

Researchers have studied differences among women in terms of sexual victimization for the past 3 decades. Traditionally, researchers have categorized women as those who have been victimized and those who have not and have compared these two groups in terms of predictors, correlates, and outcomes of sexual victimization (e.g., Abbey, Ross, McDuffie, & McAuslan, 1996; Corbin, Bernat, Calhoun, McNair, & Seals, 2001; Marx, Nichols-Anderson, Messman-Moore, Miranda, & Porter, 2000; McMullin, Wirth, & White, 2007). A related body of research focuses on comparisons not only between victims and nonvictims but also between women who have been victimized only once and those who have been victimized more than once. The phenomenon of revictimization is an important part of the sexual victimization literature, to the extent where exploring unique predictors, correlates, and out-

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comes of revictimization could be considered a subtopic of the sexual victimization literature (e.g., Classen, Palesh, & Aggarwal, 2005; Messman-Moore & Brown, 2006; Roodman & Clum, 2001; Sorenson, Seigel, Golding, & Stein, 1991; Yeater & O'Donohue, 2002).

The sexual victimization literature implies—although rarely explicitly states—that there is heterogeneity among women in terms of their sexual victimization experiences. Some women are victimized and others are not. Among victims, some women are victimized once and others are victimized multiple times. Researchers who compare these groups usually rely upon classification strategies—examining women's endorsements on particular measures and then constructing a categorical variable based on their responses. There is no doubt that creating categories in this way has taught us a great deal about the differences among women in terms of their victimization experiences (Koss et al., 2007). However, using a yes–no classification for victimization or revictimization does not address differences in frequency or severity; the techniques used have not allowed researchers to make more nuanced distinctions among victims.

Macy, Nurius, and Norris (2007a, 2007b) have begun exploring the heterogeneity among sexual assault survivors. They used a cross-sectional person-centered analysis—latent profile analysis—to discover differing groups of victims. Rather than assigning women to predetermined groups on the basis of their variables of interest, they allowed women's underlying patterns of responses to coalesce into a latent categorical variable based on latent profile analysis. Using contextual factors, such as previous victimization and alcohol use, they were able to classify women into one of four distinct victimization profiles; they then used multivariate analyses to compare these differing groups on cognitive, emotional, and behavioral outcomes.

As pointed out by Macy (2008), much of what is currently known about revictimization is based on studies that have used cross-sectional research designs and analyses based on the general linear model. Although longitudinal research designs have been normative within the field for decades, person-centered approaches are relatively new. Compared with methods that require longitudinal data to be analyzed with several steps across time points, developments in statistical modeling over the past few decades now allow researchers to analyze longitudinal data contemporaneously—providing a clearer picture of how their phenomena of interest appear over time. Furthermore, person-centered analyses offer researchers the opportunity to find meaningful patterns within their data (Bogat, Levendosky, & von Eye, 2005). When used in conjunction with longitudinal data, person-centered analyses allow researchers to find different and meaningful developmental trajectories within their data. It is in this light that we explore the nature of female sexual victimization.

Some of the most studied and supported predictors of adult sexual victimization have been negative childhood experiences, such as childhood sexual abuse, parental physical punishment, and witnessing domestic violence (e.g., Fargo, 2008; Humphrey & White, 2000; Koss & Dinero, 1989; Muehlenhard, Higby, Lee, Bryan, & Dodrill, 1998; Russell, 1984; Smith, White, & Holland, 2003). Using discriminant analysis, Koss and Dinero (1989) found that childhood sexual abuse was one of the best predictors of adult sexual victimization. This relation is most often interpreted as the result of traumatic sexualization, where early coercive sexual experiences shape a person's thoughts, feelings, and attitudes about sex and sexuality (Finkelhor & Browne, 1985; Koss & Dinero, 1989). Additionally, physical and emotional abuse during childhood has been linked with sexual victimization later in life (Zurbriggen, Gobin, & Freyd, 2010). Because negative childhood experiences are such strong and consistent predictors of sexual victimization later in life, they are included in the present analyses. In the event that cohesive trajectories of women are found with respect to their frequency of victimization, the power of negative childhood experience variables to predict trajectory membership will be assessed.

Latent Class Growth Analysis (LCGA)

Variable-centered analyses rely on group means and covariances with the assumption that the sample is drawn from a single homogeneous population. However, there may be different types of people within a given population whose differences are not accounted for by variable-centered analyses (Cairns & Rodkin, 1998). Person-centered analyses—such as cluster analyses, finite mixture models, and latent class analysis—group individuals into categories using a set of variables deemed relevant by the researcher. In a well-fitting model, members of each category are assumed to be similar to in-group members and dissimilar to members of other categories in terms of the relevant variables (Muthén & Muthén, 2000). Recent research on violence against women has used an applied version of latent class analysis known as *latent profile analysis* to suggest that there is heterogeneity among victims of sexual assault (Macy et al., 2007a, 2007b). Latent class analysis allows a researcher to estimate unobserved categories of people within a data set using observed categorical variables (Muthén & Muthén, 2000). This classification is based on individual probabilities of giving a certain set of responses; in a heterogeneous sample, people's probabilities coalesce into latent categories.

Growth mixture models (GMM; Muthén, 2004; Muthén & Asparouhov, 2009; Muthén & Shedden, 1999)—where more than one latent class is estimated—allow researchers to discover latent heterogeneity within their longitudinal data. The rationale for these analyses stems from the person-centered assumption that there are qualitatively different subgroups within some populations. Longitudinally speaking, these latent subgroups each display separate trends, or trajectories, of scores or behaviors across time. GMM is positioned to handle highly skewed and categorical data (Feldman, Masyn, & Conger, 2009), which are often characteristics of data collected on sexual victimization. Researchers use a theoretical basis to model subgroups or classes within their data instead of estimating parameters for an entire sample. This process results in multiple normally distributed latent classes comprised of differing proportions of the overall sample and mean structures.

GMM allows the assumption of a normally distributed sample to be relaxed; it estimates multiple, normally distributed classes within a skewed sample. This is especially useful in the analysis of sexual victimization because a large portion of the population has not been victimized, resulting in skewed datasets (Swartout, Swartout, & White, in press). There are instances, however, when within-class normality cannot be assumed. For these instances, a more simplified case of GMM—LCGA—can be used. In LCGA, unlike GMM, within-class variances are fixed at zero (Feldman et al., 2009; Nagin, 1999; Roeder, Lynch, & Nagin, 1999). The classes that correspond with more severe behaviors or experiences are likely to account for a small number of cases and are unlikely to be normally distributed. LCGA can be used, then, to estimate latent classes without violating the assumption of normality held by the more general GMM. Because there is no within-class variability, individual differences found through LCGA are entirely attributed to latent class membership (Muthén & Muthén, 2000). This class structure forms a categorical variable that can then be regressed on exogenous variables in an effort to predict latent class membership.

Finally, a larger sample size is always preferable when conducting this type of analysis. An additional advantage of using LCGA is that it does not require listwise exclusion of cases containing missing data; all data may be used as they were collected. Some participants may have completed only one time point, others may have completed them all, and still others may have completed some number in between. In the present study, therefore, all data are included in the analysis to provide the most accurate picture of the sample and to make the most of all data originally collected.

The Present Study

To our knowledge, little research has drawn attention to distinct patterns of sexual victimization across time. The present article does just that. Using longitudinal data, we tested a series of LCGA models to assess for meaningful patterns of sexual victimization frequency among female college students. Our first research question was: Is there latent heterogeneity within our sample in terms of sexual victimization frequency across time? We propose that there are cohesive subgroups of women in terms of their frequency of sexual victimization across adolescence and college. On the basis of previous sexual victimization literature, we expect to find at least two distinct subgroups: women who are not victimized during adolescence and college and women who are consistently victimized across this time period, with the nonvictimized group accounting for the highest proportion of the sample (Classen et al., 2005). We expect at least one additional cohesive subgroup of women to emerge, although the exact nature of additional groups cannot be predicted on the basis of previous research—hence the need for, and unique contribution of, the present analyses.

After choosing the best fitting model of patterns of victimization across time, we added negative childhood experiences as covariates—childhood sexual abuse, witnessing domestic violence, and parental physical punishment—to the model in an attempt to predict latent trajectory membership. The addition of these covariates allows us to address our second research question: If there are distinct latent subgroups of women in terms of their sexual victimization frequency, can negative childhood experiences differentiate between these groups? Consistent with previous literature, we hypothesized that childhood experiences will differentially predict victimization trajectory membership.

Method

Participants

Data for these analyses are from a larger longitudinal study of social experiences (data are available at http://dx.doi.org/10.3886/ICPSR03212). Participants were women ages 18 to 19 enrolled at a midsized institution in the southeastern United States. The Carnegie Foundation (1987) has deemed this university representative of U.S. state colleges, the type that approximately 80% of all U.S. college students attend. Two incoming classes of first-year female students were invited to complete a series of five surveys over their 4 years of college; 85% of women invited agreed to participate by completing the initial survey (n = 1,580). Approximately 25.3% of women in the sample self-identified as African American, 70.9% as Caucasian, and 3.8% as other ethnic groups. Participants' average age was 18.3 years, and 92.8% had never been married.

Procedure

Initial data collection was made a part of the university's first-year orientation for 2 consecutive years. Hour-long sessions were conducted by trained undergraduate orientation leaders. Researchers explained the purpose and method of data collection to participants and acquired informed consent before the first survey was administered. To protect the confidentiality of participants, we obtained a Federal Certificate of Confidentiality from the National Institute of Mental Health. Participants were given $15 in exchange for each survey they completed. The surveys were designed to gauge a number of social experiences including predictors, correlates, and consequences of interpersonal violence.

The first survey, presented during the fall semester of the women's first year of college, asked about adolescent and childhood experiences. The remaining four surveys—administered either in group sessions or through mailed surveys during the spring semesters of each of their 4 years of college—asked questions about behaviors and experiences that had occurred since the last survey. Yearly participant retention rates were 89%, 86%, 80%, and 78%, respectively; 47.2% of the initial sample completed all five time points of the study. Patterns of attrition are described later in more detail.

Measures

Sexual Experiences Survey (SES; Koss, Gidycz, & Wisniewski, 1987). The SES was used to measure adolescent and college sexual victimization. Young women were asked during the first survey to indicate how many times since the age of 14 they had experienced a variety of sexual experiences (Cronbach's alpha = 0.93). Eleven questions directly addressed sexual experiences ranging from consensual sexual activity ("Have you ever had sexual intercourse with a man when you both wanted to?") to verbal coercion ("Have you given in to sexual intercourse when you didn't want to because you were overwhelmed by a man's continual arguments and pressure?") to forced sexual activity ("Have you engaged in sexual intercourse when you didn't want to because a man threatened or used some degree of physical force [twisting your arm, holding you down, etc.] to make you?"). At each follow-up, participants were asked to indicate how many times they had experienced each behavior since the last survey—instead of since age 14 (Cronbach's alphas for the four years of college were 0.89, 0.95, 0.97, and 0.82, respectively). For the present analysis, victimization frequency was calculated by totaling the number of sexual victimization endorsements at each time point for each woman.

Negative childhood experiences. Only the first survey included measures of childhood victimization. Three forms of victimization were used to predict trajectory membership in the analysis: childhood sexual abuse, parental physical punishment, and witnessing domestic violence. Each form of abuse was assessed on the basis of measures used by Koss and colleagues (1987).

Childhood sexual abuse. Childhood sexual abuse was assessed with four items concerning sexual acts perpetrated by an adult or any coercive sexual act perpetrated on the participant by a similarly aged peer before the age of 14 (e.g., "A person fondled you in a sexual way or touched your sex organs or asked you to touch their sex organs"). The four items used to construct the childhood sexual abuse variable were measured on 5-point scales ranging from 1 (*never had this experience*) to 5 (*more than five times*); Cronbach's alpha = 0.70. A frequency of childhood sexual abuse was calculated by recoding and summing across all four items, creating a response range of 0 to 24.

Parental physical punishment. Parental physical punishment was measured in a way that captured young women's recurrent experiences rather than experiences that may have happened once or twice during childhood: "Physical blows (like hitting, kicking, throwing someone down) sometimes occur between family members. For an average month, when you were growing up (i.e., ages 8 to 14 years), indicate how often one of your parents did this to you." Responses were recorded on a 5-point scale ranging from 1 (*never*) to 5 (*over 20 times*). For the present analysis, responses were recoded to yield a frequency measure ranging from 0 to 21.

Witnessing domestic violence. Witnessing domestic violence was similarly measured by asking women to respond to this statement: "For an average month, indicate how often one of your parents or stepparents delivered physical blows to the other." Responses were recorded on a 5-point scale ranging from 1 (*never*) to 5 (*over 20 times*). Similar to the parental physical punishment variable, responses were recoded to yield a frequency measure ranging from 0 to 21.

Analytic strategy. A LCGA was conducted with Mplus version 5.1 (Muthén & Muthén, 2008) with maximum likelihood estimation and robust standard errors to account for missingness within the sample across time. This estimation method adheres to the assumption that data are missing at random, uses all of the data present in the sample to estimate model parameters, and allows variables included in the analyses to be related to patterns of missing data (McKnight, McKnight, Sidani, & Figueredo, 2007). Women's frequencies of sexual victimization at each time point—adolescence to fourth year of college—were entered as latent trajectory class indicators in the analysis. The latent trajectory class structure, therefore, is based on patterns of sexual victimization frequency across time. Because these variables represent frequencies of behavior during a given time frame, they were designated as count variables within the analysis. By designating the dependent variable as *count*, the analysis uses a Poisson distribution to estimate the model where the conditional mean equals the conditional variance (Long, 1997).

Negative childhood experiences—childhood sexual abuse, parental physical punishment, and witnessing domestic violence—were entered into the model as covariates. These variables were used as predictors of latent trajectory membership through multinomial logistic regression (Hosmer & Lemeshow, 2000). This part of the analysis plan assessed the power of past negative childhood experiences in discriminating between latent trajectory classes.

The data were fit to LCGA models ranging from one to five classes. When building a mixture model, there is no singular indicator of how well a model fits the data; multiple statistical indicators must be paired with a theoretical understanding of the constructs to determine an appropriate class structure (Jackson, Sher, & Schulenberg, 2005; Tucker, Orlando, & Ellickson, 2003). The Bayesian information criterion (BIC) and the Lo–Mendell–Rubin adjusted likelihood ratio test were used to compare model fit. Entropy and posterior probabilities were also used to compare how cleanly each model classified cases into each class structure (Muthén, 2004). In addition to these model fit and classification statistics, plots of estimated means for each model were reviewed. This allowed the comparison of heterogeneous class structures suggested by each model with past theoretical and empirical information concerning frequency of sexual victimization and also helped to factor parsimony into the model selection process. Negative childhood experience covariates were used in an attempt to establish additional discriminant validity between the latent trajectory classes (Muthén, 2003).

Attrition. No evidence was found for differential attrition in terms of the variables used for the present analyses. No statistically significant differences were found on sexual victimization between women who remained in the study for all 5 time points and women who dropped out of the study at any point (see Graves, Sechrist, White, & Paradise, 2005, footnote 2, for more detail on these analyses). Further comparisons of demographic and other relevant variables revealed no statistically significant differences as a function of time in the study for child sexual abuse, witnessing domestic violence, parental physical punishment, dating frequency, number of dating partners, race, or relationship status at Time 1. However, young women who dropped out of the study before the fifth time point reported more signs of psychological distress, being more sexually active as adolescents, and getting drunk more, although frequency of drinking was not different.

Results

Descriptives

The three negative childhood experience variables modestly yet significantly interrelated based on Spearman's rank correlations: child sexual abuse with witnessing domestic violence ($\rho = .11$, $p < .01$); child sexual abuse with parental physical punishment ($\rho = .11$, $p < .01$); and witnessing domestic violence with parental physical punishment ($\rho = .34$, $p < .01$). Of the sample, 19.4% reported child sexual abuse ($M = 0.62$, $SD = 1.38$); 25.8% reported parental physical punishment ($M = 0.37$, $SD = 0.75$); and 9.2% reported witnessing domestic violence ($M = 0.12$, $SD = 0.44$). Across the five time points, percentages of women who experienced any type of unwanted sexual experience were as follows: 27.2% in adolescence ($M = 1.31$, $SD = 3.44$); 17.0% in the first year of college ($M = 1.05$, $SD = 3.73$); 14.5% in the second year of college ($M = 0.83$, $SD = 3.02$); 15.2% in the third year of college ($M = 1.19$, $SD = 4.78$); and 15.6% in the fourth year of college ($M = 1.11$, $SD = 3.88$).

Model Selection

All five models converged normally. Fit statistics for each model are found in Table 1. The Lo–Mendell–Rubin adjusted likelihood ratio test provides two important pieces of information: The 4-class model fits the data significantly better than the 3-class model ($p < .01$); and the 5-class model does not explain the data significantly better than the 4-class model ($p = .47$). The 4-class model has a higher BIC compared with the 5-class model; also, the entropy is higher (.911 vs. .892), signifying better classification quality. The difference in classification quality is also apparent in the average latent class probabilities: The 4-class model probabilities ranged from .931 to .959, whereas the 5-class model probabilities ranged from .856 to .960. The 4-class model was ultimately selected on the basis of model fit to the data as well as interpretability, both of which are discussed throughout the remainder of this article (see Figure 1 for the estimated means plot of the 4-class model). The following are interpretations of each of the four latent trajectory classes based on trajectory parameters noted in Table 2 and the plot depicted in Figure 1.

Class 1: low/none. On the basis of the estimated model, Class 1 has the highest proportion of membership with approximately 67% of the sample ($n = 1{,}007$). The intercept of Class 1 is significantly lower than average, and the linear slope is significantly negative (see Table 2 for parameter estimates of each latent class). The significant negative linear slope is due to the fact that sexual victimizations reported at the first time point spanned 4 years

Table 1
Fit Statistics for Each Class Structure Estimated

Model	BIC	Adj. LRT	Entropy
One class	32,114.41		**1.000**
Two class	20,802.39	10,998.13 ($p < .001$)	**0.964**
Three class	18,675.84	2,085.23 ($p = .06$)	**0.937**
Four class	17,045.67	1,605.67 ($p < .01$)	**0.911**
Five class	16,260.51	787.34 ($p = .47$)	**0.892**

Note. Boldface type indicates the selected model. BIC = Bayesian information criterion; Adj. LRT = Lo–Mendell–Rubin adjusted likelihood ratio test.

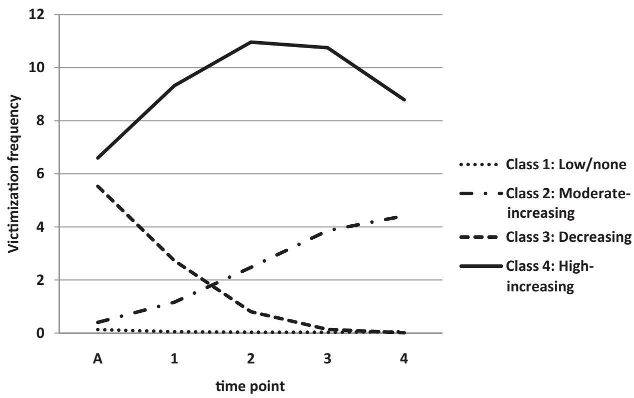

Figure 1. Estimated mean frequency of sexual victimization at each time point.

(ages 14–18), whereas the remaining four time points asked about victimization experiences over a 1-year period. Figure 1 indicates the true nature of Class 1—a very low and consistent frequency of victimization across time. This consistently low pattern of sexual victimization across the 5 time points led to the interpretation of Class 1 as the low/none trajectory of sexual victimization. Because participants categorized in Class 1 reported little to no victimization across the study, this trajectory was used as a reference group for the multinomial logistic regressions of latent trajectory class membership on negative childhood experience covariates.

Class 2: moderate-increasing. Class 2 accounts for approximately 12% of the sample (n = 190). The intercept of Class 2 is significantly lower than average, and the linear slope is significantly positive. Figure 1 depicts this class as having a very low frequency of victimization during adolescence but consistently increasing across the subsequent four time points to a relatively high frequency of victimization during the fourth year of college. This led to interpretation of Class 2 as the moderate-increasing trajectory.

Class 3: decreasing. Class 3 accounts for approximately 15% of the sample (n = 220). The intercept of Class 3 is significantly higher than average; although the linear slope of Class 3 is nonsignificant, it has a significant negative quadratic effect. Figure 1 shows that this class is estimated to have a high frequency of victimization during adolescence but a sharp decline across the next three time points to infrequent victimization during the fourth year of college. This led to interpretation of Class 3 as the decreasing trajectory.

Class 4: high-increasing. Class 4 has the lowest proportion of membership with approximately 5.5% of the sample (n = 86). Both the intercept and linear slope of Class 4 are positive and significant. Figure 1 indicates that the trajectory of Class 4 starts off high in adolescence and continues to increase across the subsequent four time points. Figure 1 illustrates that the estimates of Class 4 are higher at each time point than the estimates of any other class.

Table 2
Characteristics for the 4-Class Model of Sexual Victimization

		Frequency of sexual victimization		
Latent trajectory class	% Sample	Intercept (and *SE*)	Linear slope (and *SE*)	Quadratic (and *SE*)
1. Low/none	67.4	−2.02 (0.17)***	−1.03 (0.20)***	0.21 (0.05)***
2. Moderate-increasing	12.4	−0.91 (0.32)**	1.22 (0.27)***	−0.16 (0.05)**
3. Decreasing	14.6	1.71 (0.08)***	−0.45 (0.27)	−0.26 (0.12)*
4. High-increasing	5.5	1.89 (0.20)	0.44 (0.19)*	−0.09 (0.04)*

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

These women form the most frequently and consistently victimized class within our sample; this led to interpretation of Class 4 as the high-increasing trajectory.

We tested for the possibility that trajectory membership might be related to dropout from the study due to the negative outcomes associated with sexual victimization. Although a chi-square analysis suggested a significant relation between trajectory membership and attrition from the study, Pearson $\chi^2(12, N = 1{,}580) = 80.48$, $p < .001$, examination of standardized residuals revealed that only three cells in the 4×5 matrix accounted for this effect and were contrary to expectation (i.e., indicated that participants were less likely to drop out). This pattern suggests that dropout from the study is not a viable explanation of trajectory membership.

The Association of Negative Childhood Experiences With Sexual Victimization Trajectories

Observed negative childhood experience variables—childhood sexual abuse, witnessing domestic violence, and parental physical punishment—were specified as predictors of latent trajectory membership. With the low/none trajectory as the reference group, multinomial logistic regressions suggest that negative childhood experiences are predictive of one's future trajectory of sexual victimization (see Table 3). As the frequency of childhood sexual abuse increases, the odds of a woman's classification into the moderate-increasing, decreasing, and high-increasing trajectories, compared with the low/none trajectory, all significantly increase (all ps $< .001$). This suggests that childhood sexual abuse is a strong predictor of sexual victimization, regardless of victimization pattern across time. As the frequency of witnessing domestic violence increases, the odds of a woman's classification into the decreasing trajectory, compared with the low/none trajectory, significantly increase ($p < .05$). Similarly, as the frequency of parental physical punishment increases, the odds of a woman's classification into the moderate-increasing and high-increasing trajectories, compared with the low/none trajectory, both significantly increase (ps $< .05$).

Given that both the decreasing and high-increasing trajectories began with elevated frequencies of sexual victimization in adolescence, we conducted an additional comparison to determine whether childhood experiences distinguished between memberships in these two trajectories. As the frequency of parental physical punishment increases, the odds of a woman's classification into the high-increasing trajectory, compared with the decreasing trajectory, significantly increase (estimate/*SE* = 1.99, $p < .05$). All other relationships between negative childhood experiences and latent trajectories were nonsignificant.

Table 3
Sexual Victimization Trajectory Class on Negative Childhood Experiences

Latent trajectory class	Estimate/*SE*		
	CSA	WDV	PPP
Moderate-increasing	3.31^{***}	0.27	2.29^{*}
Decreasing	4.47^{***}	2.56^{*}	0.74
High-increasing	4.47^{***}	0.06	3.01^{**}

Note. Results based on multinomial logistic regressions using the posterior probabilities within the latent class growth analysis with the low/none trajectory class used as the reference group. CSA = childhood sexual abuse; WDV = witnessing domestic violence; PPP = parental physical punishment.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Discussion

The present results document heterogeneity in women's frequency of sexual victimization across time and suggest that the patterns are at least partially predicted by childhood victimization experiences. These results potentially can transform the way researchers, practitioners, and policymakers think about sexual victimization. Sexual victimization is more than an event; rather, it should be conceptualized as a multifaceted phenomenon involving yet-to-be understood roles of various types of childhood experiences and life transitions.

Additionally, the effects of all forms of childhood victimization on later sexual victimization are not the same. Our results indicate that experiences of childhood sexual abuse are associated with increased risk of sexual victimization at some point in the future, regardless of pattern (see moderate-increasing, high-increasing, and decreasing trajectories). Experiences of parental physical punishment were associated with increased risk across time, despite levels of adolescent sexual victimization (see moderate-increasing and high-increasing trajectories). In contrast, witnessing domestic violence appears uniquely associated with high frequency of sexual victimization in adolescence and decreased risk through college (see decreasing trajectory), perhaps suggesting that the transition away from a violent home has a protective role in young women's lives. Whereas the transition to college may be a protective factor for those in the decreasing trajectory, this transition may be a risk factor for other women (both moderate-increasing and high-increasing trajectories), with childhood sexual abuse and parental physical punishment apparently having a continuing impact over time.

These results suggest the need for future research on patterns of victimization over time, as well as other possible predictors and correlates of these patterns. Because these findings represent a potential shift in the way we conceptualize sexual victimization, an initial step must be to replicate these findings of sexual victimization frequency as well as examine childhood predictors in relation to other markers of sexual victimization. These analyses focused only on one facet of women's sexual victimization experiences: frequency. Further research should begin to assess for differential patterns of victimization over time with measures of sexual assault severity or other assault characteristics, including relationship to perpetrator, alcohol use, or situational context.

Implications

The ultimate goal of research on sexual victimization is to decrease its occurrence. The results of these analyses may help to meet that end. Many sexual assault prevention programs have been indiscriminately applied to all females with the belief that all females were at relatively equal risk of becoming victims. The differential patterns of sexual victimization apparent in our data can be used to inform prevention strategies tailored to specific groups of women.

From a public health perspective, there are three types of prevention approaches: primary, secondary, and tertiary prevention (Caplan, 1964). Primary prevention focuses on interceding and inhibiting an event from happening: preventing a woman who has never experienced any type of sexual assault from ever being assaulted. Our results certainly suggest that primary prevention efforts should address childhood abuse experiences—a call frequently seen in the literature. Preventing childhood victimization will reduce risk for sexual victimization in adolescence and later in life. Secondary prevention focuses on targeting those who have already experienced some harm in an effort to prevent further injury. To prevent further assaults from occurring, programs should be designed to teach women who have experienced childhood abuse or adolescent sexual assault about the potential risk of patterns of victimization in emerging adulthood. For example, if we know that a woman was a victim of childhood sexual abuse, it may be effective to involve her in a more in-depth, targeted, prevention program during college, even if she did not experience any unwanted sexual experiences during adolescence (moderate-increasing vs. low/none trajectories). Acknowledgment of the role that a negative home environment plays in victimization risk—independent of previous victimization itself—may prove to be an effective approach to prevention. Tertiary prevention is focused on providing care to those who have already experienced the negative outcomes associated with assault. Our research suggests that some women have elevated and consistent, even increasing, risk of sexual assault over time. These groups of women should be targeted with intensive efforts to reverse these trends and lower their frequencies of sexual victimization to null levels.

The knowledge of differing patterns of sexual assault risk can inform prevention strategies at each of these levels. It is well established that negative childhood experiences create risk for long-term victimization. The findings of the present study allow prevention experts to craft even more nuanced prevention strategies. Practitioners and counselors are encouraged to assess clients for patterns of victimization over time to be able to give them insight into possible future risk of further victimization. In one-on-one therapy, the client and practitioner can begin to craft individualized interventions to disrupt this potential pattern. For traditional psychoeducational programs that are often delivered to groups, information should be provided that encourages individuals with certain experiences, such as childhood abuse or unwanted adolescent sexual experiences, to seek help and support to reduce future risk. Group facilitators can provide the information for women to seek help on their own, thereby respecting their privacy and autonomy while also empowering them with knowledge, skills, and resources.

It is important that both researchers and practitioners protect against the tendency to think of these trajectories as inevitable and fixed. The experience of childhood abuse does not doom a person to a lifetime of victimization. Prevention programs, no matter their focus, must protect women against being inappropriately labeled. It should be possible, however, to develop prevention programs that address at-risk groups without singling out specific individuals. Knowledge concerning longitudinal patterns of risk can arm practitioners more fully in their mission of long-term prevention.

Limitations

There has been some debate within the methodological literature about interpretations of LCGAs and growth mixture models in general. Bauer and Curran (2003a, 2003b) pointed out that there are two equally plausible explanations for the fit of a growth mixture model: (1) The population of interest is heterogeneous and contains cohesive subgroups; or (2) the data constitute a nonnormal sample, and model fit is purely a function of this lack of normality. These two explanations are very similar in practice but lead to very different and possibly inaccurate conclusions, especially when cohesive latent subgroups are assumed on the basis of data that are actually from a homogenous population. Although no statistical indicator currently exists to distinguish results due to nonnormal data or latent subgroups when a sample contains missing data, we feel confident that we have discerned meaningful cohesive latent subgroups in the present research. The idea of heterogeneity among victims is not new within the literature on sexual violence (Macy et al., 2007a, 2007b). Therefore, our interpretation of homogeneous subgroups within the population fits with substantive theory within the field. Furthermore, covariates known to predict sexual victimization—negative childhood experiences—provided meaningful distinctions among the latent trajectory classes.

All data used for these analyses were collected from college students at one southeastern U.S. university. Although The Carnegie Foundation (1987) has found students at this institution to be representative of all students at U.S. state colleges, the findings of this study may not generalize to all U.S. college students, students from other countries, or noncollege populations. No findings or theories suggest a different pattern of sexual victimization trajectories for different samples of women; however, caution should be used in generalizing these findings.

Another limitation of this work was its primary focus on the frequency of women's sexual assault experiences. By limiting the scope of the present research to frequency of victimization, all unwelcomed sexual experiences are given the same weight in the analysis. Future research designs that include examinations of sexual assault severity or other assault characteristics will ameliorate and possibly support the present findings. The measures of negative childhood experiences included in this project, although heavily used in the sexual victimization literature, do not constitute a validated scale with known psychometric properties; future replications of these findings should include a more comprehensive measure of childhood experiences.

Conclusion

The present study makes the case for subgroups of college women in terms of their patterns of sexual victimization frequency across time. LCGA identified four classes across adolescence and 4 years of college. These four classes are interpreted as low/none, moderate-increasing, decreasing, and high-increasing trajectories of victimization across time. Negative childhood experiences, found by previous research to be predictive of sexual victimization—childhood sexual abuse, witnessing domestic violence, and parental physical punishment—distinguished the latent trajectory classes. Application of research that distinguishes cohesive subgroups of victims may inform the disparate efforts of sexual assault prevention programs.

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