2003

Problem Behavior Theory in an Ethnically Diverse Female Prison Sample

Kristen J. Quinlan
University of Rhode Island

PROBLEM BEHAVIOR THEORY IN AN ETHNICALLY DIVERSE FEMALE PRISON SAMPLE

BY

KRISTEN J. QUINLAN

THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE
MASTER'S DEGREE
IN
PSYCHOLOGY

UNIVERSITY OF RHODE ISLAND
2003

Abstract

Research on female inmates has shown that this population engages in a variety of risky behaviors, like alcohol abuse, drug abuse, and risky sexual activities, and that these problem behaviors seem to share high positive intercorrelations. Problem Behavior Theory (PBT) explains these positive intercorrelations by viewing problem behaviors like alcohol abuse, drug abuse, and risky sexual activities as a single factor, or a single behavioral syndrome. Although the presence of this syndrome has been demonstrated in a variety of ethnically diverse adolescent samples, little work has been done to evaluate its presence in a sample of adults. Adult female inmates (N = 234) from a New England prison facility answered questions about their alcohol use, drug use, and sexual activities prior to entering prison. There were no significant differences noted across ethnicity in number or type of risky behaviors. Exploratory factor analysis (EFA) was used to examine the dimensions of alcohol abuse, drug abuse, and risky sexual practices. Once established factors were found, confirmatory factor analysis (CFA) was used to test for the existence of a single "problem behavioral syndrome". CFA revealed that although each type of problem behavior offers some unique contribution, a single behavioral syndrome can account for their intercorrelations. Because problem behavior syndrome was found in the prison sample, future steps can be taken to evaluate which personality, social, and other behavioral constructs are related to this syndrome, and appropriate interventions can then be designed.

Table of Contents

List of Tables

List of Figures

The number of incarcerated women has increased dramatically over the past two decades. The population of women in federal and state prisons tripled between 1980 and 1990, and continues to grow today (Henderson, 1998). Research on female inmates has shown that this population engages in a variety of risky behaviors. For example, women in prison use more drugs and harder drugs than incarcerated men (Langan & Pelissier, 2001), and drug abuse is the primary reason women enter prison (Henderson, 1998). Substance use rates have been cited to be between 60-80% in female prison samples (Marquart, Brewer, Mullings, & Crouch, 1999). Female prisoners are also more likely to be involved in addictive drug use (Kassebaum & Chandler, 1994). In addition to drug use, alcohol rates are also quite high in prison populations; reports have cited that almost 60% of all incarcerated women in state prisons had used alcohol during the 12 months before their incarceration (Marquart, Brewer, Mullings, & Crouch, 1999). In addition to these substance use issues, a majority of incarcerated women report engaging in high-risk sexual practices (Mullings, 1998). Some studies have shown that as many as 38.9% of incarcerated women have had a sexually-transmitted disease at some point in their lifetime (Hogben, St. Lawrence, & Eldridge, 2001).

Problem Behavior Theory

In a longitudinal study in 1977, Jessor and Jessor found that certain problem behaviors, like alcohol abuse, drug abuse, and risky sexual practices, had high positive correlations with each other and high negative correlations with other behaviors like church attendance and other conservative practices. They also found that these problem behaviors had high correlations with a variety of personality and social factors (Donovan, Jessor, & Costa, 1988). These findings led to the

development of Problem Behavior Theory (PBT), which states that problem behaviors like alcohol abuse, drug abuse, and risky sexual practices can be best understood by examining three main systems: the personality, the perceived environment, and an individual's behavioral practices (Harlow, Mitchell, Fitts, & Saxon, 1999).

Problem behavior theory is a social-psychological theory, meaning that it focuses both on the individual and on environmental/contextual influences (Dinh, Roosa, Tein, & Lopez, 2002). When focusing on the individual, or the personality dimension of problem behavior theory, attitudinal variables like academic achievement and tolerance of deviance are often measured (Dinh, Roosa, Tein, & Lopez, 2002). The personality dimension of problem behavior could also look at a person's core values, like aspirations and other self-actualization principles (Goff & Goddard, 1999). Finally, Jessor (1993) suggests that self-esteem and expectation for success could also contribute to the personality dimension of the theory.

Jessor (1993) stated that the perceived environment dimension of problem behavior theory involves an individual's relationships with friends and parents, and friend involvement in problem behavior. Variables like peer approval and peer modeling of problem behavior are often used when studying this dimension (Dinh, Roosa, Tein, & Lopez, 2002). Paschall, Ringwalt, and Flewelling (2003) examined the perceived environment system by looking at the effect of environmental dimensions like socioeconomic status, parenting, father absence, and affiliation with delinquent peers on delinquent behavior in a sample of African-American male adolescents. Results suggested that adolescents are less likely to engage in

delinquent behavior when closely monitored by their families. Other studies have demonstrated that environmental factors like perceived sense of belonging can also inhibit some delinquent behaviors (Goff & Goddard, 1999).

Current research of delinquent activities has shown high positive intercorrelations between different types of problem behaviors. For example, Testa and Collins (1997) found that females were significantly more likely to engage in risky sexual activity after using alcohol than when not using alcohol. Sexual risk factors have also been shown to differ across different types of drug users. Cotton-Oldenburg, Jordon, Martin, & Kupper (1999) showed that crack-smoking injectors had the highest risk of contracting sexually-transmitted HIV, "followed by injecting drug users, crack smokers, and then other drug users (p.130)". Drug abusers are also more likely to be involved in prostitution (Marquart et al.., 1999). A community sample of 180 African American women found that women who had smoked crack cocaine in the past month were more likely to have had multiple sexual partners. Further, the study found that women who had consumed alcohol on almost a daily basis were more likely to engage in risky sexual practices, like not using condoms (Wingwood & DiClemente, 1998).

These high positive intercorrelations have also been seen in incarcerated samples. For example, studies have shown that incarcerated women with an addictive disorder (like alcohol or substance dependence) exhibit more HIV-related risky sexual behaviors than the general population of women in prison (Guyon, Brochu, Parent, & Desjardins, 1999). A 1994 study of 104 incarcerated women found that women who were involved in trading sex for money were more likely to be regular crack users, and were more likely to experience alcoholism (Schilling,

El-Basesel, Ivanoff, Gilbert, Su, & Safyer, 1994). Delinquency and violence measures are also related to substance use in prison samples. For example, violent offenders are more likely to have started using alcohol and cocaine at an earlier age (Logan & Leukefeld, 2000).

PBT explains these links by stating that the positive intercorrelations between problem behaviors can be best explained by viewing them as a single factor, or a single behavioral syndrome (Donovan & Jessor, 1985; Donovan et al., 1988; Harlow et al., 1999). Problem behaviors can be characterized as "socially defined by the norms of conventional society as undesirable for adolescents to engage in (Donovan et al., 1988, p. 762)", often involving "the possibility of negative social sanctions (Donovan et al., 1988, p. 762)". Problem behaviors are most often operationalized by using measures of alcohol use, drug use, risky sexual activity, and other delinquent-type behavior, like vandalism, shoplifting, and defiance toward parents (Gilmore, Spencer, Larson, Tran, & Gilchrist, 1998).

Evidence that problem behaviors may actually be part of a single syndrome can be seen when looking at problem behaviors developmentally. Donovan and Jessor (1985) have argued that as individuals begin to disengage in problem behaviors, they tend to disengage all at once. Evidence of this disengagement has also been seen in prison samples, where research has noted that prisoners often "age out" of unhealthy behaviors (Mullings, 1998).

The "syndrome" of problem behavior has also been noted in a variety of culturally diverse samples. For example, a 1998 study by Gilmore et al.. examined an ethnically diverse sample of pregnant adolescents and found support for the idea of problem behavior as a single syndrome. In addition, a 1996 dissertation study

by Jane-Ellen Dick supported the idea of a single syndrome of problem behavior in students who were deaf or hard-of-hearing. A 1994 study by Brook, Balka, Abernathy, and Hamburg also found an underlying problem behavior syndrome in a large sample of over 1300 African-American and Puerto Rican male and female adolescents.

Present Study

Although problem behavior syndrome has been supported in a variety of diverse adolescent samples, little work has been done to evaluate its usefulness in a sample of adults. Because women who are incarcerated are at high risk for past and current problem behavior, the applicability of the model for this population needs to be validated. The present study has several purposes. This study will first examine problem behaviors across racial/ethnic background, to ensure that problem behaviors remain uniform across self-identified race/ethnicity.

This study will then evaluate several manifest variables to determine the dimensions of alcohol use, drug use, and sexual behavior. Following this exploratory approach, the study will look to see if alcohol use, drug use, and sexual behavior are actually part of a larger single behavioral syndrome in an adult female prison sample. Further, this study will look to see if the factors of alcohol use, drug use, and sexual behavior offer unique contributions for understanding problem behavior syndrome.

Method

Participants

Adult female inmates (N = 234) from a New England prison facility completed self-report questionnaires assessing alcohol use, drug use, and sexual

activity.[1] Slightly more than half of the sample self-identified as Caucasian (54.7%). Self-identified African-American participants and Latino participants formed the next largest groups (17.9% and 12.4%, respectively). The remaining participants identified as Native American (4.7%) and other ethnicities (10.3%). There were no significant differences in basic demographics, except that individuals who identified as Latino had the lowest percentage of childless women and the highest percentage of no previous job training (65.6%). Participants were given $25 for participation in the complete study.

Measures

The three latent variables in this study were each evaluated with several manifest scores. These are grouped by construct and listed below:

Alcohol Use - Alcohol use was measured with three manifest variables. "Current Frequency of Alcohol Use" asked participants how often they drank during the month prior to their arrest. This measure was a 5-point scale ranging from "never" to "almost every day". "Amount of Use" asked how many drinks a participant would typically have during the month before their arrest. "Lifetime Frequency of Use" assessed how often participants consumed alcohol during the time in their life when they drank the most. This measure was also on a 5-point scale ranging from "never" to "almost every day".

Drug Use - Drug use was assessed with three manifest variables: "Current Frequency of Drug Use", "Age of Drug Initiation", and "Lifetime Frequency of Drug Use". "Current Frequency of Drug Use" asked participants to rate how often they drank during the month prior to their arrest on a 5-point scale ranging from "never" to "almost every day". "Age of Drug Initiation" asked participants how

old they were when they first started using drugs. "Lifetime Frequency of Drug Use" involved a 5-point scale which asked participants how often they used drugs during the time in their lives when they used them the most. Participants were given the following list to define "drugs": marijuana, cocaine, LSD or psychedelics, amphetamines, Quaaludes, barbiturates, heroin, glue, poppers, gasses or sprays to get high, and prescription drugs that were not needed and/or not prescribed by a doctor.

Risky Sexual Behavior – Risky sexual behavior was measured by "Partner Risk", "Frequency of Unprotected Sex", and "Number of Sexual Partners". "Number of Sexual Partners" asked participants to indicate the number of sexual partners that they had during the month prior to their arrest. "Frequency of Unprotected Sex" was found by summing the number of main partners with whom the subject had unprotected sex. "Partner Risk" was assessed by asking if the participant's three main sexual partners had used intravenous drugs, tested positive for HIV, or had previous sexual partners. Questions were scored by using "0" for "no", "1" for "I don't know", and "2" for "yes". These scores were then summed for each participant across the three main partners to create a composite score of "Partner Risk". Higher scores indicated that an individual had higher partner risk.

Analyses

Multivariate Analysis of Variance (MANOVA)

SPSS (Version 11.5) was used to evaluate 3 separate one-way, between subject MANOVA's. The first MANOVA compared individuals who identified as White, African American, Latino, or Other across three dependent measures of alcohol use: current frequency of alcohol use, amount of alcohol use, and lifetime

frequency of alcohol use.[2] The second MANOVA compared the 4 groups of race/ethnicity on measures of drug use, including current frequency of drug use, lifetime frequency of drug use, and age of drug initiation. A final MANOVA examined measures of risky sexual behaviors (frequency of unprotected sex, partner risk, and number of sexual partners) across the four groups of race/ethnicity. Each MANOVA was evaluated using Pillai's trace because this measure is more robust to unequal sample sizes (Tabachnick and Fidell, 2001).

Exploratory Factor Analysis (EFA)

To complete the exploratory portion of the analysis, 75 subjects were randomly selected from the data set, and their information was analyzed using SPSS (Version 11.5). Exploratory factor analysis requires the use of at least five subjects per measured variable. Because there were nine measured variables for the factor analysis, data from 75 randomly selected subjects was more than sufficient. The exploratory factor analysis used oblique rotation to ensure that the 9 manifest variables fell along the three different hypothesized dimensions. Oblique rotation was used instead of orthogonal rotation because in complex situations of the "real world", factors are always somewhat correlated, and oblique rotation is recommended for correlated factors (Tabachnick & Fidell, 2001).

Confirmatory Factor Analysis (CFA)

Maximum likelihood estimation procedures were used for the confirmatory factor analysis. EQS (Bentler, 1995) was used to analyze and compare two separate models. In Model 1 (see Figure 1) the parameters from problem behavior syndrome to each of the three latent constructs (alcohol use, drug use, and risky sexual behavior) were unconstrained. This means that the model allows for each of

the three latent constructs to contribute some unique variance to the construct of problem behavior syndrome. In Model 2 (see Figure 2), the parameters from problem behavior syndrome to each of the three latent constructs (alcohol use, drug use, and sexual behavior) were fixed at 1. This model tests the hypothesis that all of the variance in the manifest measures is due to the presence of problem behavior syndrome. This model states that the individual constructs of alcohol use, drug use, and sexual behavior do not offer unique contributions to the model. Model 1 and Model 2 both have one path from each factor fixed to a constant (1.0). This was advised by Raykov and Marcoulides (2000) because it helps to identify the model.

Each structural model will be evaluated using several indices. These indices include average absolute standardized residuals (AASR), the chi-squared statistic, the comparative fit index (CFI), the root mean square error of approximation (RMSEA), and individual parameter estimates. When structural models fit well with the data, the AASR should be less than .06, CFI should be close to 1.0, and the RMSEA should be close to 0. With good model fit, chi-square should be small and not significant. The parameter estimates should be significant, with z-ratios greater than 3.33 for $p<.001$, and greater than 1.96 for $p< .01$ (Raykov & Marcoulides, 2000; Harlow, Mitchell, Fitts, Saxon, 1999). If neither model has good fit with the data, the construct of problem behavior syndrome may not exist in an adult female prison population. If either model has good fit, problem behavior syndrome can be said to exist, and can be further evaluated to determine if each latent construct (alcohol use, drug use, and sexual behavior) offers unique contribution to understanding the model.

Results

Prior to analysis, the data were screened to ensure that the assumptions for multivariate analyses were met, including accurate data entry, normality, linearity, and homoscedasticity. Data were also screened to ensure the absence of missing values, outliers, multicoliniarity, and singularity.

Six variables had more than 5% missing values. These variables were age at first arrest, amount of alcohol use, age of drug initiation, frequency of unprotected sex, partner risk, and number of sexual partners. One-way ANOVA's (with missing versus non-missing data as the grouping variable) were used to ensure data was randomly missing across variables. Because no significant differences were found between missing and non-missing cases across variables (using $p < .05$), group mean substitution was used for all missing values. MANOVA and Factor Analysis are very sensitive to the presence of univariate and multivariate outliers. Using Boxplots, SPSS (Version 11.1) identified several outliers in the data set. Number of previous sentences had three outliers, age of drug initiation had one outlier, number of sexual partners had 10 outliers, length of original sentence had seven outliers, and amount of alcohol use had five outliers. Tabachnick and Fidell (2001) recommend two ways of fixing univariate outliers. In score alteration, the outlier is assigned "a raw score on the offending variable that is one unit larger (or smaller) than the next most extreme score in the distribution" (p. 71). Tabachnick and Fidell (2001) also recommend transformation of the variable when the distribution is badly skewed with many outliers. However, because none of the variables in this data set were badly skewed

(all had skewness less than or equal to two, and kurtosis less than or equal to four),and because transformation reduces the ability to interpret results, score alteration was used.

After fixing the offending cases, multivariate outliers were found using manahobolis distance. Four cases were identified as multivariate outliers with $p<.001$. When there are only a few outliers, and their maximum values are not much higher than the critical manahobolis value, Tabachnick and Fidell (2001) state that these cases can be retained in the analysis. These four outlying cases were therefore retained.

Homogeneity of variance and covariance was then evaluated. Box's M, which evaluates homogeneity of variance and covariance, was significant at $p < .001$ for partner risk, number of sexual partners, and frequency of unprotected sex. However, Tabachnick and Fidell (2001) argue that Box's M is notoriously strict with large sample sizes, so results can still be interpreted.

The remaining data set fit the assumptions of normality, linearity, homoscedasticity, multicoliniarity and singularity.

MANOVA Results

After the above corrections, the data met the major assumptions for MANOVA. The entire sample ($N = 234$) was used for each MANOVA. Table 1 demonstrates descriptive statistics of alcohol use, drug use, and risky sexual behavior across self-identified race/ethnicity.

A first MANOVA was conducted to evaluate alcohol use across race/ethnicity. This MANOVA used three dependent variables: current frequency of alcohol use, amount of alcohol use, and lifetime frequency of alcohol use. The

independent variable was race/ethnicity (white, African American, Latino, and Other). Pillai's Trace was not significant, F (9, 960) = 1.258, p >.05, indicating that there were no differences across race/ethnicity in alcohol use.

Another MANOVA was then used to evaluate three dependent variables of drug use (current frequency of drug use, lifetime frequency of drug use, and age of drug initiation) across the same independent variable (white, African American, Latino, and Other). Pillai's Trace was not significant, F (9, 960) = 1.416, p >.05, indicating that there were no differences across race/ethnicity in drug use.

A final MANOVA was conducted to determine if there were group differences across race/ethnicity (white, African American, Latino, and Other) on dependent measures of risky sexual behaviors (frequency of unprotected sex, partner risk, and number of sexual partners). Pillai's Trace was not significant, F (9, 960) = .605, p >.05, indicating uniformity across groups in terms of risky sexual behaviors.

Table 2 provides summary information of these findings. Because the MANOVA revealed no significant differences between self-identified race/ethnicity and various problem behaviors, the entire sample could be used in the factor analysis, and the results of the EFA and CFA can be generalized across groups.

EFA Results

After ensuring that the data met appropriate assumptions, exploratory factor analysis was conducted. Data from N = 75 randomly selected participants were used for the exploratory portion of the analysis. Using oblique rotation, three factors were found. "Current Frequency of Alcohol Use", "Amount of Alcohol

Use", and "Lifetime Frequency of Alcohol Use" formed one dimension. "Current Frequency of Drug Use", "Lifetime Frequency of Drug Use", and "Age of Drug Initiation" formed a second factor. "Frequency of Unprotected Sex", "Partner Risk", and "Number of Sexual Partners" formed a third dimension. Table 3 demonstrates the results of the EFA.

CFA Results

The entire sample (N = 234) was used for the CFA, and prior corrections ensured that the sample met the necessary assumptions. Descriptive statistics for the data can be seen in Table 4. For Model 1, Average Absolute Standardized Residuals (AASR) was .039, CFI was .947, and the RMSEA was .066, all indicating good model fit. Chi Square was small and not significant for Model 1 (p>.001), another indication of good model fit. Chi-Square was larger and significant for Model 2 (p <.001), indicating that the model may not provide ideal fit for the data. The AASR for Model 2 was .7347. The CFI was .894 and the RMSEA as .087. These measures are further indication of poor model fit.

Because Model 1 provided better fit than Model 2, further examination of the parameter estimates for Model 2 was not completed. Table 5 indicates fit indices for each model. Figure 3 shows Model 1 with parameter estimates designated. All of the paths were significant at $p < .001$, except for age of drug initiation, which was significant at p <.01. Further analysis of the Lagrange and Wald Tests for Model 1 did not indicate any meaningful paths for addition or deletion.

Discussion

Model 1 demonstrated the existence of problem behavior syndrome in a

sample of incarcerated adult females. CFA revealed that although each type of problem behavior offers some unique contribution, a single behavioral syndrome can account for their intercorrelations. This means that although it is important to understand drug use, alcohol use, and risky sexual practices individually, understanding their interrelationship is equally important.

These results are similar to those found by McGee and Newcomb (1992) during their examination of drug use, academic involvement, and sexual behaviors at several differing developmental levels (from the start of adolescence to adulthood). These researchers found that compared to model that proposed a single factor, a multi-factor model better explained the correlations between problem behaviors. McGee and Newcomb (1992) concluded that although problem behaviors have enough common variance to create an overarching syndrome of problem behavior, each of the problem behaviors also offers unique contributions. Osgood, Johnston, O'Malley, and Bachman (1988) found similar results. They examined longitudinal data on criminal behavior, marijuana and illicit drug use, risky driving, and alcohol use with high school seniors, and found that a model that specified both general and specific relationships provided better fit to the data than a model that postulated only a single general factor. These findings are also similar to the results of Harlow et al. (1999), who found that a higher-order factor of problem behavior syndrome could link alcohol use, drug use, and AIDS risk behavior in a sample of community women.

Evaluating each behavior's unique contribution helps one to understand the syndrome as a whole. For example, it is interesting to not that drug use is most closely related to problem behavior syndrome, saying that if an incarcerated female

is involved in drug use, she is very likely to be involved in alcohol use and risky sexual behavior. Alcohol use had the lowest relationship to the syndrome, meaning that alcohol use alone could not adequately predict a person's involvement in other risky behaviors.

Another interesting finding in this study was the absence of behavioral differences across ethnicity. Large-scale epidemiological studies have shown differences across race/ethnicity in terms of risky behaviors, with African Americans frequently showing lower prevalence rates of substance use (Kipp, Peters, & Morrison-Rodriguez). This finding was not present in the current study, and this may be because of the large heterogeneity that exists within each of the four racial/ethnic groups. For example, individuals who identified as Latino may have been from Puerto Rico or Mexico; they may have English as a second language or no knowledge of Spanish. These within group differences might make between group differences difficult to see.

Problem behavior theory is not solely interested in the intercorrelations of problem behaviors. It is also interested in how the syndrome of problem behavior interrelates with an individual's personality, their conventional behavioral practices, and their perceived environment (Harlow, Mitchell, Fitts, & Saxon, 1999). Because problem behavior syndrome has been noted in a female prison sample, future steps should examine personality variables like non-traditional attitudes and lack of commitment to socially-valued pursuits like education and employment (Gilmore et al., 1998). Future studies should also examine the correlation of problem behavior syndrome with conventional behaviors, like church attendance, educational goals, and volunteerism in adult females (Farrel, Danish, &

Howard, 1992). Future studies could further evaluate the relationship of problem behavior syndrome with environmental factors like childhood sexual abuse, family history of convictions, and partner violence in adult prison populations.

Problem behavior theory shares many common characteristics to the sociological theory of self-control. Both theories state that problem behaviors share high positive intercorrelations, and both theories agree that these behaviors are highly related to an individual's personality and perceived environment. Self-control theory takes these relationships one step further to suggest causality: individuals engage in problem behaviors when they do not perceive an attachment with society, when they have low involvement in social activities, when they spend little time in activities that are socially approved, and when they have a low level of belief in the moral legitimacy of societal rules and values (Alston, Harley, & Lenhoff, 1995). Personality factors also play a role in self-control theory: individuals who are more prone to "temptations of the moment" (Gottfredson & Hirschi, 1990, p. 87) are more likely to engage in problem behaviors. Future studies could model the applicability of self-control theory to problem behavior syndrome in female prison populations to gain a better understanding of potential causality.

A few potential limitations must be noted with the current study. This study may have been limited by the choice of manifest variables. For example, the study might have been strengthened if amount and type of drug use could be evaluated, instead of just frequency and age of initiation. These scales also involve the use of retrospective information, and their reliability has not yet been determined. Further, the study may have been enhanced by using measures that were not merely

single-item indicators. A statistical limitation is the use of nonrandom sampling, which could cause problems with the variances and covariances of the latent variables and may effect the interpretation of study results (McDonald & Moon-Ho, 2002).

The theory of problem behavior also has some limitations. The theory does not adequately outline an explanation of why some individuals engage in only one or two behaviors, while others are involved in many more. As stated earlier, problem behaviors were defined as behaviors that society views as undesirable. Problem behaviors fall along a spectrum: not wearing a seatbelt falls along one end of the spectrum, while violent behaviors like assault or murder would be considered much more severe by society. Problem behavior theory does not separate those behaviors that cause harm to the self, and those that cause harm to others, and does not do an adequate job of illustrating the spectrum of behavior. Problem behavior syndrome also does not take into account key cultural correlates to behavior. For example, cultural values in a particular race/ethnicity may prohibit drug use in front of one's children (M. Garrido, personal communication, November 12, 2003). Problem behavior theory does not address such cultural correlates, or how they would relate to the syndrome.

Despite these limitations, problem behavior syndrome gives a parsimonious explanation for behavior, so that understanding problem behavior syndrome and its correlates in a population of adults would be key for designing appropriate, holistic interventions. The results of this study echo the suggestions by many criminal treatment researchers, who call for integrated treatment approaches. Incarcerated women often have a host of psychosocial problems and treatment needs. In

addition to their correlated problem behaviors, they often report low levels of education, high levels of physical and sexual abuse, and a general feeling of being unprepared for the work world (Peters, Strozier, Murrin, & Kearns, 1997). Gaining a better understanding of problem behavior syndrome will help treatment providers create more integrated treatment approaches for incarcerated women, improving involvement in risky activities and adjustment to society following a prison sentence.

Footnotes

1. This present study is actually part of a larger study evaluating a prison intervention program. The study used measures at baseline, during an intervention, and following an intervention to determine the program's effectiveness. For the purposes of this study, only the baseline measures are used, so that women's problem behaviors prior to entering prison could be evaluated.

2. "Other" includes individuals who identified as Native American or Asian American, as these groups were too small to analyze statistically.

Table 1
Descriptive Statistics of Alcohol Use, Drug Use, Risky Sexual Behavior and General Delinquency across Self-Identified Race/Ethnicity

Variable	**Race/ethnicity**	**N**	**Mean**	**Std. Deviation**
Alcohol				
Current Frequency of Alcohol Use	White	128	2.83	1.622
	African American	42	3.19	1.565
	Latino	29	2.97	1.679
	Other	35	2.71	1.655
	Total	234	2.89	1.621
Amount of Alcohol Use	White	128	5.98	7.065
	African American	42	7.07	7.989
	Latino	29	7.03	8.894
	Other	35	5.71	8.594
	Total	234	6.27	7.681
Lifetime Frequency of Alcohol Use	White	128	3.72	1.469
	African American	42	3.52	1.435
	Latino	29	3.34	1.798
	Other	35	3.89	1.388
	Total	234	3.66	1.494
Drug				
Current Frequency of Drug Use	White	128	3.77	1.672
	African American	42	3.74	1.499
	Latino	29	3.24	1.864
	Other	35	3.57	1.668
	Total	234	3.67	1.665
Age of Drug Initiation	White	128	16.05	4.736
	African American	42	17.74	4.334
	Latino	29	17.59	5.834
	Other	35	16.57	6.074
	Total	234	16.62	5.052
Lifetime Frequency of Drug Use	White	128	4.29	1.293
	African American	42	4.05	1.324
	Latino	29	4.21	1.424
	Other	35	3.86	1.498
	Total	234	4.17	1.348
Risky Sexual Behavior				
Partner Risk	White	128	2.30	1.433
	African American	42	2.24	1.411
	Latino	29	1.90	1.113
	Other	35	2.09	1.067
	Total	234	2.21	1.343

Table 1
Descriptive Statistics of Alcohol Use, Drug Use, Risky Sexual Behavior and General Delinquency across Self-Identified Race/Ethnicity (Continued)

Frequency of Unprotected Sex	White	128	1.94	.761
	African American	42	2.02	.715
	Latino	29	1.93	.753
	Other	35	1.89	.932
	Total	234	1.94	.776
Number of Sexual Partners	White	128	2.70	3.108
	African American	42	2.38	1.738
	Latino	29	1.90	2.320
	Other	35	2.83	2.802
	Total	234	2.56	2.770

Table 2
Multivariate Analysis of Variance of Race/ethnicity

Construct	Pillai's Trace	F value	df Hypothesis	df_{Error}	Sig.
Alcohol Use	.048	1.258	9.0	690.0	.257
Drug Use	.054	1.416	9.0	690.0	.177
Risky Sexual Behavior	.023	.605	9.0	690.0	.794

Note. None of the constructs reached significance at the $p < .05$ level.

Table 3

Results of Exploratory Factor Analysis with Oblique Rotation

(N = 75)

	Component		
	1	2	3
Current Frequency of Alcohol Use	.907		
Amount of Alcohol Use	.739		
Lifetime Frequency of Alcohol Use	.766		
Current Frequency of Drug Use		.849	
Age of Drug Initiation		.479	
Lifetime Frequency of Drug Use		.889	
Partner Risk			.721
Frequency of Unprotected Sex			.788
Number of Sexual Partners			.715

Table 4
Descriptive Statistics for Variables in Model 1and Model 2
(N = 234)

Variable	Mean	SD	Skewness	Kurtosis
Current Frequency of Alcohol Use	2.89	1.621	.138	-1.596
Amount of Alcohol Use	6.27	7.681	1.951	3.639
Lifetime Frequency of Alcohol Use	3.66	1.494	-.723	-.962
Current Frequency of Drug Use	3.67	1.665	-.753	-1.179
Age of Drug Initiation	16.62	5.052	1.246	2.112
Lifetime Frequency of Drug Use	4.17	1.348	-1.493	.786
Partner Risk	2.21	1.343	1.250	1.302
Frequency of Unprotected Sex	1.94	.776	.875	.939
Number of Sexual Partners	2.56	2.770	2.103	4.314

Table 5
Summary of Fit for Model 1 and Model 2
(N = 234)

Model	AASR	CFI	RMSEA	Chi Square	df	Significance
Model 1	.039	0.947	0.066	47.937	24	.00257
Model 2	.7347	0.894	0.087	74.852	27	< .001 *

* Chi-square significant at p<.001

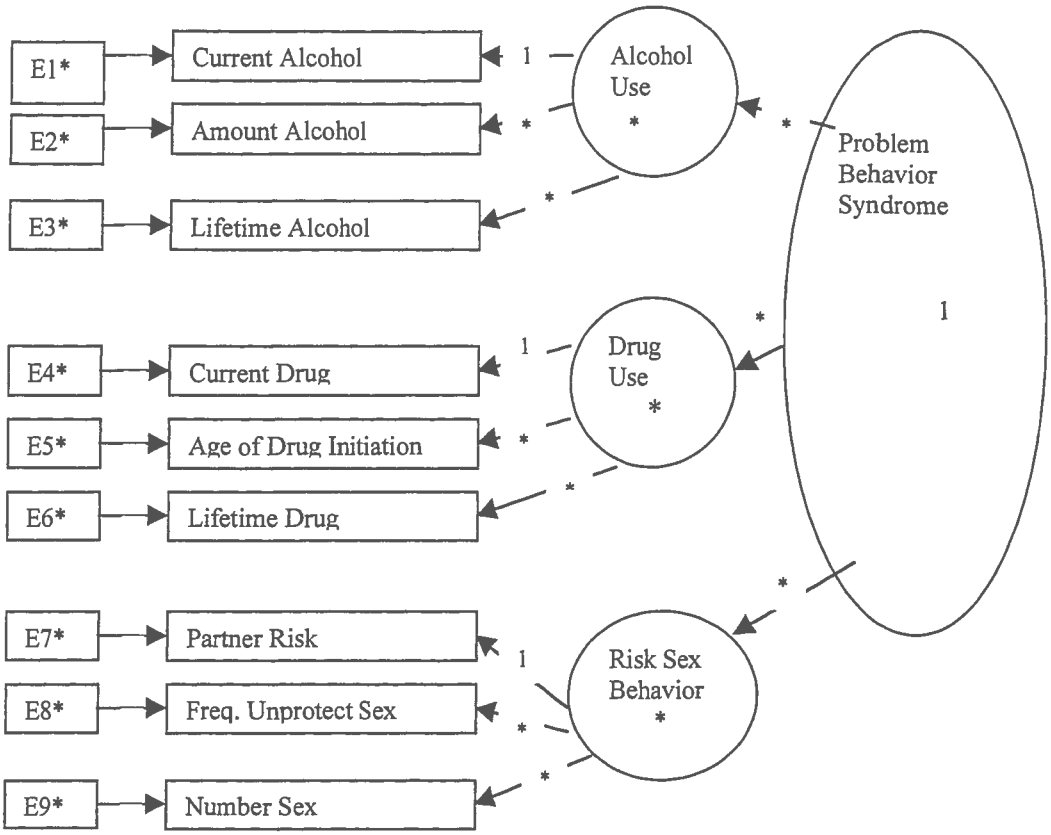

Figure 1. Parameters to alcohol use, drug use, and risky sexual behavior are unconstrained.

Note. * Free Parameter

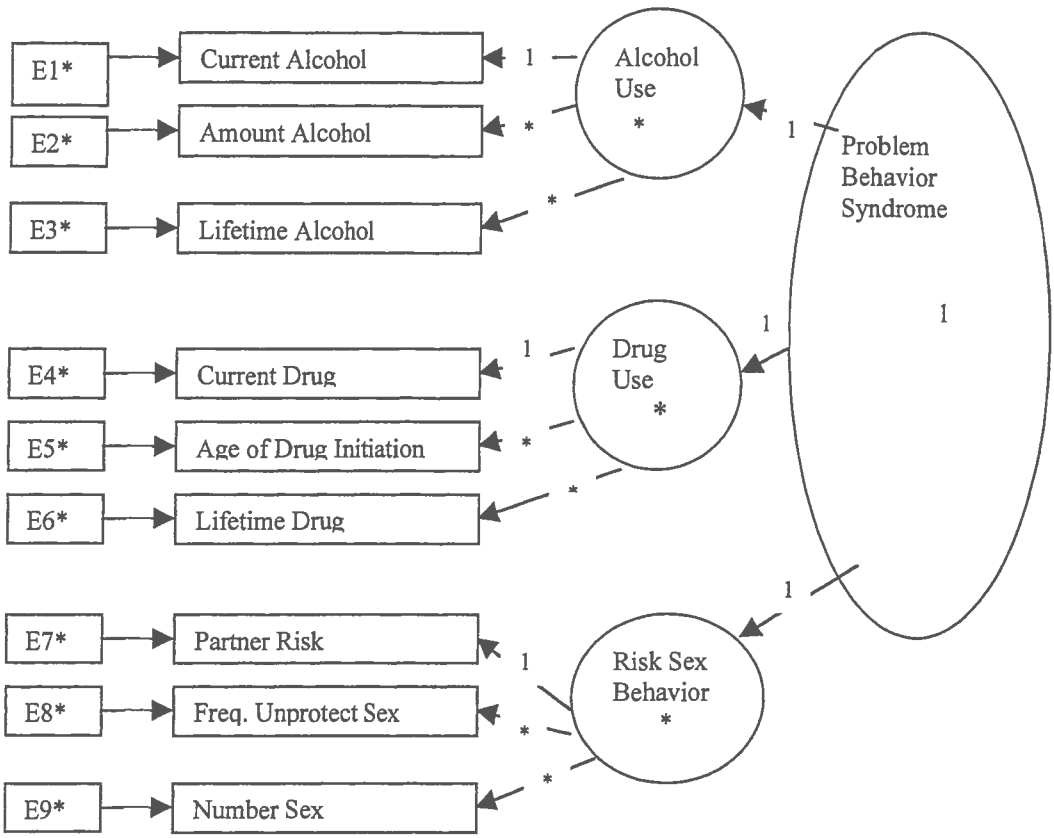

Figure 2. Parameters to alcohol use, drug use, and risky sexual behavior are constrained at 1.

Note. * Free Parameter

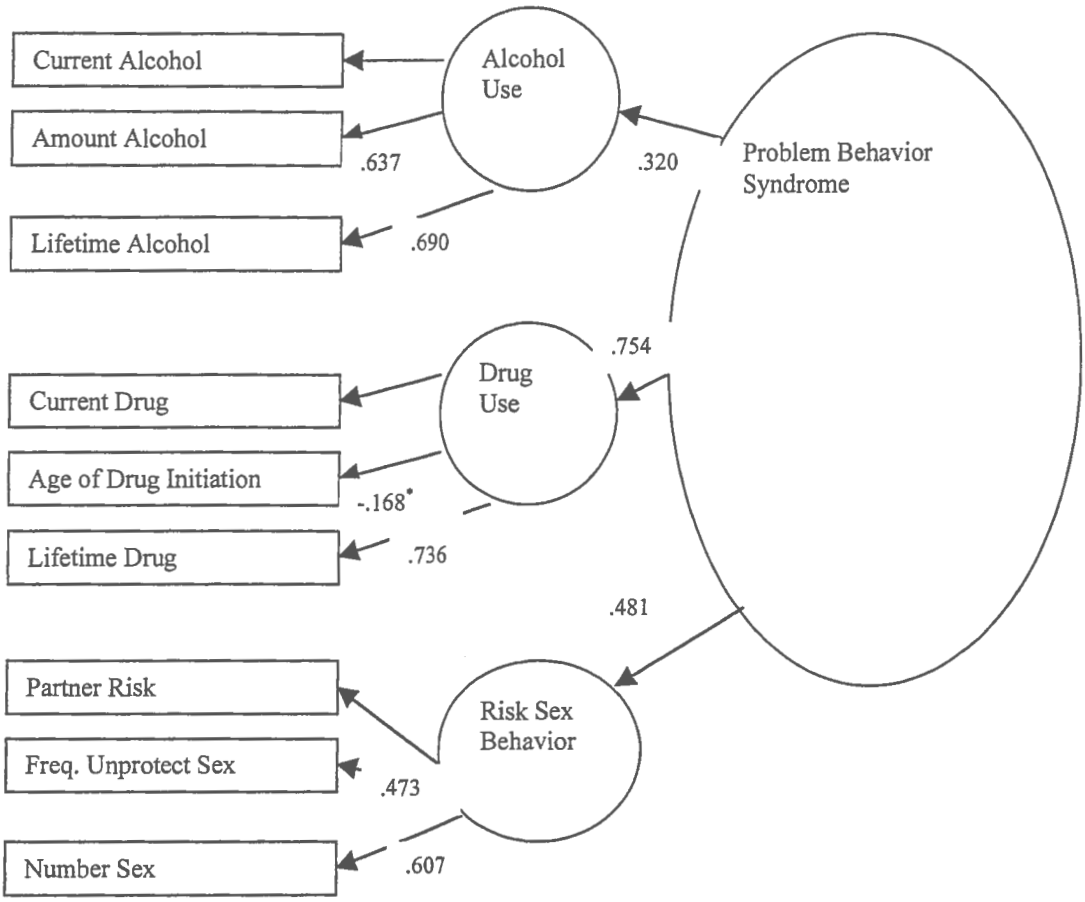

Figure3. Model 1 with Final Parameter Estimates

Note. Only those variables that were not set to 1 in the original model have available factor loadings.

* This parameter estimate is significant at the $p < .01$ level. All other parameters are significant at the $p < .001$ level.

Bibliography

Alston, R. J., Harley, D., Lenhoff, K. (1995). Hirshchi's social control theory: A sociological perspective on drug abuse among persons with disabilities. *Journal of Rehabilitation, 61*, 31-35.

Bentler, P. M. (1995). *EQS: A Structural Equations Program Manual for Program Version 3.0.* Encino, CA: Multivariate Software.

Brook, J. S., Balka, E. B., Abernathy, T., Hamburg, B. A. (1994). Sequence of sexual behavior and its relationship to other problem behaviors in African American and Puerto Rican adolescents. *Journal of Genetic Psychology, 155*, 107-114.

Cotton-Oldenburg, N. U., Jordon, B. K., Martin, S. L., & Kupper, L. (1999). Women inmates and risky sex and drug behaviors: Are they related? *American Journal of Drug and Alcohol Abuse, 25*, 129-149.

Dick, J. E. (1996). Signing for high: A study of alcohol and drug use by deaf and hard of hearing adolescents. *Dissertation Abstracts International Section A: Humanities and Social Sciences, 57*, 2675.

Dinh, K. T., Roosa, M. W., Tein, J. Y., & Lopez, V. A. (2002). The relationship between acculturation and problem behavior proneness in a Hispanic youth sample: a longitudinal mediation model. *Journal of Abnormal Child Psychology, 30,* 295-309.

Donovan, J. E., & Jessor, R. (1985). Structure of problem behavior in adolescence and young adulthood. *Journal of Consulting and Clinical Psychology, 53*, 890-904.

Donovan, J. E., Jessor, R., & Costa, F. M. (1988). Syndrome of problem behavior in adolescence: A replication. *Journal of Consulting and Clinical Psychology, 56*, 762-765.

Farrell, A. D., Danish, S. J., & Howard C. W. (1992). Relationship between drug use and other problem behaviors in urban adolescents. *Journal of Consulting and Clinical Psychology, 60*, 705-712.

Gilmore, M. R., Spencer, M. S., Larson, N. C., Tran, Q. D., & Gilchrist, L. D. (1998). Childbearing adolescents and problem behavior theory. *Journal of Social Service Research, 24*, 85-109.

Goff, B. G & Goddard, H. W. (1999). Terminal core values associated with adolescent problem behaviors. *Adolescence, 34*, 47-60.

Gottfredson, M. R., & Hirschi, T. (1990). *A General Theory of Crime*. Stanford, CA: Stanford University Press.

Guyon, L., Brochu, S., Parent, I., & Desjardins, L. (1999). At risk behaviors with regard to HIV and addiction among women in prison. *Women and Health, 29*, 49-66.

Harlow, L. L., Mitchell, K. J., Fitts, S. N., & Saxon, S. E. (1999). Psycho-existential distress and problem behaviors: Gender, subsample, and longitudinal tests. *Journal of Applied Biobehavioral Research, 4*, 111-138.

Henderson, D. J. (1998). Drug abuse and incarcerated women: A research review. *Journal of Substance Abuse Treatment, 15*, 579-587.

Hogben, M., St. Lawrence, J., Eldridge, G. D. (2001). Sexual risk behavior, drug use, and STD rates among incarcerated women. *Women and Health, 34,* 63-78.

Jessor, R. (1993). *Problem-Behavior Theory and the Life Course in Adolescence: Epistemology in Action.* Presented at the First International Congress of Adolescentology, Assisi, Italy, October 22-24, 1993. Retrieved on November 19, 2003 from: http://www.adolescenceweb.org/KURZ/932/a932 jessor.HTM

Kassebaum, G., & Chandler, S. M. (1994). Polydrug use and self control among men and women in prisons. *Journal of Drug Education, 24*, 333-350.

Kipp, K. E., Peters, R. H., & Morrison-Rodriguez, B. (2002). Commentary on why national epidemiological estimates of substance abuse by race should not be used to estimate prevalence and need of substance abuse services at community and local levels. *American Journal of Alcohol Abuse, 28 (3),* 545-556.

Langan, N. P., & Pelissier, B. M. (2001). Gender differences among prisoners in drug treatment. *Journal of Substance Abuse, 13*, 291-301.

Logan, T. K., & Leukefeld, C. (2000). Violence and HIV risk behavior among male and female crack users. *Journal of Drug Issues, 30(2)*, 261-282.

Marquart, J. W., Brewer, V. E., Mullings, J., & Crouch, B. M. (1999). The implications of crime control policy on HIV/AIDS-related risk among women prisoners. *Crime and Delinquency, 45*, 82-98.

McDonald, R. P, Moon-Ho, R. H. (2002). Principles and practice in reporting structural equation analyses. *Psychological Methods, 7,* 64-82.

McGee, L., & Newcomb, M. (1992). General deviance syndrome: Expanded hierarchical evaluations at four ages from early adolescence to adulthood. *Journal of Consulting and Clinical Psychology, 60*, 766-776.

Mullings, J. L. (1998). Victimization, substance abuse, and high risk behavior as predictors of health among women at admission to prison. *Dissertation Abstracts International Section A: Humanities and Social Sciences, 58*, 3730.

Osgood, D.W., Jonnston, L. D., O'Malley, P. M., & Bachman, J. G. (1988). The generality of deviance in late adolescence and early adulthood. *American Sociological Review, 53*, 81-93.

Peters, R. H., Strozier, A. L., Murrin, M. R., Kearns, W. D. (1997). Treatment of substance abusing jail inmates: examination of gender differences. *Journal of Substance Abuse Treatment, 14*, 339-349.

Paschall, M. J., Ringwalt, C. L., & Flewelling, R. L. (2003). Effects of parenting, father absence, and affiliation with delinquent peers on delinquent behavior among African-American male adolescents. *Adolescence, 38*, 15-34.

Raykov, T, & Marcoulides, G. A. (2000). *First Course in Structural Equation Modeling*. New Jersey: Lawrence Erlbaum Associates.

Schilling, R., El-Bassel, N., Ivanhoff, A., Gilbert, L., Su, K., & Sayfer, S. (1994). Sexual risk behaviors of incarcerated, drug using women, 1992. *Public Health Reports, 109,* 539-547.

Tabachnick, B. G., & Fidell, L. S. (2001). *Using Multivariate Statistics* (4th ed.). Massachusetts: Allyn and Bacon.

Testa, M., & Collins, R. L. (1997). Alcohol and risky sexual behavior: Event-based analyses among a sample of high-risk women. *Psychology of Addictive Behaviors, 11*, 190-201.

Wingwood, G. M,., & DiClemente, R. J. (1998). The influence of psychosocial factors, alcohol, and drug use on African-American women's high-risk sexual behavior. *American Journal of Preventative Medicine, 15,* 54-59.