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Predictors of Co-Occurring Risk Behavior Trajectories among Economically Disadvantaged African American Youth: Contextual and Individual Factors

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Abstract

Purpose—African American youth, particularly those from low-income backgrounds, evidence high rates of negative outcomes associated with three problem behaviors, conduct problems, risky sexual behavior, and substance use. This study used a contextually-tailored version of Problem Behavior Theory (PBT) to examine predictors of the simultaneous development of problem behaviors in this specific cultural group.

Methods—Socio-contextual and individual variables representing four PBT predictor categories, controls protection, support protection, models risk, and vulnerability risk, were examined as predictors of co-occurring problem behaviors among economically disadvantaged African American adolescents ($n = 949$). Specifically, the likelihood of following three classes of multiple problem behavior trajectories spanning ages 12 to 18, labeled the “early experimenters,” “increasing high risk-takers,” and “adolescent-limited” classes, as opposed to a “normative” class was examined.

Results—Among other findings, controls protection in the form of a more stringent household curfew at age 12 was related to a lower likelihood of being in the “early experimenters” and “increasing high risk-takers” classes. Conversely, vulnerability risk manifested as stronger attitudes of violence inevitability was associated with a higher likelihood of being in the “early experimenters” class. However, the PBT category of support protection was not associated with risk trajectory class. More distal neighborhood-level manifestations of PBT categories also did not predict co-occurring behavior problems.

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Conclusion—Guided by an incorporation of contextually-salient processes into PBT, prevention programs aiming to decrease co-occurring problem behaviors among low-income African American adolescents would do well to target both proximal systems and psychological constructs related to perceived security throughout adolescence.

Keywords

problem behavior theory; low-income; African American; risk behaviors

Introduction

Adolescent problem behaviors, including conduct problems, substance use, and risky sexual behavior, often occur together (1,2). The consequences of problem behaviors are disproportionately more severe for African American youth, on average. African Americans make up 39% of those incarcerated in the U.S., despite the fact they are only 13% of the U.S. population (3). If current rates continue, about 1 in 3 African American males and 1 in 18 African American females are expected to be incarcerated during their lifetime (4). In addition, African Americans accounted for close to 44% of all new HIV infections among adolescents and adults in 2010 (5). Moreover, African Americans made up 18% of admissions to publicly funded substance abuse treatment centers from 2004 to 2007 (6). Often these negative outcomes are particularly concentrated among low-income populations (7,8). Thus, gaining a better understanding of predictors of precursors to these negative outcomes among low-income African American adolescents is imperative.

Empirical work examining the development of individual risky behaviors during adolescence elucidates that they can follow different trajectories (9–11). The first pattern is a relatively low engagement throughout adolescence, typically called the “normative” pathway. Another pattern is an increase in problem behavior, peaking during mid-adolescence, and then decreasing, called the “adolescent-limited” pathway. A third pattern is an early onset of problem behaviors, which then steadily increases, or an “increasing high risk-takers” pathway. Finally, a fourth pattern is engagement in higher levels of risk behaviors which then decrease, which can be called an “early experimenters” trajectory. In addition, problem behavior theory (PBT; 2, 12) conceptualizes co-occurring problem behaviors as a syndrome, with predictors of this syndrome existing in two systems, the perceived environment and personality systems. These systems exert influence through multiple mechanisms including controls protection (e.g., parental behavioral control, religiosity), support protection (e.g., parental support, neighborhood connectedness), models risk (e.g., deviant peers, neighborhood danger), and vulnerability risk (e.g., low self-worth, traumatic stress, hopelessness, acceptance of violence). Studies based on PBT have found these categories combined to predict engagement in the problem behavior syndrome among adolescents across the United States, Europe, and Asia (12, 13).

Importantly, a recent refinement of PBT by Jessor (14) highlights that the influence of specific types of systems mechanisms (e.g., parental monitoring as a form of control protection) depend on the context (e.g., low-income neighborhoods). This nuanced perspective proffers the value of taking a more fine-grained approach to predicting clustered

problem behaviors in specific socio-cultural groups. Applied to low-income African American youth, despite the broad support for a full PBT model that includes multiple systems, empirical findings suggest neighborhood factors may not exert a strong influence within samples of low-income or ethnic minority youth in the U.S. Among these youth, when neighborhood variables are included in models alongside parenting behavior, most often parenting behavior either mediates the association or the neighborhood variables are not significant (e.g., 15,16). In addition, empirical and theoretical work related to African American families in low-income neighborhoods suggests that parental monitoring, a controls protection, may be more influential in conduct problems than warmth, a support protection (17,18). Another possible attunement of PBT for this particular group relates to recent work suggesting that in cultures where religious participation is considered normative, such as among African Americans, religious beliefs do not always differentiate adolescents who engage in risk behaviors (19,20).

Taking together these findings, a contextually-tailored PBT model for low-income African American youth would suggest that controls protection demonstrated by parents, models risk demonstrated by peers, and vulnerability risk evidenced by adolescents themselves are associated with problem behavior syndrome trajectory class. On the other hand, we predict that neighborhood-level manifestations of PBT mechanisms are not associated with multiple problem behaviors in this sample. Finally, consistent with equivocal findings in the literature, whether support protection exhibited by parents or controls protection in the form of adolescent religiosity is associated with problem behaviors are considered exploratory (16–19).

Methods

Sample Selection and Participants

This study entails secondary data analysis of data from the Mobile Youth Study (MYS), a community-based, multiple cohort longitudinal study seeking to explore the contexts leading to health disparities affecting economically disadvantaged, urban youth ages 10 to 18 (21). Youth were recruited from the 13 neighborhoods in the Mobile, Alabama metropolitan statistical area with the lowest median household incomes, which were 95% African-American. In 1998, the MYS researchers actively recruited 50% of youth living in those neighborhoods, and passively recruited additional participants through fliers and word of mouth, with around 60% of youth actively recruited being enrolled in the study. The initial sample consisted of 1,771 youth¹ (21). Each subsequent year, the team recruited and enrolled new participants, and, in addition, as participants moved, the team followed them to their new neighborhoods.

An analysis of school records for MYS participants and non-participants showed that, demographically, the MYS participants had slightly lower incomes, but there were few if any functional differences (e.g., standardized test scores, disciplinary actions) (21). Within

¹The exact number of observations examined in the current study is slightly different than this number due to recent data correction (e.g., through cross-verification with school district data), which is on-going and has resulted in a change in approximately 1.25% of the cases (e.g., removing bogus cases, merging cases that were previously treated as separate) in the full sample since the analyses for the current paper were run.

the study sample, although studywise attrition (i.e., across multiple waves) was significant, sensitivity analyses indicated that dropouts between adjacent time points, i.e. T and T-1, did not differ overall from non-dropouts on MYS responses measured at time T-1 (e.g., neighborhood support, peer pressure) (21).

The present study is a follow-up to a previous one which identified the four problem behavior classes in the sample using growth mixture modeling (GMM) (11). Differences between participants included in those analyses ($n = 1,406$) and those excluded because they did not provide sufficient data for the GMM analyses were estimated for conduct problems, risky sexual behavior, and substance use at ages 12 through 18 and were consistently very small ($d < .2$). For the current study, only the subsample of adolescents who also provided data on predictor variables at age 12 and were African American were included, with the final sample consisting of 949 youth (51% female, 49% male; see sample selection design in Figure 1).

Procedures

Study procedures for the MYS were approved by the Institutional Review Board, and informed assent and guardian permission were obtained prior to questionnaire administration. Data collection took place in community centers where team members read the questionnaire items aloud to participants in groups of 10 to 20. Participants were paid \$10 for survey completion prior to 2006, and \$15 from 2006 onward.

Measures

Dependent Variable

Multiple Risk Behavior Trajectory Class: The generation of the four classes representing different combinations of trajectories of substance use, conduct problems, and sexual risk taking (see Figure 2) is described in another paper (11). In brief, *substance use* consisted of cigarettes, alcohol, and marijuana used in the previous month and cocaine in the previous year (scores ranged from 0 to 8), *conduct problems* assessed suspension and arrests in the previous year (scores ranged from 0 to 8), and *sexual risk taking* was a composite of number of sexual partners in the previous year and condom use (scores ranged from 0 to 3; see Figure 2). A four-class solution was established using growth mixture modeling (log likelihood=-26876.81; BIC=54514.70; entropy=0.85), resulting in the following classes: “normative,” or lower levels of engagement in all three behaviors, “increasing high risk takers”, or increasing levels of all three risk behaviors; “adolescent-limited,” which consisted of a peak in conduct problems and substance use in mid-adolescence, as well as steadily increasing sexual behavior, and “early experimenters,” or higher levels of all three risk behaviors which then decreased.

Predictor Variables—Due to the developmental level of most participants at enrollment (i.e., early adolescence) and their relatively low average level of cognitive functioning (i.e., a sub-sample of MYS participants scored on average in the 27th percentile on intelligence testing), the response options created for most variables were dichotomous. In addition, to handle item non-response for variables measured as scales, we averaged the item scores of participants who responded to more than half the items to create their scale scores, a method

which typically does not result in substantial bias (22). Importantly, rates of missing data on individual items within scales ranged from 1% to 3%.

Perceived Environment System

Six perceived environment system variables were assessed: *neighborhood connectedness*, *perceived neighborhood danger*, *peer pressure*, *maternal warmth*, *family rules*, and *curfew*. *Neighborhood connectedness* was measured using six binary (Yes/No) items used in other empirical work to measure a psychological sense of community (23). Sample items include “I feel I am an important part of my neighborhood.” Scores on the neighborhood connectedness scale ranged from 0 to 6 ($\alpha = .67-.72$, across the nine waves of data collection).

Perceived neighborhood danger was measured using one item, “How much of the time do you feel unsafe in your neighborhood” with responses ranging from “Never” (scored 0) to “All the time” (scored 3). A similar measure has been used to assess subjective global sense of neighborhood danger in other work involving large-scale cohort-based sampling (24).

Peer pressure was assessed using a six-item scale similar to other measures of peer pressure (e.g., 25) but adapted for the current study to include culturally-salient language and focus on peer responses to the risk behaviors targeted. An example is, “How many of your friends think you are a punk if you don’t use drugs.” Responses ranged from “almost none of them” (scored 0) to “most of them” (scored 2), with scale scores ranging from 0 to 12 ($\alpha = .72$ to .90, across the nine waves of data collection).

For *maternal warmth*, participants were asked to refer to the person most like a maternal figure to them when responding to a shortened version of a measure of parental responsiveness used in previous work (26). An example includes “She spends time just talking with me,” with responses ranging from “I don’t have anyone who is like a mother to me” (scored 0) to “Agree” (scored 2). Scale scores ranged from 0 to 12 ($\alpha = .61$ to $.71$ over the years of the study).

Family Rules was measured using a scale of five binary items (Yes/No) used in previous work to assess parental strictness (26), such as “Does your family have rules about dating?” Scale scores ranged from 0 to 5 ($\alpha = .61$ to $.65$).

Curfew was measured using a scale of four items with binary responses (Yes/No), such as “Are you allowed to stay out after dark on weekend nights?” used in previous work as a measure of parental supervision (26). Scale scores ranged from 0 to 4 ($\alpha = .63$ to $.71$ across years of the study).

Personality System Variables

Five personality system variables were measured: *traumatic stress*, *belief in the inevitability of violence*, *hopelessness*, *self-worth*, and *religiosity*. *Traumatic stress* was measured using seven items tapping the three main categories of traumatic stress listed in the DSM IV-TR, re-experiencing, hyperarousal, and avoidance (27), with responses on a likert scale ranging from “almost never” (scored 0) to “very often” (scored 2). Sample items include, “I have

trouble sleeping at night when bad things happen to a family member or friend.” Scale scores ranged from 0 to 14 ($\alpha = .70$ to $.73$ across waves of the study).

Belief in the inevitability of violence was measured using an adapted version of a social learning measure of aggressive thoughts (28). The measure consisted of eight binary items (Agree/Disagree) such as, “It’s not possible to avoid fights in my neighborhood.” Scale scores ranged from 0 to 8 ($\alpha = .61$ – $.72$ across waves of the study).

Hopelessness was measured using an abbreviated version of the Hopelessness Scale for Children (29) and consisted of six binary items (Agree/Disagree), such as “I might as well give up because I can’t make things better for myself.” Scale scores for hopelessness ranged from 0 to 6 ($\alpha = .69$ to $.75$).

Self-worth was measured using a scale of nine binary (Agree/Disagree) items adapted from the self-worth subscale of the Perceived Competence Scale for Children (30), such as “I am usually unhappy with myself.” Scale scores ranged from 0 to 9 ($\alpha = .62$ to $.65$).

Religious Importance was measured using one item, “How important is religion to you?” with three response options, “Not important,” “Somewhat important,” and “Very important.” This item has been used to measure importance of religion in other large scale studies involving adolescents (e.g., 31).

Analysis Plan

Multinomial regressions were run predicting likelihood of membership in each of the risk classes as compared to the normative class, which was the reference group. A two-step model building process was followed, consistent with other research examining the PBT (e.g., 32), in which models were run individually for each PBT system and then a final model run including only significant variables from the system-level models. The adapted control of the false discovery rate procedure developed by Benjamini and Hochberg (33), which controls the false discovery rate in multiple comparisons while maintaining greater power than the commonly used Bonferroni approach, was invoked to determine significance in the final model. To aid in interpretation, all predictor variables were standardized by their theoretical ranges, that is by the minimum and maximum scores possible.

Results

Descriptive Statistics and Bivariate Associations

Descriptive statistics and bivariate correlations of demographic, predictor, and individual risk variables at age 12 are presented in Tables 1 and 2, respectively. Two demographic variables, gender and parental living arrangements, were included in the bivariate analyses. Adolescent gender was associated with two outcome variables, and, therefore, was included as a control variable in the multivariate analyses. All of the predictor variables were associated with at least one risk behavior in the bivariate analyses, except for neighborhood connectedness.

Results for Significant Predictors within Each PBT System

Results for Perceived Environment System Variables—Although it was not associated with problem behaviors in the bivariate analyses, given its correlations with other independent variables, neighborhood connectedness was included in the perceived environment regression in case any suppression effects were present. After controlling for gender, reporting the maximum as opposed to the minimum possible score on the curfew scale was associated with lower odds of being in all three risk classes, the “increasing high risk takers” class, $OR=.30, p < .01$; the “adolescent-limited” class, $OR= .31, p < .05$; and the “early experimenters” class, $OR=.08, p < .01$, compared to the normative class. In addition, endorsing the maximum compared to the minimum score on the peer pressure scale was associated with four times greater odds of following the “early experimenters” trajectory, $OR = 4.37, p < .01$. Neighborhood connectedness, neighborhood danger, maternal warmth, and family rules did not predict membership in any classes. Importantly, neighborhood danger was measured using a single-item, which may account for its lack of significant association.

Results for Personality System Variables—Two of the five personality system variables were statistically significant predictors of PBT trajectory class membership. First, reporting the maximum compared to the minimum level of self-worth was associated with a lower likelihood of being in two risk trajectory classes, the “increasing high risk takers”, $OR = .32, p < .05$; and “early experimenters”, $OR = .10, p < .01$ classes, relative to the normative class. Conversely, endorsing the maximum as opposed to the minimum score of attitude of violence inevitability was associated with a nine-fold greater likelihood of being in the “early experimenters” class, $OR = 9.43, p < .01$. Traumatic stress, hopelessness and religiosity were not significant predictors of class membership. Of note, it is possible that the lack of association with religiosity is due to the use of a single-item for this variable.

Results for Analyses with Significant Predictors from Both PBT Systems

The results of the regression examining the full model are presented in Table 3. After controlling for gender, all four predictors were significant. First, experiencing the maximum as opposed to the minimum level of curfew was associated with lower odds of being in the “increasing high risk takers” class, $OR = .39, p < .01$; and the “early experimenters” class, $OR=.14, p < .01$. Endorsing the maximum compared to the minimum level of self-worth was associated with an adolescent being less likely to follow the “early experimenters” trajectory, $OR= .10, p < .01$. Conversely, experiencing the maximum as opposed to the minimum level of peer pressure was associated with a nearly three-fold increase in the chances of following the “early experimenters” path, $OR= 2.98, p < .05$. Finally, the maximum versus the minimum level of an attitude of violence inevitability was associated with an adolescent being nearly six times as likely to follow the “early experimenters” path, $OR = 5.82, p < .01$.

In addition to the primary analyses examining the likelihood of being classified in each risk class relative to the normative class, follow-up analyses were conducted examining the likelihood of being classified in a risk class when another risk category (e.g., “early experimenters”) was modeled as the reference group. Adolescents reporting higher levels of

peer pressure at age 12 were more likely to be classified in the “early experimenters” group relative to the “increasing high risk-takers” group, OR = 3.25, $p < .05$.

Discussion

The current study utilized a contextually-adapted version of PBT to examine predictors of membership in four co-occurring problem behavior trajectory classes among a sample of very low-income African American adolescents. Contextually-specific versions of controls protection, models risk, and vulnerability risk were associated with the likelihood of following multiple problem behavior trajectories. Importantly, however, support protection was not associated with trajectory class. In addition, peer pressure also differentiated between two risk classes. The highest number of predictors was identified for the “early experimenters” class, which may be because the problem behaviors exhibited in this class occurred at a time chronologically close to the predictor variables.

Findings from the current study suggest the merit of examining predictors representing PBT mechanisms individually (e.g., peer pressure), as opposed to as broad categories (e.g., models risk), to delineate associations between specific factors and the development of multiple problem behaviors among sub-populations. For low-income African-American youth specifically, the particular combination of a strict household curfew, low peer pressure, high self-worth, and limited belief in the inevitability of violence may be most helpful for avoiding involvement in multiple problem behaviors.

The findings must be considered in the context of the study limitations. First, although adolescents may provide the most accurate assessment of their own behaviors and perceptions (34, 35), the inclusion of additional reporters would provide a complementary perspective on youth adjustment. Moreover, some measures used in the current study evidenced only moderate levels of internal consistency (i.e., alphas close to .60). This somewhat lower internal consistency may be related to dichotomous response options, provided to match the average level of cognitive functioning of participants, which can depress Cronbach’s alpha (36). Importantly, however, given that low alphas, a form of measurement error, would lend a conservative bias to the findings (37), any significant findings would most likely be even stronger if the scales had greater reliability. Another limitation is two predictor variables consisted of single items. We also did not examine associations between predictors at later ages and trajectory class, which limits our ability to draw causal inferences. Finally, due to limitations in the constructs measured, we were not able to examine two categories of PBT predictors, opportunity risk and models protection.

This study contributes to the developmental risk literature in several ways. First, by examining trajectories of problem behaviors spanning six years among a large sample of economically disadvantaged African American adolescents, it provides data on a group that faces high rates of negative psychosocial indicators stemming from problem behaviors, yet has received insufficient empirical attention. Studies of low-income populations that include longitudinal data spanning six years are rare due to time and resource requirements. Second, this study is one of a few to examine the development of different manifestations of co-occurring risk behaviors over multiple years. Third, this study investigated an empirically-

based, contextually-specific model of PBT, which has been advocated by the author of the theory (14) but rarely has been undertaken.

Overall, the contextually-tailored PBT model proposed in this study proved to be a useful guide in highlighting potential predictors of multiple problem behaviors among a sample of economically-disadvantaged African American adolescents. It may be that proximal systemic influences as well as psychological factors related to violence are most influential in the manifestation of co-occurring problem behaviors for these youth. One interpretation of this finding is related to the correlation between economic disadvantage and crime in urban areas (38). In such settings, from the perspective of Maslow's hierarchy of needs (39), the most effective method for preventing multiple risk behaviors may be to focus on proximal factors that promote actual and psychological senses of security. Consistent with intervention research on problem behaviors (40), findings in this prospective study suggest that programs designed to *prevent* co-occurring risk behaviors before they start should target both proximal perceived environment and psychological factors. In addition, based on the findings, prevention efforts may need to be implemented throughout adolescence, not just in early adolescence. These efforts could efficiently decrease the chances a vulnerable group would engage in multiple health risk behaviors, or experience the deleterious social, health and economic consequences that can follow them.

Acknowledgments

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References

1. Biglan, A.; Brennan, PA.; Foster, SL., et al. *Helping Adolescents at Risk: Prevention of Multiple Problem Behaviors*. New York: Guilford; 2005.
2. Jessor, R.; Jessor, SL. *Problem Behavior and Psychosocial Development: A Longitudinal Study of Youth*. New York: Academic Press; 1977.
3. *Jail Inmates at Midyear 2009*. Washington, DC: U.S. Department of Justice, Bureau of Justice Statistics Annual; 2010.
4. Bonczar, TP. Prevalence of Imprisonment in the U.S. Population, 1974–2001. Bureau of Justice Statistics 2003. Retrieved 1/17/2011 from <http://www.bjs.gov/index.cfm?ty=pbdetail&iid=836>
5. *HIV Surveillance Supplemental Report 2012*. Washington, DC: Centers for Disease Control and Prevention; 2012. Estimated HIV Incidence Among Adults and Adolescents in the United States, 2007–2010.
6. *The NSDUH Report: Treatment for Substance Use and Depression among Adults, by Race/Ethnicity*. Rockville, MD: SAMHSA, Office of Applied Studies; 2009.
7. *Morbidity and Mortality Weekly Report*. Vol. 60. Washington, DC: Centers for Disease Control and Prevention; 2011. Characteristics Associated with HIV Infection Among Heterosexuals in Urban Areas with High AIDS Prevalence-24 cities, United States, 2006–2007; p. 1045-1071.
8. Western, B. *Punishment and Inequality in America*. New York, NY: Russell Sage Foundation; 2006.
9. Brook JS, Rubenstone E, Zhang C, et al. Maternal Predictors of Comorbid Trajectories of Cigarette Smoking and Marijuana Use from Early Adolescence to Adulthood. *Addict Behav*. 2012; 37:139–143. 10.1016/j.addbeh.2011.09.004 [PubMed: 21968229]
10. Moffitt TE. Adolescence-Limited and Life-Course-Persistent Antisocial Behavior: A Developmental Taxonomy. *Psychol Rev*. 1993; 100:674–701. [PubMed: 8255953]

11. Removed for blind review
12. Jessor R, Turbin MS, Costa FM, et al. Adolescent Problem Behavior in China and the United States: A Cross-National Study of Psychosocial Protective Factors. *J Res Adolesc.* 2003; 13:329–360.
13. Vazsonyi AT, Chen P, Jenkins DD, et al. Jessor's Problem Behavior Theory: Cross-National Evidence from Hungary, the Netherlands, Slovenia, Spain, Switzerland, Taiwan, Turkey, and the United States. *Dev Psychol.* 2010; 46:1779–1791.10.1037/a0020682 [PubMed: 20873922]
14. Jessor R. Description versus explanation in cross-national research on adolescence. *J Adol Health.* 2008; 43:527–528.10.1016/j.jadohealth.2008.09.010
15. Vazsonyi AT, Trejos-Castillo E, Young MA. Rural and Non-Rural African American Youth: Does Context Matter in the Etiology of Problem Behaviors? *J Youth Adolesc.* 2008; 37:798–811.10.1007/s10964-007-9239-6.
16. Rankin BH, Quane JM. Social Contexts and Urban Adolescent Outcomes: The Interrelated Effects of Neighborhoods, Families, and Peers on African-American Youth. *Soc Probl.* 2002; 49:79–100.10.1525/sp.2002.49.1.79
17. Brody GH, Flor DL. Maternal Resources, Parenting Practices, and Child Competence in Rural, Single-Parent African American Families. *Child Dev.* 1998; 69:803–816. [PubMed: 9680686]
18. Bean RA, Barber BK, Crane DR. Parental Support, Behavioral Control, and Psychological Control Among African American Youth: The Relationships to Academic Grades, Delinquency, and Depression. *J Fam Issues.* 2006; 27:1335–1355.10.1177/0192513X06289649.
19. Landor A, Simons LG, Simons RL, et al. The Influence of Religion on African American Adolescents' Risky Sexual Behavior. *J Youth Adolesc.* 2011; 40:296–309. [PubMed: 21052800]
20. Steinman KJ, Ferketich AK, Sahr T. The Dose-Response Relationship of Adolescent Religious Activity and Substance Use: Variation Across Demographic Groups. *Health Educ Behav.* 2008; 35:22–43.10.1177/1090198105284839 [PubMed: 16861596]
21. Removed for blind review
22. Schafer J, Graham J. Missing data: Our view of the state of the art. *Psychol Meth.* 2002; 7:147–177.
23. Perkins DD, Florin P, Rich RC, et al. Participation and the Social and Physical Environment of Residential blocks: Crime and Community Context. *Am J Community Psychol.* 1990; 18:83–115.
24. CDC Neighborhood Safety and the Prevalence of Physical Activity-Selected States. *Morbidity Mortality Weekly Report* 1999. 1996; 47:143–146.
25. Brown BB, Clasen DR, Eicher SA. Perceptions of Peer Pressure, Peer Conformity Dispositions, and Self-reported Behavior Among Adolescents. *Dev Psychol.* 1986; 22:521–530.10.1037/0012-1649.2.4.521.
26. Lamborn SD, Mounts NS, Steinberg L, et al. Patterns of competence and adjustment among adolescents from authoritative, authoritarian, indulgent, and neglectful families. *Child Dev.* 1991; 62:1049–1065. [PubMed: 1756655]
27. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition-Text Revision.* Washington, DC: American Psychiatric Association; 2000.
28. Bandura, A. *Aggression: A Social Learning Analysis.* Englewood Cliffs, NJ: Prentice Hall; 1973.
29. Kazdin AE, French NH, Unis AS, et al. Hopelessness, Depression, and Suicidal Intent Among Psychiatrically Disturbed Inpatient Children. *J Consult Clin Psychol* 1983. 1983; 51:504–510.10.1037/0022-006X.51.5.504
30. Harter S. The Perceived Competence Scale for Children. *Child Dev.* 1982; 53:87–97.
31. Sinha JW, Cnaan R, Gelles RJ. Adolescent Risk Behaviors and Religion: Findings From a National Study. *J Adolesc.* 2007; 30:231–249.10.1016/j.adolescence.2006.02.005 [PubMed: 16677701]
32. Madkour AS, Farhat T, Halpern CT, et al. Early Adolescent Sexual Initiation as a Problem Behavior: A Comparative Study of Five Nations. *J Adolesc Health.* 2010; 47:389–398.10.1016/j.jadohealth.2010.02.008 [PubMed: 20864009]
33. Benjamini Y, Hochberg Y. On the Adaptive Control of the False Discovery Rate in Multiple Testing with Independent Statistics. *J Educ Beh Stat.* 2000; 25:60–83.

34. De Los Reyes A, Kazdin AE. Informant Discrepancies in the Assessment of Childhood Psychopathology: A Critical Review, Theoretical Framework, and Recommendations for Further Study. *Psychol Bull.* 2005; 131:483–509.10.1037/0033-2909.131.4.483 [PubMed: 16060799]
35. Fisher SL, Buholz KK, Reich W, et al. Teenagers are Right-Parents Do not Know Much: An Analysis of Adolescent-Parent Agreement on Reports of Adolescent Substance Use, Abuse, and Dependence. *Alcohol Clin Exp Res.* 2006; 30:1699–1710. [PubMed: 17010137]
36. Gadermann AM, Guhn M, Zumbo BD. Estimating ordinal reliability for Likert-type and ordinal item response data: A conceptual, empirical, and practical guide. *Prac Assess Res & Eval.* 2012; 17:1–13.
37. Riggs DC, Guarnieri JA, Addleman S. Fitting straight lines when both variables are subject to error. *Life Sci.* 1978; 22:1305–1360. [PubMed: 661506]
38. Valdez A, Kaplan CD, Curtis RL. Aggressive crime, alcohol and drug use, and concentrated poverty in 24 U.S. urban areas. *Am J Drug Alcoh Abuse.* 2007; 33:595–603.10.1080/00952990701407637
39. Maslow A. A Theory of Human Motivation. *Psychol Rev.* 1943; 50:370–396.
40. Henggeler S, Sheidow AJ. Empirically supported family-based treatments for conduct disorder and delinquency in adolescents. *J Marital and Fam Ther.* 2012; 38:30–58.10.1111/j.1752-0606.2011.00244.x [PubMed: 22283380]

Implications and Contribution

Peer pressure, parental monitoring, self-worth, and belief in the inevitability of violence at age 12 were associated with co-occurring trajectories of substance use, sexual behavior, and conduct problems spanning adolescence among low-income African American youth. Prevention efforts for decreasing multiple problem behaviors should target parenting, peers, and individual psychological factors.

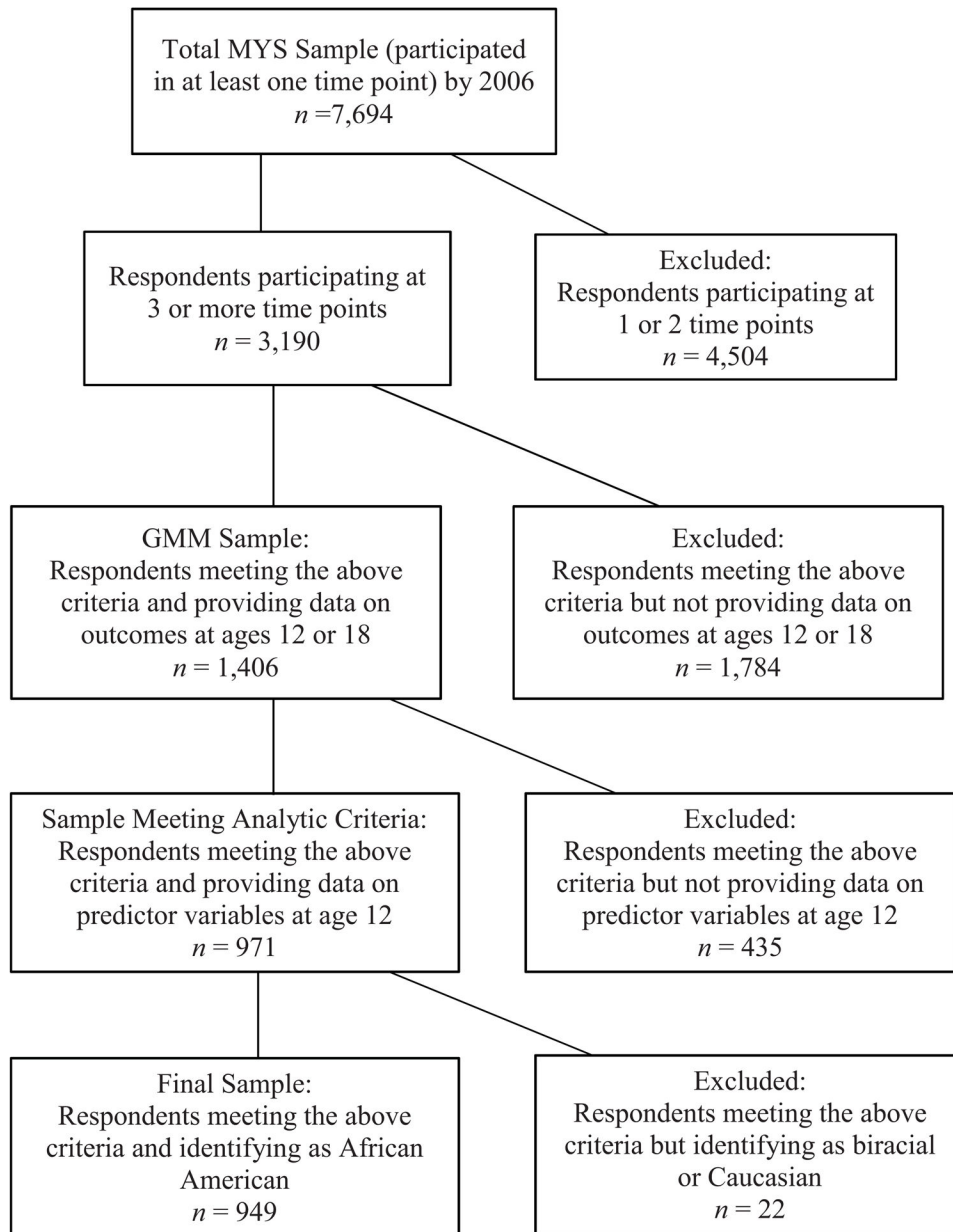


Figure 1.
Sample Selection Design

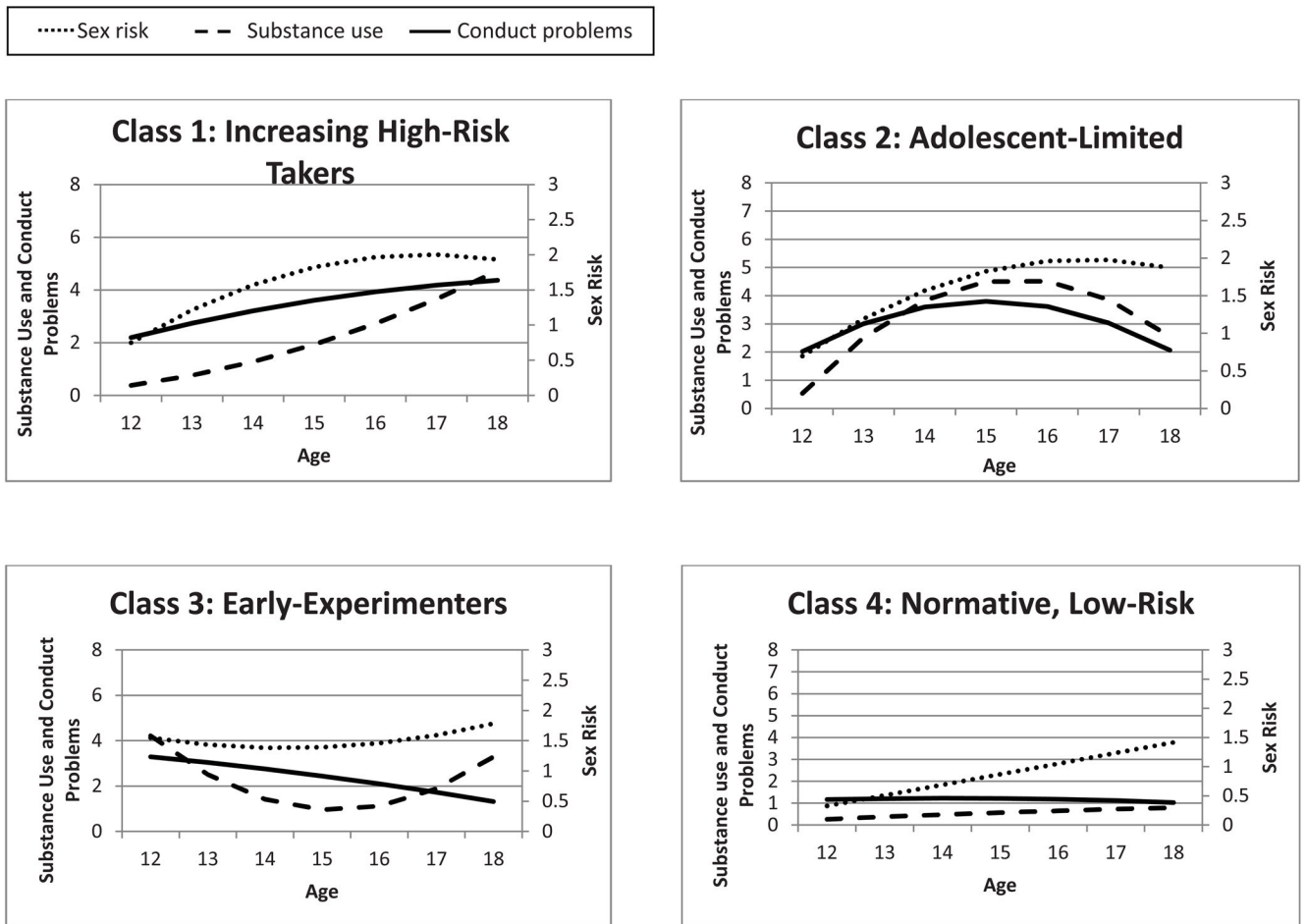


Figure 2.
Engagement in Risk Behaviors By Trajectory Class

Table 1

Participant Demographic Information and Descriptive Statistics of Age 12 Predictors

	<i>N</i>	Range	<i>M</i> or <i>n</i> (%)	<i>SD</i>
Male	949		467 (49.2%)	
Parental Figures Live Together	662			
None of the time			224 (33.8%)	
Some of the time			73 (11.0%)	
Most of the time			51 (7.7%)	
All of the time			314 (47.4%)	
Neighborhood Connectedness	947	0–6	4.02	1.71
Perceived Neighborhood Danger	941	0–3	1.22	1.05
Peer Pressure	942	0–12	2.99	3.66
Maternal Warmth	921	0–6	5.26	1.12
Family Rules	917	0–5	3.34	1.60
Curfew	942	0–4	2.59	1.22
Traumatic Stress	944	0–14	6.98	3.12
Hopelessness	944	0–6	1.56	1.64
Attitude of inevitability of violence	949	0–8	3.62	2.02
Self-Worth	948	0–9	6.13	2.03
Religiosity	944	0–2	1.62	.57

Table 2
 Bivariate Correlations of Predictor Variables and Individual Risk Behaviors Reported at Age 12

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1. NH Con	--															
2. NH Un.	-.08**	--														
3. Peer Pr.	-.08**	.13**	--													
4. M. Wm.	.14**	-.08**	-.11**	--												
5. Rule	.07**	.01	-.07**	.21**	--											
6. Curfew	-.03	.01	-.08**	.05*	.27**	--										
7. Par. Lv.	.01	-.02	.09**	.06*	.08**	.02	--									
8. A. Gen.	.02	.03	.04*	.01	-.06**	.00	-.02	--								
9. Trauma	.12**	.26**	.13**	.05*	.06**	-.00	.06*	.05*	--							
10. Hope	-.06*	.16**	.31**	-.17**	-.13**	-.10**	.04	.01	.12**	--						
11. Worth	.09**	-.14**	-.21**	.13**	.11**	.12**	.05	.02	-.12**	-.30**	--					
12. Relig.	.07*	.03	-.03	.10**	.11**	.03	.03	.00	.13**	-.09**	.07**	--				
13. Viol.	.08**	.11**	.22**	-.05*	-.15**	-.18**	.00	.03	.13*	.24**	-.18**	-.07**	--			
14. Sex	-.01	.11**	.16**	-.09**	-.10**	-.16**	.05	.33**	.06	.10**	-.16**	-.06	.24**	--		
15. Cond	.02	.07	.20**	-.13**	-.22**	-.25**	.00	.20**	.14**	.19**	-.29**	-.16**	.26**	.33**	--	
16. Sub	-.04	.07	.12**	-.09*	-.13**	-.20**	-.02	.05	.05	.09*	-.18**	-.06	.20**	.28**	.45**	--

Note.

* p < .05

** p < .01.

NH Con= neighborhood connectedness, NH Un. = neighborhood feels unsafe, Peer Pr. = peer pressure, M. Wm. = maternal figure warmth, Rule = family rules, Par. Lv. = parental figures live together, A. Gen.= adolescent gender, Trauma = traumatic stress, Hope = hopelessness, Worth = self-worth, Relig. = religious importance, Viol. = violent attitudes, Sex = risky sexual behavior, Cond = conduct problems, Sub= substance use.

Table 3

Multinomial Regression Model Predicting Multiple Risk Behavior Trajectories from Significant PBT System Level Variables[†]

Class	Predictor (PBT System)	OR	B	SE	P
Increasing High-Risk	Peer Pressure (PE)	.92	-.09	.37	.81
	Curfew (PE)	.39*	-.94	.36	.01
	Self-Worth (P)	.40	-.92	.49	.06
Adolescent-Limited	Violence Inevitability (P)	1.90	.64	.45	.15
	Peer Pressure (PE)	1.02	.02	.47	.97
	Curfew (PE)	.43	-.85	.46	.07
Early-Experimenters	Self-Worth (P)	.32	-1.13	.62	.07
	Violence Inevitability (P)	2.54	.93	.59	.11
	Peer Pressure (PE)	2.98*	1.01	.46	.02
	Curfew (PE)	.14*	-2.00	.49	.00
	Self-Worth (P)	.10*	-2.27	.68	.00
	Violence Inevitability (P)	5.82*	1.76	.64	.01

Notes.

[†]Regression analyses included adolescent gender as a control variable.

* $p < .05$ significant p -value derived from the false discovery rate control procedure (33).

B = regression coefficient. The “normative” group serves as the reference group. (PE)= Perceived Environment system. (P) = Personality system.