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Emotional/psychological and related problems among truant youths: An exploratory latent class analysis

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Abstract

Latent class analysis was conducted on the psychosocial problems experienced by truant youths. Data were obtained from baseline interviews completed on 131 youths and their parents/guardians involved in a NIDA-funded, Brief Intervention Project. Results identified two classes of youths: Class 1(n=94): youths with low levels of delinquency, mental health and substance abuse issues, Class 2(n=37): youths with high levels of these problems. Comparison of these two classes on their urine analysis test results and parent/guardian reports of traumatic events found significant ($p<.05$) differences between them that were consistent with their problem group classification. Our results have important implications for research and practice.

Introduction

School truancy, or unexcused absences from school, particularly in primary and secondary schools, has increasingly been identified as an issue deserving attention in communities across the nation. According to Office of Juvenile Justice and Delinquency Prevention (OJJDP, 2001), hundreds of thousands of youths are truant each day. Many youths in America neither attend school regularly nor graduate from high school (Arnette, 1995; Baker, Sigmon & Nugent, 2001; Center for Labor Market Studies, 2009). There is a critical, continuing need to develop and test innovative strategies and programs to improve the delivery of services to truant youths. It is likely that many fall through the cracks of the service delivery system.

Truant youth represent a challenging, yet very promising group of at-risk youth to study. In addition to having problems in school, they frequently experience troubled family situations, failing grades, and psychosocial difficulties including drug use (Dembo & Turner, 1994). Truancy is usefully conceived as midpoint along a continuum that begins with absenteeism and recurrent tardiness and ends with suspension or expulsion (National School Safety Center, 1996).

School officials have critical roles to play in identifying truant youth, and determining the psychosocial problems they are experiencing which impede their participation in school and in other important areas of their functioning. Unfortunately, due to limited resources, schools tend to have an episodic concern about truant youth. Policy makers are often torn between providing services to truant and other at-risk youth and their families and responding to youth misbehavior with harsher sanctions (Steinhart, 1996). Truant youths are most often treated as management and disciplinary problems (DeKalb, 1999; Diebolt & Herlache, 1991; Dougherty, 1999). Resources are focused on identifying, locating, and transitioning truant youth back into their respective schools with appropriate sanctions and/or citations. Often, these efforts include formal adjudication, police involvement, and suspension or remedial programs, which have not been shown to be effective in resolving the issues fostering truancy (Byer & Kuhn, 2003). Serious attention to the underlying causes of truancy is usually given after the youth's absence from school becomes frequent or chronic. At that point, the youth has often developed far more serious difficulties in school and other areas of psychosocial functioning in addition to not attending classes.

As well, many communities lack screening or assessment and intervention services for truant youth in spite of the psychosocial problems these youth often present. A more effective response to truancy requires identifying and addressing the problems that these youth and their families are experiencing through effective truancy intervention programs. However, reviews of the literature have identified relatively few studies of interventions that have been put in place to decrease truancy rates by remediating the problems causing this behavior (Doll & Hess, 2001; Dembo & Gulledge, 2009).

Some communities, such as Hillsborough County, Florida, have established truancy centers, which conduct intake, assessment, service referral and intervention activities (Dembo & Gulledge, 2009). Established in 1993, the Truancy Intake Center is a crime prevention tool designed to get students back into the mainstream of school by reducing student dropout (Hillsborough County Sheriff's Office, 1997). Students who are not in school can be taken into custody by various law enforcement agencies located throughout Hillsborough County and transported to the center.

With regard to psychosocial issues, the limited number of available studies involving selected samples of truant youths indicate truant youths are often experiencing serious interrelated problems in regard to a stressed family life (Baker, Sigmon, & Nugent, 2001; Kearney & Silverman, 1995), alcohol and other drug use (Baker et al., 2001; Dembo & Turner, 1994; Diebolt & Herlache, 1991), emotional/psychological functioning (Diebolt & Herlache, 1991; Egger, Costello, & Angold, 2003; Kearney & Silverman, 1995), and educational functioning (e.g., low grades, high rates of being retained in grade or placed in remedial or special programs) (Dembo & Turner, 1994; Garry, 1996; Ingersoll & LeBoeuf, 1997). Research also suggests that truant youths are at considerable risk of continuing their troubled behavior in school and entering the juvenile justice system (Garry, 1996; Ingersoll & LeBoeuf, 1997; Loeber & Farrington, 2000; Puzzanchera, Stahl, Finnegan, Tierney & Snyder, 2003; also see: Henry et al., 2009).

These interrelated problem behaviors among truant youth support the concept of problem behavior syndrome. According to this view, youth who engage in a specific form of deviant behavior (e.g., drug use) are significantly more likely to report engaging in other deviant behaviors (e.g., delinquency) (LeBlanc and Bouthillier, 2003). These behaviors are seen to reflect a general disposition towards deviant behavior. Engaging in a particular form of deviant behavior is seen as a symptom of the larger "general syndrome" of deviance, commonly referred to as problem behavior syndrome (PBS) (Jessor & Jessor, 1977).

Reaching truant youths before they become more seriously involved in drug use and other delinquent behavior provides an excellent opportunity to reduce the likelihood they will move into the juvenile justice system. Unfortunately, with few exceptions (e.g., Henry & Huizinga, 2007; McCluskey, Bynum, & Patchin, 2004), truancy has not received significant attention by criminologists.

Identification of these youths' problems and responding to them by placing them as early as possible into effective intervention services would benefit them, their families, and society (Hawkins et al., 2000). This success of this service placement effort would be increased by identifying subgroups of truant youths who differ in psychosocial problems they present. As well, such knowledge could inform the development of needed services and improve the allocation of existing treatment resources. Accordingly, there is a need: (1) to develop a more comprehensive understanding of the multiple problems truant youths may be experiencing, and (2) to identify subgroups of truant youths who differ in their psychosocial problems. These were the objectives of the study we report in the present paper. We report preliminary findings from a study of baseline data collected on 131 youths and their parents/guardians in an ongoing, NIDA-funded truancy Brief Intervention (BI) project. Results identified a sizable subgroup of multi-problem truant youths. Collateral data supported the usefulness of this classification. Following presentation and discussion of our results, we review their implications for intervention services.

Method

Subjects

A main place of recruitment into the BI project occurred at the Hillsborough County Juvenile Assessment Center, Truancy Intake Center (TIC). Eligible youths met the following criteria: (1) aged 11 to 15, (2) have no official record of delinquency or up to two misdemeanor arrests, (3) have some indication of alcohol or other drug use, as determined, for example, by a screening instrument (PESQ [Winters, 1992]) or as reported by a Hillsborough County School District (HCSD) social worker located at the TIC, and (4) live within a 25 mile radius of the TIC. Additionally, any HCSD social worker or guidance counselor can make referrals to the Brief Intervention project. A second place of recruitment into the BI project was at a community diversion program. Case managers also refer youths with a current truancy record who meet project criteria for BI services (Winters & Leitten, 2007) to project staff for enrollment. Detailed information on the Brief Intervention sessions be found in Winters & Leitten (2007) and Dembo, Gulledge, et al. (in press).

Key Measures

The main data collection instruments used in the study were the Adolescent Diagnostic Interview (ADI, Winters & Henly, 1993), and the Parent/Guardian ADI (Winters & Stinchfield, 2003). All study procedures were approved and monitored by the local IRB.

Delinquency—Based on the work of Elliott, Ageton, Huizinga, Knowles, and Canter (1983), we measured the youths' delinquent behavior in the 12 months prior to their baseline

interviews by asking how many times they engaged in each of 23 delinquent behaviors. Youths reporting an act 10 or more times were asked to indicate how often they participated in this behavior (i.e., once a month, once every two or three weeks, once a week, two to three times a week, once a day, or two to three times a day). Further, youths were asked to indicate their age when they first committed each delinquent behavior. Similar to Elliot et al. (1983), we developed five summary measures of delinquent involvement: general theft (e.g., petit theft, vehicle theft/joyriding, and burglary), crimes against persons (e.g., aggravated assault, fighting, and robbery), index crimes (similar to UCR Index Part I offenses); drug sales; and total delinquency (i.e., the sum of the 23 delinquent activities).

Problem Substance Use—Two sources of information were used to assess youths' substance use involvement: (a) a question on the ADI asking if the youth *ever had a problem with drug or alcohol abuse*, and (b) for youths reporting alcohol, marijuana, or other drug use, detailed questions for each drug used five of more times in their lives were asked regarding the extent, experiences, and consequences of use. For each drug, the responses were keyed to DSM-IV criteria for a substance use disorder, leading to a classification of each youth as having no diagnosis, a diagnosis of being an abuser, or dependent on the drug. Finally, the diagnostic results for the three categories of drugs (alcohol, marijuana, and other drugs) were combined into an overall measure, based on their most serious diagnostic classification on any of the three mutually exclusive drug categories: 0 = no diagnosis on any of the three categories of drugs, 1 = abuse disorder on any of the drug categories and no dependence disorder on all categories, and 2 = dependence disorder on any of the three categories of drugs.

Urinalysis—Urine specimens were collected to assess recent drug use. The use of four substances was probed using the Onsite CupKit® urine screen procedure (positive threshold levels are noted in parentheses): (1) methamphetamines (1000 nanograms per milliliter [ng/ml] of urine), (2) opiates (300 ng/ml of urine), (3) cocaine (300 ng/ml of urine), and (4) marijuana (THC) (50 ng/ml of urine). No urine testing was done for alcohol use. Following are the surveillance windows for the four drugs: methamphetamines and opiates = 48 hours; cocaine = 72 hours; marijuana: moderate users = 5 days; heavy users = 10 days; chronic users = 20 days.

Emotional/Psychological Problems—The youths' experience of emotional/psychological problems was probed in two ways: 1. The youths were asked if they ever received services for an emotional or behavioral problem, and 2. ADHD was assessed by four questions on the ADI mental health section keyed to DMS-IV criteria for this troubled behavior: (1) Do you often get complaints from parents/teachers that you don't listen to instructions or directions? (2) *Do you frequently tend to act before thinking?* (3) Do you often have difficulty waiting for your turn during games or when doing things with other people your age? (4) *Do you often fidget and find it difficult to sit?*

Parent Reports of traumatic events experienced by youth or other family member—The youths' parents/guardians were asked to indicate if the youth or their family ever experienced various traumatic events. Following are the nine items: (1) unemployment of parent, (2) divorce of parents, (3) death of loved one, (4) serious illness, (5) victim of a violent crime, (6) eviction from house or apartment, (7) legal problem resulting in jail time or detention, (8) accidental injury requiring hospitalization, and (9) other traumatic event.

Results

Sample Characteristics

Most of the youths in the study (N = 131) were male (65%). The youths averaged 14.68 years in age (SD = 1.22). Thirty-nine percent of the youths were Caucasian, 24% were African American, 28% were Hispanic, 2% were Asian, and 7% were from other, mainly multi-ethnic backgrounds. Relatively few youths (14%) lived with both their biological parents. On the other hand, a majority of the youths were living either with their biological mother alone (35%) or with their mother and another adult (34%). The youths tended to live in modest socioeconomic circumstances. Ten percent of the caretakers reported an annual income of more than $75,000, while 40% reported annual incomes of $25,000 or less. Median family income was $25,000 to $40,000.

Psychosocial Description

The youths reported significant problems experienced by their families (see Table 1). More specifically, of the youths in the sample, 57% reported a family member ever had a substance abuse problem, and nearly a quarter indicated a family member had received substance abuse treatment. In addition, 34% of the youths reported a family history of mental health problems.

The youths also reported they had experienced significant psychosocial problems. As shown in Table 1, 18% of the youths claimed ever having had a substance abuse problem, and 11% reported they had received substance abuse treatment. In addition, 50% of the youths claimed they had received treatment for emotional or behavioral problems.

Four questions keyed to DSM-IV criteria for ADHD were included in the youth interviews. As Table 1 shows, large percentages of the youths, ranging from 31% to 73%, reported ever experiencing one or more of these issues.

Confirmatory Factor Analysis of the ADHD Items

Confirmatory factor analysis was used to assess how well a one factor model, involving each of the four ADHD items, fit the data (Muthén & Muthén 1998-2010, version 6.0). Two fit indices, the comparative fit index (CFI) and the Tucker-Lewis index (TLI), were used to evaluate model fit. The typical range for both CFI and TLI is between 0 and 1, although the TLI may achieve values slightly greater than 1,with values greater than .90 indicating acceptable fit and values greater that .95 indicating good fit (Hu & Bentler, 1999). Two additional indices were used to evaluate the model fit to the data: (1) the root mean square error of approximation (RMSEA); RMSEA values of .05 or less indicate close model fit, and values between .05 and .08 indicate adequate fit (Brown & Cudeck, 1993); and (2) the weighted root mean square residual (WRMR) for categorical variables; Yu and Muthén (2001) suggest WRMR <.90 indicate good models. Results indicated a very good fit for the single factor model (Chi-square=0.97[2], p=0.62; CFI = 1.000, TLI = 1.038, RMSEA = 0.000, WRMR= .234), with respectable standardized loadings (ADHD1= .52; ADHD2= .63; ADHD3=.85; ADHD4=.74) (see Table 1 for the four items).

Youth Substance Use

A majority of the youths (64%) reported ever using alcohol to the point of feeling a buzz or intoxicated, and 36% indicated they had this experience five or more times in their lives. Almost all the youths indicated that they had ever used marijuana (92%), and nearly two thirds reported having used marijuana five of more times in their lives. In response to questions about their use of other drugs, 12% of the youths reported that they had ever used barbiturates, and 11% indicated they used this drug 5 or more times in their lives.

Urine test results were available for 91% of the youths. Results indicated 51% of the youths were positive for marijuana. No youth was drug positive for opiates, one youth was cocaine positive and eight youths were positive for amphetamines (many of these youths were taking amphetamine-based ADHD medications).

For each drug that a youth reported using five or more times in their lives, detailed lifetime DSM-IV-based questions pertaining to substance use disorders were asked. The data indicate these diagnostic criteria were met: 16%, alcohol abuse, 5% alcohol dependence, 36% cannabis abuse, 21% cannabis dependence, 6% abuse of another substance, and 2% dependence on another substance. Across the various drug types, 39% of the youths did not meet diagnostic criteria of abuse or dependence, 38% met criteria of abuse for at least one substance, and nearly a quarter of them (23%) met criteria of dependence.

Self-Reported Delinquency

The youths' responses to questions probing their involvement in delinquent behavior in the 12 months before their baseline interviews were used to assess their involvement in delinquent behavior. High prevalence rates were found for their involvement in index offenses (48%), crimes against persons (76%), general theft offenses (74%), and drug sales--mainly marijuana (34%). In addition, over 9 out of 10 youths reported engaging in one or more of the 23 delinquent acts.[1]

The range of responses to the items comprising the self-reported delinquency indices was large, ranging from no activity to hundreds (and, in a few cases, thousands). Due to non-normality, analysis of the frequency data as an interval scale was not appropriate as a measure of delinquent involvement. Instead, a log (base 10) transformation was employed so that equal intervals on the transformed scale would represent equal differences in involvement (with a raw score of -1 assigned to youths reporting 0 offenses). This evaluates the difference between no offense and one offense as equal in importance as the difference between 1 offense and 10, 10 offenses and 100, or 100 offenses and 1000.

The correlation between the log transformed measure of total delinquency and the other delinquency measures was sizable and statistically significant (mean correlation =.62). Importantly, the skewness and kurtosis of the log transformed measure of total delinquency were dramatically lower than those of the untransfomed measure (untransformed [skewness=5.93, kurtosis=41.84], transformed [skewness=-0.59, kurtorsis=0.74]). Hence, we decided to use the log transformed measure of total delinquency in our analyses.

Traumatic Events

The youths' parents/guardians were asked to indicate if the youth or their family ever experienced various traumatic events. Large percentages of the youths/families had these experiences, with unemployment of parent (52%), divorce of parents (43%), death of a loved one (63%), serious illness (35%), victim of a violent crime (21%), eviction from house or apartment (18%), and legal problem resulting in jail or detention (27%) being noteworthy. In addition, 47% of the caretakers reported other traumatic experiences (e.g., youth being placed in foster care, not having a relationship with their father, fighting with brothers and sisters, losing the opportunity to obtain a driver's license, separation from their mother). Overall, an average of 3.14 (SD = 1.72) traumatic events were reported. For each youth, we calculated the total number of traumatic events he/she or another family member experienced. This measure was used in our analysis.

[1]Due to space concerns, a table reporting these results has been omitted. A copy is available from the corresponding author upon request.

Analysis Strategy

This study involved a latent class analysis (LCA) using Mplus version 6.0 (Muthén & Muthén, 1998-2010). Useful in a wide range of substantive areas, LCA seeks to identify an underlying classification of entities (e.g., individuals) that are related to manifest indicators in probabilistic terms (Dayton, 1998). LCA is particularly useful when studying heterogeneous populations, that is populations "consisting of several unidentified groups that behave differently regarding the problems at hand" (Hagenaars & McCutcheon, 2002, p. xii). Using LCA, one can identify mutually exclusive latent classes, which account for the distributions of the observable measures within the sample (Clogg, 1981, 1995; Hagenaars & McCutcheon, 2002). The latent classes are related to manifest indicators in probabilistic terms (Dayton, 1998). Our use of latent class analysis was exploratory in nature, i.e., without specification of hypotheses relating to the values of the conditional or latent class probabilities.

The issue of class enumeration, determining the appropriate number of latent classes for a study population, in mixture modeling remains unresolved; therefore, experts recommend using multiple criteria to aid in class enumeration (Nylund et al., 2007). The statistical criteria used to assess the number of classes were: (1) the classification table based on class probabilities for the most likely latent class membership by latent class, (2) the entropy score, (3) the Akaike Information Criterion (*AIC*), (4) the Bayesian Information Criterion (*BIC*), (5) the sample size adjusted BIC (*saBIC*), (6) the Vuong-Lo-Mendell-Rubin likelihood ratio test (*LRT*), (7) Lo-Mendell-Rubin adjusted likelihood ratio test (*aLRT*), (8) the bootstrap likelihood ratio test statistics (*bLRT*) (Nylund et al., 2007; Lo et al., 2001), and (9) the model fit to the univariate and bivariate frequency tables (Lubke & Neale 2006; Ramaswamy et al., 1993; Akaike, 1987; Bozdogan, 1987). For the classification table, high diagonal values and low off-diagonal values indicate good classification quality (Muthén & Muthén, 2001:372). Entropy values may range from 0 to 1, with values closer to 1 indicating clearer classifications (Muthén & Muthén, 2001:372). For *AIC*, *BIC*, and *saBIC*, lower scores, those closest to zero, indicate a better fit of the model. For *aLRT*, a significant *p*-value indicates that the specified model (with k classes) fits significantly better than a model enumerating one less class (k-1). The *bLRT* is similar to the *aLRT* except the distribution is estimated based on bootstrap samples. For the fit of the model to the univariate and bivariate frequency tables, smaller standardized residuals between the observed and estimated (expected) probabilities indicate a better fit. Additionally, along with statistical criteria, the substantive meaningfulness of the selected latent class model is also important in deciding on the number of classes.

The following observed variables comprised the manifest indicators that were used in the latent class analyses: Continuous: (1) youth total self-reported delinquency in the prior to baseline interview (log transformed), (2) youth ADHD factor score, and (3) caretaker reported number of traumatic events experienced by the youth or family. Categorical: (4) youth reported experiencing a substance abuse problem (0 = no, 1 = yes), (5) youth reported receiving services for emotional/behavioral problems (0 = no, 1 = yes), and (6) combined youth alcohol, marijuana, other drug DSM-IV substance use disorder diagnosis (0 = none, 1 = abuse only, *2* = dependence for at least one substance).

Relationships among the variables in the Latent Class Analysis

Preliminary examination of the Pearson and tetrachoric correlations among the continuous and binary indicators, respectively, included in the latent class analysis is presented in Table 2. Using Fisher's *r* to *z* transformation and following conversion of the correlations to *z*-scores, these results highlight significant relationships exist between 7 of the 15 pairs of

variables. Most of the relationships are in the low to moderate range (r=-0.058 to 0.622). The results provided a statistical foundation for the latent class analysis we pursued.

Latent Class Analysis Fit Indices

LCA models were estimated for a series of models including one-class, two-class, and three-class models. The LCA fit indices are shown in Table 3. Given the limited number and distribution of cases across the various variables—especially the categorical variables---up to a three-class LCA solution could be estimated. As the *LRT*, *aLRT* and *bLRT* results reported in Table 3 indicate, a two-class solution appears to best fit the data ($p < 0.0016$). Further, the 2-class solution has the lowest BIC value.

Bivariate model fit results also supported a 2-class solution and indicated zero standardized residuals between the observed and estimated (expected) probabilities for the categorical variables in the model. Further, low, and all nonsignificant, standardized residuals were found for the bivariate model fit information involving cell comparisons (not shown) for the categorical variables, indicating a respectable fit of the two-class model. Additionally, the nonsignificance of the bivariate standardized residuals supports the assumption of local independence for the categorical indicators in the latent class model. Local independence is a critical assumption of the model when trying to enumerate the correct class model, as the existence of local dependencies will artifactually increase the optimum number of classes extracted (Reboussin, Ip, & Wolfson, 2008). For the continuous variables, the local independence assumption was tested by introducing the observed variables as a latent factor in the LCA analysis and comparing the obtained BIC from this model with the BIC from the selected 2-class model. A smaller BIC for the selected 2-class model was obtained supporting the local independence of the indicators.

Latent Class Analysis Results

The LCA results are shown in Table 4. The two classes identified in the data, which differ in important ways across the six variables included in the analyses, were termed: (1) *High Risk* youths ($n = 37$), and (2) *Lower Risk* youths ($n = 94$). Compared to Lower Risk youths, High Risk youths report more delinquency, have higher rates of exposure to stressful/traumatic events as reported by caretakers, are more likely to report ever having a substance problem, ever receiving services for emotional/behavioral problems, and have a DSM-IV substance use diagnosis of abuse or dependence. The classification table based on an individual's model-estimated (posterior) probabilities for most likely latent class membership indicates high main diagonal and relatively low off-diagonal values suggesting that the model produces relatively unambiguous classifications. Importantly, an entropy value of .720, which represents a quantification of the classification uncertainty, was obtained. Further, the latent class means differ significantly.

Comparison of Various Covariates across the High Risk and Lower Risk Latent Class Groups

The Mplus Auxiliary option (Muthén & Muthén, 1998-2007:454) of specifying variables for which the equality of means across latent classes is tested using posterior probability-based multiple imputation was used to compare the equality of means for the High Risk and Lower Risk youth UA marijuana test results, and their caretaker responses to baseline interview questions relating to their psychosocial functioning.

Results, shown in Table 5, indicated a significantly larger proportion of High Risk youths were marijuana positive, than Lower Risk youths. In addition, the caretakers of High Risk youths reported the youths significantly more often received help for personal problems and

medication to treat attention, behavioral, learning or emotional problems, than the caretakers of Lower Risk youths.

Conclusions

Even though our study involved a relatively small number of cases, the results were rather clear in terms of the psychosocial risk profiles of the truant youths we studied. This study was directed to: (1) developing a more comprehensive understanding of the multiple problems truant youths may be experiencing, and (2) to identifying subgroups of truant youths who may differ in problem domains so that intervention programs can be more effectively implemented.

In regard to the first study objective, our data document the many psychosocial issues the study youths and their families are experiencing. In particular, sizable percentages of youths report their families have experienced substance abuse and mental health problems; and large percentages of youths report significant involvement in delinquency and substance use, and many experience symptoms of ADHD.

In terms of our second study objective, specific subgroups of truant youths were identified in our data, reflecting different levels of delinquency, mental health and substance use/abuse issues. The two identified subgroups differ in important ways across the six variables included in the latent class analysis: (1) High Risk youths ($n = 37$), and (2) Lower Risk youths ($n = 94$). Compared to Lower Risk youths, High Risk youths report more delinquency, have higher rates of exposure to stressful/traumatic events as reported by parents/guardians, are more likely to report ever having a substance use problem, ever receiving services for emotional/behavioral problems, and having a DSM-IV substance use diagnosis of abuse or dependence. These results underscore the interrelationships among the youths' mental health, substance use, delinquency, and stress/trauma experiences in understanding their psychosocial risk.

Comparisons of these two groups of youths on a variety of covariates, including their urine test results for marijuana and parent/guardian reports of their psychosocial problems, found significant differences between them that were consistent with their problem group classification. Specifically, compared to Lower Risk youth, High Risk youth were significantly more likely to be urine positive for marijuana, and for their parent/guardian to report they received services for personal problems, and medication for attention, behavioral, learning or emotional problems. The association of parent/guardian reported youth/family stress/trauma experiences with the truant youths' other risk level factors highlights the need to incorporate routine assessment of these stressful events to obtain a more comprehensive picture of the youths' psychosocial profile and service needs.

The interrelated problems uncovered among the High Risk youths in our study are consistent with the problem behavior syndrome concept, discussed in the introduction section. It would be important to replicate our study among comparable samples of truant youth to assess the external validity of our findings.

Our results also point to a number of intervention and service delivery needs among the youths we studied. First, there appear to be emotional and environmental consequences for the overwhelming majority of these youths residing in the absence of at least one biological parent. Adapting to the absence of that parent, whatever the degree or cause, may influence ego strength, character, and general outlook on life. Environmental consequences of this indicator may include financial and residential instability. Access to physical and mental health care, dependable provision of food and clothing, and resiliency from setbacks in general may be impeded. Furthermore, 57% of the truant youth indicated that a family

member ever had a substance abuse problem, and 34% reported a family history of mental health problems. Our results suggest that these troubling family situations should be addressed and remediated in comprehensive intervention services.

Our study has provided an informed understanding of truant youths' and their families. Although at first blush the in-depth assessments we completed might seem more appropriate for more seriously troubled, delinquent youths, sound assessment is indispensable for truant youth in order to best allocate intervention services based on their psychosocial needs.

Our findings also suggest that much remains to be done to strengthen school truancy efforts. In this vein, the Colorado Foundation for Families and Children's (2007) review of promising truancy reduction programs is instructive. The reported several critical elements necessary for effective programming: (a) parent or guardian involvement; (b) a continuum of services, to include meaningful incentives, consequences, and support; (c) collaboration with community resources, including law enforcement, mental health services, mentoring, and social services; (d) school administrative support and commitment to keeping youth in the educational mainstream; and (e) ongoing evaluation. Few of the many programs reviewed by the foundation met these criteria. Of particular concern was the general, serious lack of detailed information on program implementation and system issues experienced by truancy reduction programs as well as process and outcome evaluations that could inform the field. Most evaluations of truancy programs were found to be based on aggregate data, often lacked meaningful comparison groups, and focused on short-term benefits (e.g., reduction in unexcused absences; Mueller, Giacomazzi, & Stoddard, 2006), which do not provide meaningful information on changes in individual's school attendance or academic school performance (OJJDP, 2001). This situation needs to improve, if the field is to move forward.

The National Center for School Engagement (2007) completed an evaluation of seven OJJDP funded truancy demonstration projects. Several lessons learned in its program evaluation work are instructive: (a) there is a need for truancy services to become part of existing student support services, which fosters greater acceptance and impact; (b) early intervention pays off, especially if it involves home visits and outreach to parents of children with few unexcused absences; and (c) there is an importance for community organizations to join schools to improve school attendance. Community-based, mental health providers could establish effective, collaborative relationships with schools in helping identify the psychosocial issues experienced by truancy youth, and involving such youth in needed intervention services.

Our analysis strategy involved a rather novel use of latent class analysis. The use of latent class analysis to identify subgroups of youths involved in various community service programs, who reflect different constellations of psychosocial problems, can be useful to program administrative and clinical staff. First, such analyses can provide some evidence that the agency or program is serving its intended target population. Second, subgroups of youths reflecting different constellations of psychosocial problems can lead to more informed referrals or treatment placement. For example, youths who exhibit lower risk will likely not require intensive mental health or substance abuse services, as will be the case for high risk youths. Related research indicates that providing intensive intervention services to low risk persons may, in fact, increase problem behavior (Lowenkamp, Latessa et al., 2006; Lovins, Lowenkamp et al., 2009). (It is appreciated that the youth subgroups identified by latent class analysis are statistical constructs, rather than actual youths. Hence, the results of latent class analysis should be interpreted with this understanding.)

There are several limitations to our study. First, the study involved a relatively small number of cases. This situation, together with the distribution of cases across the levels of the categorical variables in the data we analyzed, precluded illumination of additional subgroups that might exist. We plan to replicate these analyses with a larger number of cases in this ongoing study to address this issue. Second, there is a need to replicate our findings with truant youth in other jurisdictions, who differ in their sociodemographic characteristics. Third, our results are based on cross-sectional information collected from baseline interviews, which prevent discussion of the longitudinal relationships among the youths' psychosocial problems. We are planning to conduct and report the results of such longitudinal analyses in future manuscripts produced from this ongoing, prospective study.

Truancy represents a growing epidemic in academic settings across the United States (Fantuzzo et al., 2005). Unfortunately, efforts to address truant behavior are all too often sanction and procedure oriented, with truant youths being treated as disciplinary and management problems. Interventions that do not target the root causes of such behavior fail to address the problems that can lead many seriously truant youth to move into the juvenile justice system. However, as described earlier, some truancy programs have started to move away from one-dimensional strategies and, instead, involve more collaborative and holistic approaches (Dembo & Gulledge, 2009).

At the same time, the thrust of our findings is clear. An urgent need exists to direct resources to strengthen service delivery to truant youth and their families. Intervention services are necessary to reduce the flow of truant youth reflecting these problems into the justice system. Directing resources to truant youth is far less costly, and has greater potential for redirecting troubled lives in more prosocial directions, than having these youths develop more serious, troubled behavior problems with their resulting, adverse consequences.

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Table 1

Psychosocial Description of the Youth's Families and Youths (N=131)

	Percentage
Family Problems	
Family member ever had an alcohol/other drug abuse problem	57
Family member ever received alcohol/other drug use treatment	24
Family history of mental health problems	34
Youth Problems	
Ever had an alcohol/other drug abuse problem	18
Ever received treatment for alcohol/other drug abuse problem	11
Ever received services for emotional/behavioral problems	50
ADHD Questions-Ever	
Do you often get complaints from parents/teachers that you don't listen to instructions or directions?	64
Do you frequently tend to act before thinking?	73
Do you often have difficulty waiting for your turn during games or when doing things with other people your age?	31
Do you often fidget and find it difficult to sit still?	49
Experiences any of these problems in past year? (Among youths answering “yes” to Q1-4 above)	85

Table 2

Correlations Among the Variables in the Latent Class Analysis (N=131)

	1	2	3	4	5	6
1. Self-reported total delinquency	-					
2. Youth reported alcohol/other drug abuse problem	.127	-				
3. Youth reported emotional/behavioral problems	.074	.560***	-			
4. Youth reported ADHD problems	.221**	.134	.105	-		
5. Number of youth/family trauma experiences	.048	.259*	.244*	.151	-	
6. Overall alcohol/marijuana/other drug DSM diagnosis	.267**	.622***	.260**	-.058	.131	-

Two-tailed test significance levels:

* p<.05

** p<.01

*** p<.001

Table 3

Latent Class Analysis Fit Statistics (N=131)

	Likelihood Ratio Chi-Square	df	Akaike (AIC)	Bayesian (BIC)	Sample Size Adjusted BIC	Vuong-Lo-Mendell-Rubin Likelihood Ratio Test (LRT)	Lo-Mendell-Rubin Adjusted LRT (aLRT)	Parametric Bootstrapped LRT (bLRT)
1 Class	41.74***	7	1554.30	1583.06	1551.43	N/A	N/A	N/A
2 Classes	**2.13**	**2**	**1518.24**	**1569.99**	**1513.06**	**p=0.0013**	**p=0.0015**	**p=0.0000**
3 Classes	2.28	-	1513.02	1587.78	1505.54	p=0.1767	p=0.1862	p=0.0500

Note: AIC=Akaike Information Criterion; BIC=Bayesian Information Criterion. Two-tailed values:

*** p<.001. The chi-square tests refer only to the categorical variable part of each model.

Table 4

Latent Class Analysis Results

Latent Class 1 (n=94)			
Means	**Estimate**	**S. E.**	**Critical Ratio**
Total Delinquency	0.934	0.102	9.164***
ADHD	0.018	0.042	-0.423
Traumatic Events	2.817	0.197	14.301***
Variances			
Total Delinquency	0.663	0.096	6.903***
ADHD	0.137	0.011	12.031***
Traumatic Events	2.697	0.307	8.786***
Categorical Variable Proportions (Results in Probability Space)			
Youth ever had an alcohol/other drug abuse problem			
No	1.000	-	-
Yes	0.000	-	-
Youth ever received services for emotional/behavioral problems			
No	0.643	0.057	11.211***
Yes	0.357	0.057	6.211***
Substance Use/Abuse Diagnosis			
None	0.562	0.075	7.513***
Abuse	0.294	0.060	4.872***
Dependence	0.143	0.049	2.955**
Latent Class 2 (n=37)			
Means	**Estimate**	**S. E.**	**Critical Ratio**
Total Delinquency	1.358	0.140	9.674***
ADHD	0.063	0.064	0.976
Traumatic Events	3.857	0.342	11.294***
Categorical Variable Proportions (Results in Probability Space)			
Youth ever had an alcohol/other drug abuse problem			
No	0.430	0.142	3.016**
Yes	0.570	0.142	4.005***
Youth ever received services for emotional/behavioral problems			
No	0.190	0.088	2.164*
Yes	0.810	0.088	9.243**
Substance Use/Abuse Diagnosis			
None	0.000	-	-

Categorical Variable Proportions (Results in Probability Space)			
Abuse	0.579	0.091	6.323***
Dependence	0.421	0.091	4.607***

Categorical Latent Variable Mean			
C#1	0.810	0.350	2.32*

Entropy: 0.720

Average Latent Class Probabilities for Most Likely Latent Class Membership (row) by Latent Class (column)

	1	**2**
1	0.971	0.083
2	0.120	0.880

Note: Two-tailed p-values:

* p<.05

** p<.01

*** p<.001

Table 5

Youth Urine Test Results for Marijuana and Parent/Guardian Reports of Youth Psychosocial Difficulties (N=131)

	Youth Group				
	High Risk (n=37)		Lower Risk (n=94)		
UA Test Results for Marijuana and Parent/Guardian Reports	**Mean**	**S.E.**	**Mean**	**S.E.**	**Chi-Square p-value**
Urine test positive for Marijuana	0.679	0.087	0.438	0.059	.032
Parent/Guardian Reports					
Youth ever received professional help/been in hospital for personal problems (not alcohol or other drug related)	0.843	0.071	0.433	0.054	<0.001
Youth ever received professional help/been in hospital for alcohol or other drug problems	0.191	0.066	0.070	0.028	.102
Youth ever received special school services for attention/behavioral/learning/emotional problems	0.360	0.085	0.296	0.050	.538
Youth ever received medication for management/treatment for attention/behavioral/learning or emotional problems	0.507	0.086	0.239	0.047	.008