Distinct Stress and Resource Profiles Among At-Risk Adolescents: Implications for Violence and Other Problem Behaviors

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Abstract

This study tests for the presence of subgroups among youth at-risk for school drop-out and whether those groups differ on levels of violence and related problem behaviors. Latent profile analysis was employed with a diverse adolescent sample ($N = 849$) to identify and describe subgroups based on assessment of stress and coping resources, resulting in four distinct groups: Low Risk, Unprotected, Risk Only, and High Risk. Tests across these groups demonstrated significant heterogeneity in violent behaviors, substance use, and school disengagement. The value of stress and protective resource assessment and tailoring interventions to meet the differing needs of vulnerable youth is discussed.

Keywords

Adolescence is a developmentally critical period that constitutes peak times of violent victimization and perpetration, family conflict, unprecedented risky situations, and enormous cognitive and neurological changes (Bureau of Justice Statistics 2006; Dahl 2004; Fleming et al. 2010). Behaviors in adolescence regarding school, substance use, and delinquent or violent behaviors can have substantial impact on adult outcomes such as relationships, educational attainment, and/or employment difficulties (Dubow et al. 2006; Fang and Corso 2007; Windle et al. 2005). Consequently, preventive interventions in arenas in which social workers frequently interact with at-risk youth need to be developed that target youth at risk of engaging in violence and other problem behaviors (Farrell and Flannery 2006; National Institutes of Health State-of-the-Science Conference Statement

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2006). Towards this end, it is constructive to employ a risk and protective factor framework that seeks to assess factor clusters associated with heightened or reduced behavioral problems (Farrington 2007; Herrenkohl et al. 2004).

How are Person-Oriented Methods of Analysis Useful?

Although research has illuminated constructs that are empirically important for violence and related behaviors, much remains to be learned about how these risk and protective factors function among youth at risk for violence, including how factors may differentially cluster, creating functionally distinct youth subgroups. The developing empirical base has largely been founded on variable-oriented analysis (e.g., correlations, regression) that seek to provide understanding of overall trends and explanation of variance for samples as aggregates (Bergman and Trost 2006). This work has been essential in distilling empirically valuable risk and protective factors, providing characterization of broadly applicable trends, and assessing the cumulative and unique contribution of indicators or predictors of violence.

This foundation serves to guide complementary research questions regarding structure within heterogeneity—testing, for example, for the presence of subgroups that are characterized by important differences in how theoretically meaningful variables interrelate. Person-oriented methods (e.g., latent profile analysis, configural frequency analysis) provide the analytic tools for this kind of structure-seeking, such as identifying subtypes among incarcerated female juvenile offenders (Odgers et al. 2007) and gender-linked subgroups based on variation in youths' perceptions of parental attitudes toward drinking and their own alcohol consumption (von Eye et al. 2006). Adolescent behavior stems from the cumulative contribution of multiple domains of the adolescent milieu. Family, peer and social factors combine and interact, for example, with individual histories, emotional states, and coping resources to result in behavioral tendencies (Cicchetti and Rogosch 2002). This kind of multi-domain characteristic of factors shaping behaviors makes these techniques well suited to testing for distinct forms of clustering of these factors, clusters that importantly distinguish one group of youth from others, relative to their potential risk. In this study we test for patterns of stress and coping factors that can shape adolescent violent and related behaviors—differences which would hold implications for preventive and remedial intervention.

The use of person-oriented methods is not new to the study of violence. For example, a growing body of research has examined heterogeneity based on trajectories of violent behaviors (and, more broadly, delinquency or antisocial behavior) across the life span, distinguishing differences among individuals who exhibit violence in adolescence only, adulthood only, or throughout the lifespan (e.g., Moffitt 1993; Broidy et al. 2003). These studies demonstrate how person-oriented analysis may build productively from variable-oriented findings. Not yet well-investigated is evidence of differing pathways to violence via specific social, family, and intrapersonal contexts. The present study seeks to test for distinct clusters based on risk and protective factors for violent behaviors, using a framework that emphasizes stress and coping resources. This relatively novel approach to discerning differences among those at-risk for violence has the potential to illuminate youth with differing needs for interventions. Evidence suggests that understanding the differing needs

of youth based on their developmental trajectories is paramount to designing successful intervention and prevention (Dahlberg and Potter 2001; Farmer et al. 2007).

Theoretical Foundations: Stress and Coping

The current examination draws from a research program that theorizes adolescent risk behaviors within a stress and coping framework (Eggert et al. 1994; Walsh et al. 1997). Family, peer, and intrapersonal domains can convey maladaptive inputs that result in stress and distress, or may be positive resources for support and adaptive coping. This ecological approach to the adolescent context is consistent with theories of violence, such as traumatic stress and general strain theories, which emphasize the relevance of interpersonal trauma and emotional distress as a contextual influence for engaging in violent behaviors (Chemtob et al. 1988; Greenwald 2002; Hartman and Burgess 1993). Numerous empirical examinations of violence within a context of stress and coping have supported the salience of distress and low inter- and intra-personal resources relative to engaging in violence (Peled and Moretti 2007; Logan-Greene et al. 2011, Sussman et al. 2004).

Sources of distress and support with empirical associations to violent behaviors span domains of the adolescent ecology, such as family, school and peer ties, as well as individual factors (Barnow et al. 2005; Thornberry et al. 2001; Van Dorn et al. 2009). For the present study, we focused on three areas of assessment: interpersonal sources of stress, emotional health, and resources for coping and support. Interpersonal stressors included variables that are potential sources of trauma and distress, such as victimization and family disruption (Fagan 2005; Herrenkohl et al. 2008; Maas et al. 2008), as well as negative peer associations, which can contribute to distress and/or provide opportunities for further exposure to violence (Lauritsen et al. 1991, 1992). Emotional health indicators were included that typically are highly associated with trauma and distress, specifically anxiety, hopelessness, and high stress (Bolland et al. 2007; Greenwald 2002; Loukas et al. 2005). Finally, both personal resources for coping and social support were included as they have the potential to reduce emotional distress and buffer the effects of trauma and distress in preventing violent behavior (Resnick et al. 2004; Scarpa and Haden 2006).

Adolescent aggression tends to co-occur with other problem behaviors, such as alcohol and drug use and school disengagement (Ansary and Luthar 2009; Fleming et al. 2010). Thus, we included these as additional outcomes with violence in the present study. Their inclusion provides a more thorough assessment of youths' differing patterns of engagement in problem behaviors, allowing a better understanding of the subgroups. This also mirrors the need for multidimensional assessment within school-based prevention programs, which serve youth with multiple problems that must be addressed holistically (Mun et al. 2008).

Research Questions

The present study thus addresses two specific research questions: (1) Are there distinct subgroups of youth based on stress and coping resource profiles? (2) Do these profiles significantly differ relative to violent behaviors, substance use, and school engagement in adolescence. Although prior research does not provide a strong basis for a priori hypothesizing as to the specific clustering that may be expected, we had some expectations,

based on literature and practice findings. For example, we expected some youth would likely reflect fairly uniformly low and high levels of risk, and that these youth would report correspondingly lower and higher levels of problematic behaviors such as violence. However, we also predicted that some youth would have more complicated patterns of risks and resources; for example, some youth might have higher levels of stressful risk factors in their lives, but also have resources that could serve to buffer these stressors. Distinguishing patterns between this type of youth from other youth helps us discern differences within the "gray middle" that can otherwise get lost. That is, in typical variable-oriented analysis such as correlations, potentially important profile differences get absorbed into aggregate sample trends. Although the aggregate, or averaged, picture has considerable value, it lacks access to subgroup characterization that holds potential implications for tailoring preventive or remedial intervention supports. Finally, we predicted that youth profiles that contained higher levels of protective coping and supportive resources would correspond to reduced levels of violence and other problem behaviors. These research questions are of importance to social workers and allied professionals to better understand and intervene with the heterogeneous population of at-risk youth encountered in their practices.

Methods

Sample and Procedures

This study presents results of a cross-sectional survey of high school youth. Study participants ($N = 849$) included adolescents in 9th through 12th grade in urban high schools in two cities in the western region of the United States. Inclusion criteria were operationalized through school performance criteria previously demonstrated to predict school dropout (Herting 1990). Specifically, this included students whose school records indicated lower grade point average (<2.4), being behind in credits earned for grade, and having school absences in the top 25 percentile. Youth fitting these criteria constituted the pool from which a random sample was drawn (details below). Use of school dropout indicators provides a highly replicable and transparent strategy for recruitment of youth who are at risk but still school based and, thus, potentially accessible for preventive intervention (Brenner and Collins 1998; Resnick 2000).

Following research procedures that were reviewed and approved by the Institutional Review Board (IRB), youth were randomly selected by computer from the above described sampling pool and then invited by trained research staff to participate in the study. The invitation included information about the purpose of the study, the types of questions that would be asked, the voluntary nature of participation, and choice to withdraw at any time. Youth who were interested were provided a copy of the consent to take home and discuss with his/her parent. The youth's parent was called, usually the same day of invitation, to describe the study. Verbal and written assent/consent was obtained from both youth and their parents or guardians prior to data collection. Youth received snacks and $10 for completing the research questionnaire and interview.

The acceptance rate was 75 % for completing the questionnaire, with 87 % of the participants also completing the follow-up interview. In general, the focus of the initial questionnaire was on school and peer variables, whereas the interview contained a more

complete assessment of the youths' emotional health and family characteristics. All data reported here were based on quantitative scale items from the interview, with the exceptions noted below. The interviews were conducted in-person by master's level clinicians, using standardized procedures; interviews were videotaped and monitored weekly by the clinical supervisor and/or investigator for procedural fidelity. We had in place IRB-approved protocols for following up with youth suspected to be at risk for neglect or abuse, which included state defined mandatory reporting, as well as data safety monitoring procedures.

Forty-five percent of the sample was female; sample ages ranged from 14 to 21 years with only three students over age 19. The average age was 16.0 (SD = 1.24). Racial/ethnic breakdown of the sample included 38.4 % European-American, 20.0 % Latino/Hispanic, 15.5 % African American, 9.9 % Asian American/Pacific Islander, 7.2 % Native American, and 9.0 % reported mixed or other race/ethnicity. For sample characteristics on study variables, see Table 2.

Measurement

Youth completed the High School Questionnaire (HSQ) and then the Measure of Adolescent Potential for Suicide (MAPS) interview, both of which included multiple measures drawn from public domain scales and scales constructed specifically for this population. All measures have been analyzed extensively for internal reliability, ease of use, interpretability, and developmental appropriateness (Eggert et al. 1994; Walsh et al. 1997). Response options, unless otherwise noted, for the questionnaire and interview items were on a 0–6 Likert-type scale (anchors given were: 0 = never, 2 = sometimes, 4 = a moderate amount, and 6 = always, unless otherwise noted). For this study, measures of interpersonal stress, emotional well-being, and personal resources for coping and support were used to help characterize subgroupings of youth based on violence and victimization histories.

Risk Factors—Risk was assessed in both interpersonal and intrapersonal forms. Interpersonal stress was assessed through three measures: *Violent victimization* included witnessing parental violence toward a family member, witnessing a family member destroying things, and experiencing physical abuse, sexual abuse, and physical injury (summed scale of 5 items, α = 0.70; 0 = never, 3 = a few times, 6 = many times). *Family disruption* assessed arguments with parents and siblings, thoughts of running away, and parental substance use and emotional problems (9 items, a = 0.73). *Peer high risk behaviors* (assessed in the HSQ) related to how many friends use drugs/alcohol, skip school, get into physical fights, and get into trouble at school or with the law (8 items, α = 0.88; 0 = none of them, 3 = about half of them, 6 = all of them).

Three measures tapped intrapersonal distress. *Anxiety* (adapted from Thompson and Leckie 1989) measured excessive worry, physical agitation, fearfulness, humiliation, and stomachaches in the last 2 weeks (13 items, α = 0.87). A *hopelessness* scale (items adapted from Beck et al. 1974; 14 items, α = 0.89) appraised feelings of discouragement, hopelessness, lack of enjoyment in life, and a lack of viable solutions to problems. *Perceived stress* assessed the amount of distress caused by 31 possible stressful recent events. Each individual's score was calculated based only on the items he/she had experienced.

Protective Factors—Two protective factors were included in the classification of the groups. The number of positive coping strategies were assessed with a mean-based Likert scale (0 = never, 3 = a few times, 6 = many times) called *problem solving coping*, which targets the range and effectiveness of coping strategies—such as dealing with the problem head on and thinking of different options—used to deal with stressful situations (5 items, α = 0.72). These items were adapted from Patterson and McCubbin (1987). A *family support satisfaction* scale tapped perceptions of and satisfaction with family support, help, and communication (5 items, α = 0.89; Smilkstein et al. 1982).

Violent Behaviors—*Violent behaviors* were assessed by summing the frequency of commission of various acts (e.g., physical and/or emotional injury to others, damaging property, getting into fights) on a 0–6 Likert type scale (0 = never, 3 = a few times, 6 = many times; 6 items, α = 0.72).

Substance Use—Substance use, including *alcohol use*, was measured as the frequency of beer, wine and hard liquor use (3 items, α = 0.71), and *other drug use* (frequency of marijuana, hard drug, and polydrug use, 3 items, α = 0.71). Answers were given on a 0–6 Likert scale (0 = not at all, 1 = once, 2 = 2 or 3 times, 3 = once a week, 4 = several times a week, 5 = almost every day, 6 = every day).

School Disengagement—*School disengagement* was assessed in the HSQ through two indicators: *school goals unmet*, including youths' perceptions of their compliance with school rules and achievement of academic goals (0 = very good, 3 = neutral, 6 = very poorly; 6 items, α = 0.85) and *school dissatisfaction* (0 = very satisfied, 3 = neutral, 6 = very unsatisfied) based on youths' perceptions of their schedules, teachers, and the school atmosphere (4 items, α = 0.70).

Data Analytic Method

Latent Profile Analysis (LPA), sometimes called Latent Class Analysis with continuous variables, is a statistical technique that searches for subgroups of individuals who have similar profiles of interrelationships among selected variables (Everitt et al. 2001; Lanza et al. 2003; Vermunt 2004; a less technical introduction is provided by Neely-Barnes 2010).While similar to cluster analysis, an important difference is that with LPA model fit statistics are generated that allow critical appraisals of the appropriateness of a model and the number of clusters that best fit the data. This allows the user a basis of comparing "models" or sets of subgroups to one another to determine which is best supported by the data and meets standards for significance (akin to the probability p value in variable oriented research). Maximum Likelihood (ML) estimation uses a specified set of variables of interest (what we refer to here as risk and protective factors) to generate a categorical latent variable that probabilistically assigns individuals to clusters. This is based on the relationships among all testing variables (our risk and protective factors) considered simultaneously. To illustrate, do the ways in which correlations among risk and protective factors for youth group A differ significantly from the way the factors correlate for group B and C? An increasing number of groups are tested until estimation fails or an additional group demonstrates no significant improvement for model fit. Although the statistical terminology in LPA for these groups is

classes, we will use the more intuitive language of clusters or groups for consistency and to avoid confusion about school-based classes.

In the present study, Mplus 6.0 was utilized after data were cleaned and prepared in SPSS 15.0. A parsimonious set of stress and coping factors with strong theoretical support as risk or protective to violence engagement was selected. We tested models with one through five groups. As there is no consensus on a single best indicator of fit, we examined multiple fit statistics to determine the number of groups that best fit the data (Nylund et al. 2007). The Akaike Information Criterion (AIC; Akaike 1974) and the Bayesian Information Criterion (BIC; Schwarz 1978) are calculated slightly differently, however for both indicators values closer to zero reflect better fitting models. The Lo-Mendell-Rubin (LMR) log likelihood tests the null hypothesis that an additional group produces a better fit; a p value less than .05 indicates that the higher number of group is a significant improvement in fit (Lo et al. 2001). Interpretation of the groups is based on probabilistic means for each of the variables used to run the LPA, as opposed to definitive group assignment necessary for statistical techniques such as Analysis of Variance tests. One way to think about LPA is that it allows us to identify individuals in terms of how they appear on variables taken into account collectively, rather than variable by variable. Although it is not, therefore, appropriate to test for significant differences on indicator variables one by one, we are able to test for differences on other variables on which the groups would reasonably be expected to differ. In our case, we are able to test for group differences on violence and other problem behaviors, wherein we employed the Wald's test for mean differences based on group membership (Muthén 2007).

In studies of adolescent violence, males have generally reported higher levels of problem behaviors, although this is uneven and rates have been increasing for females in recent years (Bureau of Justice Statistics 2006). Similarly, levels of risk and protective factors indicated for problem behaviors have demonstrated some patterns of sex differences (e.g., Pittman and Wolfe 2002; Rappaport and Thomas 2004). However, studies that examine the functional relationships of risk and protective factors to violence and related problem behaviors have yielded conflicting or nonsignificant sex differences (Arthur et al. 2002; Fagan 2005; Hartman et al. 2009; Logan-Greene et al. 2011). Thus, to avoid conflation of sex differences with important risk and protective structures, we have included sex as a control variable (covariate) when testing for groups. This provides a somewhat more conservative test of the existence of subgroups and the relevance of subgroups for outcome variables of interest such as violence; that these subgroup distinctions are important above and beyond what being male or female could tell us.

Results

Table 1 presents the results of fit statistics for the one- through five-group (class) solutions using sex as a covariate. Both the AIC and the BIC decreased consistently across each of the five models tested, suggesting increasingly better fit. The LMR test results indicate that improvement was observed with each model until the fifth group was added. Taken together, these results suggested that the four-group solution was optimal. The average conditional probabilities (shown in Table 2), which represent correct model prediction of assignment to

the four groups, were also satisfactory, ranging from 0.816 to 0.918 (i.e., 81.6 % to 91.8 % of the individuals were correctly predicted into their identified subgroup on the basis of the data—a very favorable finding). Although entropy—a calculation of overall assignment accuracy based on the four conditional probabilities—was not used as a criterion to determine the number of groups, the entropy measure of the final four-group model was satisfactory, at 0.801. We also examined the theoretical coherence and meaningfulness of the results of the three- through five-group solutions. The fifth group did not add meaningfully to the four group solution; therefore, the latter was retained.

Means and standard deviations of the variables used in group classification are shown in Table 2. The first group, termed "Low Risk," had the lowest scores on all risk measures, the highest levels of all protective factors, and comprised 43.6 % of the sample. The second group was approximately average (for the sample) on all risk factors, but had low levels of all protective factors. This we termed this the "Unprotected" group, who comprised 33.0 % of the sample. The third group had high levels of risk factors and approximately sample-average levels of protective factors, and is thus termed "Risk Only." This group was relatively small, comprising 11.9 % of the sample. The final group had the highest levels of risk factors and the lowest levels of protective factors. This "High Risk" group was also comparatively small, comprising 11.4 % of the sample. A visual presentation of the standardized means (z-scores) for each latent group is shown in Fig. 1. This provides a more interpretable way to see the relative differences and similarities of the groups across the risk and protective factors. Standardizing removes differences in how items are measured by setting the sample mean on each variable to zero and the standard deviation to one. Thus, we can see by the relative height of the bars above or below the line how high or low they are compared to the sample average. Mplus 6.0 does not provide tests of significance for group differences on variables used in LPA group formation.

To examine differences in the probability of group membership by sex, sex was included as a covariate in the model. This did not affect the selection of the best-fitting model nor did it substantially change the group compositions or mean levels of indicator variables. The probability of group membership did significantly differ by sex, however. Specifically, females were more likely to be in the Risk Only and High Risk groups. This is calculated using logistic regressions (Muthén 2007). For example, when the Low Risk group was used as the referent category, being female increased the probability of membership in the Risk Only (Odds Ratio = 2.62, $p<.001$) and High Risk group (OR = 3.67, $p<.001$), but the Unprotected group contrast was not significant (OR = 0.92, $p = 0.71$). Functionally, what this means is that any group differences that are based solely on differential male/female ratios are "controlled for" in these analyses.

Problem Behaviors

The problem behavior measures that were examined had significant omnibus or overall tests of mean differences (using the Wald test, which follows a χ^2 or Chi-square distribution), as shown in Table 3. The majority of the pairwise tests for differences across each of the groups to the others (e.g., Low Risk to Unprotected) were also significant. The Low Risk youth had the lowest reported levels of violence and substance use, and were faring the best

on school-related variables. The Unprotected group, by contrast, had average levels of violent behaviors and substance use, but showed impaired school disengagement, particularly on school goals unmet. The Risk Only group had elevated levels of violent behaviors and substance use, and sample average levels of school disengagement variables. Finally, the High Risk group reported the most violence, substance use, and impairment in school disengagement.

Discussion

This study revealed distinct subgroups of at-risk youth classified on the basis of their stress and coping profiles, operationalized through theorized risk and protective factors. Moreover, these subgroups predicted differences in adolescent problem behaviors including violence, alcohol and drug use, and school dissatisfaction. Specifically, LPA yielded four groups: Low Risk, Unprotected, Risk Only, and High Risk. These groups provide significant insights regarding variations in stress and coping resources manifested among at-risk youth, and convey implications for preventing violence and other problem behaviors. These four groups are discussed below, including implications for practice for youth with varying needs (Collins et al. 2004)

Low Risk Youth

Low risk youth—the largest group at 43.6 %—reported lower than average levels of all risk factors, higher than average levels of protective factors, and correspondingly low levels of violence and other problem behaviors. Although these youth are functioning more favorably relative to the rest of the sample, it is important to recall that this is not a normative sample. Rather, low risk here is relative, "low" being contextualized within youth sought on the basis of risk of school drop-out and associated problems in living. Previous analyses have compared this sample to normative or "typical" populations of adolescents, demonstrating that these individuals have overall greater distress and fewer social and personal resources (Eggert et al. 1994; Nurius et al. 2009).

This group is thus representative of the "indicated" population, as conceptualized by prevention researchers and practitioners—they are showing early signs of risk, but may still demonstrate resilience (O'Connell et al. 2009). Building on these youths' strengths—such as relatively supportive family contexts and personal coping skills—could be sufficient to buffer risk and to foster positive development (Farmer et al. 2007). The National Institutes of Health have identified schools and primary care settings as importation sites of early screening for emotional and behavioral problems (Evans 2009). For this reason, understanding this group as representing a considerable portion of the target population of school-based prevention programs is crucial.

Unprotected Youth

This group was characterized by levels of risk factors in the middle range for the sample, but with very low levels of protective factors—almost as low as the High Risk group. They reported mid-range levels of violence and substance use for the sample, but also reported high levels of school performance problems. These youth appear to be fairly impoverished,

both in the economic sense as well as in resources such as coping skills and positive familial support. Although their risk factors were about average for this sample, they are significantly elevated relative to normative adolescents as a whole (Eggert et al. 1994).

The characteristics of this group illustrate the importance of considering youths' intra- and interpersonal contexts holistically (van der Laan et al. 2010). Although the group reported mid-range levels of violence and substance use for the sample— which would be anticipated if one assumes that risk is linearly related with those outcomes—they also reported much higher levels of school problems than the Risk Only group. Here academic problems co-occur with low levels of social and personal resources. Interventions with this group would need to focus on bolstering protective factors such as coping skills and social support to ameliorate the impact of risk factors. This recommendation is congruent with previous research that points to the need to address diminished resources in preventive interventions as well as the need to reduce risk factors (Evans 2009).

Risk Only Youth

This group was characterized by higher-than-sample-average risk factors and protective factors, indicating a substantial amount of stress and distress in conjunction with protective resources expected to be ameliorative. Compared to the Low Risk and Unprotected Groups, these individuals reported more victimization, family disruption, anxiety, and stress, whereas levels of hopelessness and peer deviance were closer to the sample average. Risk Only youth reported elevated levels of violent behaviors and substance use—statistically indistinguishable from that of the High Risk group—but low levels of school problems compared to all other groups, excepting the Low Risk group. This group is particularly interesting in that the protective factors appear to be buffering some amount of risk with regards to academic functioning, but youth in this group are also clearly struggling in other ways. One major difference separates this group from the High Risk group: although hopelessness is higher than the average, it is well below that of High Risk youth. It may be that these individuals have not lost hope, which allows them to be relatively well-engaged in school activities with an eye towards better future times (Phillips and Pittman 2007).

Despite this characteristic, these youth engage in violence and substance use. Thus, the protective factors do not sufficiently buffer risk for violence (van der Laan et al. 2010). It is possible that family support and coping skills help maintain minimal academic standing, but are insufficient to prevent problems more tightly connected to high levels of stress and anxiety, specifically substance use and violent behaviors. This is consistent with theories of violence that highlight the importance of stress and distress for engaging in violence (Chemtob et al. 1988; Hartman and Burgess 1993). Indeed, the levels of anxiety and perceived stress are nearly as high as those in the High Risk group, who have the highest levels of violent behaviors. Interventions with this group would need to reduce levels of risk, with particular attention to stress and anxiety. The relatively high levels of coping skills and social supports might also provide leverage for these interventions to ameliorate these youth's risk of engaging in violence and substance use (Pepler et al. 2010).

High Risk Youth

These youth reported the highest levels of all risk factors and the lowest levels of all protective factors. They also reported the highest rates of violence and related problem behaviors. This youth group approximates the highest levels of risk that are likely to be encountered in the school setting. They are also in serious danger of exiting normative school-based systems in the direction of juvenile justice or clinical venues. The co-occurring and high levels of prior victimization, emotional distress, and family disruption are consistent with previous research on high-risk youth (Arthur et al. 2002), and paint a picture of substantial distress with minimal buffering resources. For these youth, ever-accumulating stress that is rarely relieved could result in spiraling emotional distress and increased aggression (Lahey and Waldman 2005).

Interventions with these individuals would need to be multifaceted to be effective, and would need to interrupt the negative trajectory established by victimization, poor family context, and a lack of resources (Farmer et al. 2007). Previous research with these youth highlights the need to provide interventions that would both improve their resources, such as family functioning, as well as provide treatment for emotional problems, such as trauma from victimization (Murray and Belenko 2005). Ideally social workers who encounter youth such as these would consider treatment plans that encompass this broad area of needs.

Limitations

One limitation of this study is its cross-sectional nature, which prevents examinations of causal relationships between risk profiles and violence and other problem behaviors. Our aim was to examine clusters of adolescent risk and protective factors within a stress framework, and how those clusters relate to problem behaviors in a crucial period of development. It is also important to note that we do not consider the clusters found here to be a definitive taxonomy of at-risk youth. Future analyses will examine the relevance of these clusters during the transition into adulthood. An additional limitation is that all measures are self-reported, including violent behaviors, which may be prone to biased or inaccurate answers. Although we do not have secondary corroboration, follow-up studies with this same sample have demonstrated stability and accuracy of all measures 10 years later (Nurius et al. 2010). Finally, the at-risk nature of the sample is both a strength and a limitation. These results would not be directly generalizable to the typical population of American youth. Similarly, these results may not be directly generalizable to youth in high-risk settings such as residential treatment or juvenile justice programs. Rather, this sample speaks to the vulnerable middle ground between normative and system-residing youth, providing a relatively rare glimpse at youth teetering on the cusp of serious difficulties.

Conclusion

Despite these limitations, this study has strong implications for research and practice. First, this study sheds new light on how risk and protective factors relative to stress and coping can help practitioners discern clinically salient differences among vulnerable youth. These differences appear to suggest differential intervention priorities relative to preventing violence and other problem behaviors, as well as fostering resilience and optimizing

available strengths and resources. Congruent with theories of violence that emphasize the central causal role of trauma and distress, our findings indicated that external stressors and emotional distress were elevated in the groups that reported the highest levels of violence and substance use. In particular, violent behaviors and substance use were highest in the groups that reported the highest levels of prior victimization along with emotional distress. In contrast, school functioning problems were highest in the groups with low personal and family resources.

For both practitioners and researchers attentive to the roles of risk and protective factors in developmental trajectories towards problem behaviors, these results speak to the value of a stress framework and person-oriented tools. Group differences reveal complexity that can be masked in aggregated assessments of samples overall, whether that be a study sample, a school student body, or even school or community identified vulnerable youth. These findings are relevant for youth-serving practitioners spanning venues, such as child and family services and juvenile justice systems in addition to school-based programming, with implications for universal as well as more targeted intervention approaches. In school settings, the prevention-oriented Response to Intervention (RTI) educational framework links to a Positive Behavioral Interventions and Supports (PBIS) infrastructure designed to prevent problematic behaviors that erode learning and development (Sugai and Horner 2006). The three tiers (universal/school wide, secondary/classroom, tertiary/ individually targeted) of intervention provides multi-level approaches to teaching and supporting appropriate behaviors and underlying needs in addition to sustainable tailored or adaptive interventions. Our stress-based analysis argues for expansion of school violence programming to assess and respond to trauma and distress burdens of students as well as personal and social resources to curb impact and support resilience.

Acknowledgments

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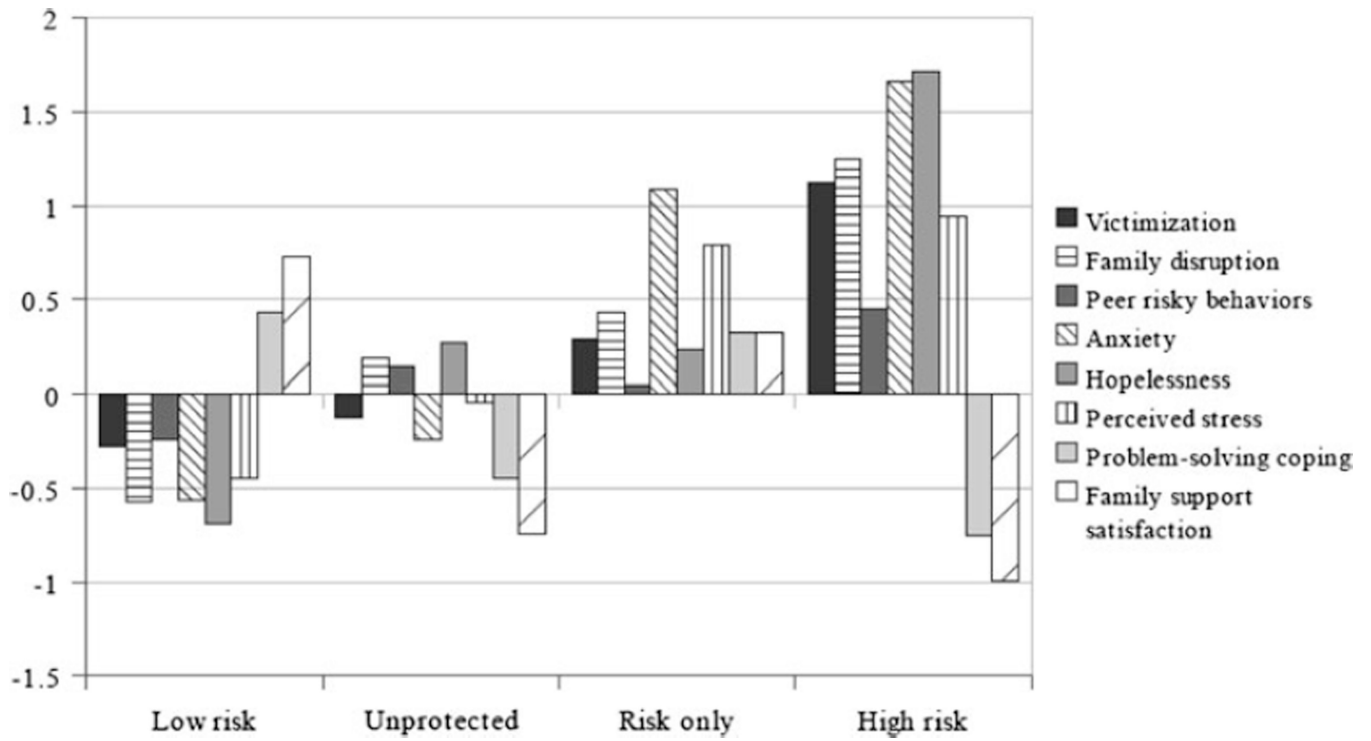
Fig. 1.
Standardized *z*-scores of risk and protective variables used to form the latent groups. (The *bars* represent standard deviation levels higher or lower than the sample mean, here set to zero.)

Table 1

Model fit statistics for 1-through 5-group latent profile analysis solutions

	AIC	BIC	LMRT	Entropy
1-group	23376.67	23452.58	N/A	N/A
2-group	22202.16	22325.48	1162.79***	0.852
3-group	21898.21	22068.96	319.22**	0.766
4-group	21724.30	21942.47	191.08*	0.801
5-group	21625.31	21713.07	117.25	0.793

Note Sex is used as a covariate in all models

AIC Akaike Information Criterion, *BIC* Bayesian Information Criterion, *LMRT* Lo–Mendell–Rubin Test

***
 p<.001,

**
 p<.01,

*
 p<.05

Table 2

Description of group characteristics on the latent profile risk and protective variables

	Sample	Low risk	Unprotected	Risk only	High risk
	mean (*SD*)	Group mean (*SE*)			
Risk factors					
Victimization	4.32 (4.78)	2.98 (0.21)	3.73 (0.28)	5.72 (0.90)	9.70 (1.03)
Family disruption	1.21 (0.88)	0.70 (0.04)	1.38 (0.07)	1.59 (0.21)	2.31 (0.13)
Peer risky behaviors	2.56 (1.53)	2.19 (0.09)	2.79 (0.11)	2.62 (0.23)	3.25 (0.17)
Anxiety	1.38 (0.95)	0.84 (0.05)	1.15 (0.06)	2.42 (0.12)	2.96 (0.16)
Hopelessness	1.44 (0.89)	0.82 (0.04)	1.67 (0.07)	1.64 (0.15)	2.96 (0.15)
Perceived stress	2.06 (1.04)	1.60 (0.06)	2.02 (0.09)	2.88 (0.15)	3.04 (0.08)
Protective factors					
Problem solving coping	3.19 (1.19)	3.70 (0.08)	2.66 (0.10)	3.58 (0.21)	2.29 (0.16)
Family support satisfaction	3.33 (1.69)	4.55 (0.10)	2.08 (0.12)	3.88 (0.48)	1.65 (0.18)
Latent group size		370	280	101	97
Percent of sample		43.6 %	33.0 %	11.9 %	11.4 %
Group membership Probabilities		0.92	0.87	0.82	0.92

Table 3

Wald test of mean differences in adolescent problem behaviors across the latent profile groups

	Sample mean (SD)	Low Risk	Unprotected	Risk Only	High Risk	χ^2
Violent behaviors[a,b,c,e]	1.07 (1.01)	0.80	1.10	1.39	1.68	53.50***
Alcohol use[a,c,e]	0.97 (1.19)	0.79	1.03	1.07	1.36	12.84**
Other drug use[a,b,c]	0.60 (0.92)	0.43	0.69	0.76	0.88	21.68**
School goals unmet[a,b,c,d,e,f]	2.30 (1.34)	1.77	2.72	2.18	3.21	77.87***
School dissatisfaction[a,c,e,f]	2.88 (1.13)	2.60	3.06	2.83	3.50	29.30***

***
 $p<.001$,

**
 $p<.01$,

*
 $p<.05$

[a] Significant contrast between Low Risk and Unprotected groups

[b] Significant contrast between Low Risk and Risk Only groups

[c] Significant contrast between Low Risk and High Risk groups

[d] Significant contrast between Unprotected and Risk Only groups

[e] Significant contrast between Unprotected and High Risk groups

[f] Significant contrast between Risk Only and High Risk groups