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Psychological Distress Among Youth Probationers: Using Social Determinants of Health to Assess Suicidal Thoughts and Behaviors

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Abstract

Background—For youth probationers, it is important to understand how mental health and substance use predict their suicidal thoughts and behaviors (STB) to identify interventions to reduce their psychological distress.

Objective—In this study, risk and protective factor indicators based on the Youth Assessment and Screening Instrument (YASI) Full Assessment were used to explore STB of youth probationers. The study's overarching aim was to examine the associations of psychological distress and other risk and protective factors with youth probationers' STB based on a Social Determinants of Health framework.

Method—This cross-sectional secondary analysis reviewed YASI records from a sample of 11,607 probationers of age 12-18 years within a large urban setting.

Results—The study used logistic regression models to assess risk and protective factors for STB odds (5.79%, $n = 672$ positive endorsement). African Americans were less likely to report STB,

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and girls were much more likely than boys to report STB across risk factors. Mental health disorders and substance use increased STB risk.

Conclusion—The findings underscore the need for screening and treatment of psychological distress for youth probationers. This study discussed these findings, strengths and limitations, and directions for future research.

Keywords

Psychological distress; probation; suicidal behaviors; youth; STB; mental health disparities

1. Introduction

Probationers make up the largest segment of the juvenile and criminal justice population comprising nearly 550,000 in the United States in any given year (Livsey, 2012; Maruschak & Bonczar, 2013). National statistics from the National Juvenile Court Data Archive, representing 82% of the juvenile delinquency population (1.5 million) in the United States, reported that 36% of delinquency cases received probation disposition (Livsey, 2012). Pre-adjudicated (before delinquency cases have been reviewed and settled) youth in the community indicated the prevalence of suicide attempts in the past month ranged between 1.4% to 2.9% (Penn, Thomas, & the Work Group on Quality Issues, 2005; Wasserman & McReynolds, 2006; Wasserman *et al.*, 2010), while lifetime attempts ranged from 9.9% to 13.2% (Wasserman & McReynolds, 2006; Wasserman *et al.*, 2010). One study of post-adjudicated (status after delinquency cases have been reviewed and settled; final disposition) youth indicated that 12.2% had lifetime attempts (Mallett, DeRigne, Quinn, & Stoddard-Dare, 2012). Another sample of youth probationers with adjudicated cases had higher suicidal ideation in the past month up to 29.5% (Evans, Albers, Macari, & Mason, 1996) versus pre-adjudicated youth ranging from 8% to 12.7% (Wasserman & McReynolds, 2006). Consequently, post-adjudicated youth, 36% of whom were probationers, had a higher rate of suicide attempts during the post-adjudication period than they had during the period before adjudication (Livsey, 2012; Wasserman & McReynolds, 2006).

There is a substantial research base documenting that, among the broader population of juvenile offenders, those with mental health problems—compared to those without—are more likely to have court involvement and other troublesome life outcomes, including a particularly high risk for suicidal behavior (Cuevas, Finkelhor, Ormrod, & Turner, 2009; Duke, Pettingell, McMorris, & Borowsky., 2010; Jenkins *et al.*, 2005). Specifically, many youth probationers do not successfully complete their probationary sentences due to technical violations mostly due to mental health problems (Puzzanchera, Adams, & Hockenberry, 2012; Manchak, Skeem, Kennealy, & Louden, 2014). Juvenile offenders are approximately 3 times more likely to die by suicide than youth in the general population (Gallagher & Dobrin, 2006). In fact, suicide is the leading reason juvenile offenders die when confined in juvenile facilities (Bureau of Justice Statistics, 2005). This is highly concerning because in 2011, there were almost 62,000 juvenile offenders in residential placements (Hocken-berry, 2014). One of the most striking reasons for these higher rates of suicide for incarcerated youth is partially due to the violent means they often use during their suicide attempts (Rohde, Mace, & Seeley, 1997). In addition, studies of substance use

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among juvenile offenders (Abram, Teplin, McClelland, & Dulcan, 2003; Teplin *et al.*, 2002) suggest that adverse childhood experiences (ACEs; *e.g.*, sexual abuse, physical abuse or neglect, exposure to or witnessing violence) are also risk factors for suicidality (Ford, Chapman, Mack, & Pearson, 2006; Ford, Hartman, Hawke, & Chapman, 2008). Evidence indicates the severity of psychological distress for juvenile offenders but less is known about the sub-population of youth probationers and whether they have high levels of need for services to address their co-occurring mental health and substance use disorders, and suicidal thoughts and behaviors (STB).

The presence of suicidal ideation may interfere with successful probation sentence completion and reflects a need for psychiatric care (Wasserman, McReynolds, Schwalbe, Keating, & Jones, 2010). Consequently, youth probationers may have considerable psychological need with little access to care, so the risk associated with STBs and delinquency is substantial. Moreover, youth probationers, being in the community may add risk, as there is less supervision, and greater exposure to the social environment that produced the delinquent behavior to begin with. Also, the risk of suicidal ideation is greater post-adjudication, suggesting that adjudication through the juvenile justice system is a point at which to intervene. Exploring risk and protective factors associated with STBs in youth probationers is an important first step in understanding the severity of their psychological distress and needs. Investigation of the mental health/substance use–STB connection, guided by a public health framework, will aid in a more clinically useful understanding of suicide risk in youth on probation.

2. Social Determinants of Health

Marmot and colleagues (1991) describe a systemic context that includes social, physical, and economic environments, which create social hierarchies and impact health outcomes as key components of social determinants of health (SDH). The World Health Organization's (WHO) Commission on SDH highlighted health disparities through this framework, emphasizing the socioeconomic and political contexts associated with health disparities based on social structures like education and race and ethnicity (2007). The WHO Commission provided a diagram that was used to inform the selection of the variables for this study, which were collected *via* the YASI instrument.

The authors chose the SDH perspective to select potential risk and protective factors to consider the various experiences in a youth probationers' life (family structure, housing, school difficulties) that might impact their mental health. The SDH framework includes two components: structural and intermediary determinants (see Fig. 1, adapted from the WHO). Structural determinants include the socioeconomic-political context and socioeconomic position, which generate stratification in the society and define individuals within hierarchies of power and access (Homedes & Ugalde, 2005). The intermediary determinants are shaped by the social, economic, and political mechanisms that impact an individual's health status within social hierarchies, which is particularly relevant for youth probationers. The structural determinants include race and gender that reflect variation among youth probationers.

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The authors chose the SDH for a number of reasons. It is often helpful to have a theoretical basis for selecting variables for a secondary analysis such as that presented here. Earlier study findings suggest that, as reflected in the SDH, race and gender may be of particular interest in exploring STB. Minority youth and males are overrepresented at all stages of the juvenile justice system (Bishop, Leiber & Johson, 2010). Also, many minority youth have been marginalized because of their race, so recognizing that their involvement in services could be the result of progressive change in treatment is important (Quinn & Grumbach, 2015). Understanding the role of race and gender will provide a needed context for youth probationers and their STB. In turn, community- and household-level risk and protective factors (intermediary determinants) may be particularly significant for the probation sub-population of offenders, given their continued exposure to these factors during the period they demonstrate the greatest STB. Consequently, SDH can help elucidate adverse events that youth probationers face.

This article incorporates the SDH conceptual framework to emphasize community- and household- factors, mental health and addictions (Bowen & Walton, 2015). Few empirical investigations have focused on youth probationers, so it is important to understand how mental health and substance use predict their STB to identify interventions to reduce their psychological distress.

3. Current Study

The study's aim was to describe youth probationers' self-reported risk and protective factors and the degree to which these predict STB based on data from the Youth Assessment and Screening Instrument (YASI). The disproportionality of minority and male juvenile offenders within the juvenile justice system is well-documented, as is the high rate of mental health disorders and their contribution to STB among juvenile offenders. Less well-studied is the degree to which the key structural determinants of race and gender intersect with community context (gang involvement, parental supervision, relationship with teachers and peers) and critical individual-level factors (mental health, substance use) to predict STB. As offenders, probationers share the characteristics of the larger offender population, but the community setting within which they continue to live provides a unique window to view the impact of community, both positive and negative, upon the STB of this vulnerable population. The ultimate goal of the study was to inform effective interventions to halt youth probationers' trajectories toward STB and crime. We hypothesized that:

1. Youth with higher incidence of STB will experience greater risk and fewer protective factors than those with lower STB in the intermediary portion of the SDH framework (material circumstances and psychosocial factors).
2. Risk factors in the intermediary, community portion of the SDH framework will be greater indicating higher STB rates for each risk factor.
3. Mental health and substance use will be significant predictors of STB.

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4. Youth Assessment and Screening instrument (YASI)

The agency that oversees the Courts identified the Youth Assessment Screening Instrument (YASI) as the primary risk assessment and implemented it statewide. It comprises risk and protective indicators in 10 domains (Legal History, Family, School, Community and Peers, Alcohol and Drugs, Mental Health, Aggression, Attitudes, Skills, and Employment and Free Time) with 72 questions.

The YASI is available in both Pre-Screen and Full Assessment form, and information collected by the latter was used in this study. Unlike other risk assessment screening tools, the YASI also comprises domains of protective factors. From the description on its website, the YASI assessment tool "…can be used in juvenile probation, detention, day reporting, youth services, schools, police diversion and other settings with a requirement to assess risk of negative outcomes and identify service needs" (Orbis Partners, Inc., 2007a).

The YASI information is useful to providers working with youth involved in the justice system for case planning purposes. Prior to completing the YASI and prior to sentencing, probation officers may interview the youth and their parent or guardian several times to build a therapeutic alliance and gather information. When probation officers complete the YASI Full Assessment, they indicate the youth's stage of involvement in the juvenile justice system: (1) Probation, (2) Case Under Supervision, (3) Referred to Court [outcome pending], (4) Informal Supervision, and (5) Diversion Without Informal supervision. Only adjudicated youth were included in this study.

Standard practice in the jurisdiction requires probation officers to complete the YASI every four months, and each assessment is scored after completion of multiple semi-structured interviews, with input frequently offered by parents or an alternative legal guardian. These scores help probation officers develop case plans for youth. Interview-based data is supplemented with a systematic review of collateral sources including police files, probation records, as well as school and mental health reports (Orbis Partners, Inc., 2007a). The information collected through this process constituted the basis for the dataset used in this study (the single YASI score was not used in this study). Instead, indicators of risk and protective factors were created based on questions in the YASI Full Assessment.

5. Method

5.1. Data

A cross-sectional design with administrative government data files was employed. The first YASI assessment, administered from 2001-2009 among youth probationers comprises the data for this study.

5.2. Ethics Approval

The Institutional Review Board at the University of Illinois at Chicago and the Cook County Bureau of Health Services approved the initial study from this data in 2013 (Quinn, 2014). The University of Rochester Medical Center Research Subjects Review Board approved this analysis in 2014.

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5.3. Participants

The total sample (n = 11,607) was comprised of adolescent boys (87.58%) and girls (12.42%), aged 12-18 in a Midwestern juvenile probation system. All youth had been adjudicated to probation. Ethnicity was coded with 4 levels: African American (73.92%), White (6.55%), Hispanic (11.83%), and Mixed/Other (7.7%). The sub-sample included a total of 672 subjects who (5.79%) reported STB.

5.4. Dependent and Predictor Variables

The dependent variable was STB, based on the YASI question "Suicidal ideation: attempts or thoughts to harm self"—coded as 1 for "suicidal thoughts" or "suicide attempt" and as 0 for "no indications." Suicidal thoughts or behaviors were combined into a single group due to the limited number of individuals that endorsed either attempts and/or thoughts, and because attempts are a predictor of completed suicide.

5.5. Risk Factors

Mental health was coded as binary, with yes for a diagnosis of psychoses, bi-polar, other mood/affective/depression disorders, schizophrenia, or thought/personality and adjustment disorders. Conduct disorder was coded as 0, 1, or 2+, and includes use of a weapon illegally, bullying/threatening people, assaultive behavior, deliberate fire starting, and animal cruelty. This was based on a series of binary questions asking whether the youth had misconducts, use of a weapon illegally, bullying/threatening people, assaultive behavior, deliberate fire starting, and animal cruelty, the variable was created by summing the positive responses. Substance use, coded as use of 0, 1, or 2+ substances, was based on questions about alcohol and drug use, where a positive response was denoted only when the use disrupts function. Family violence asks about the level of conflict between parents, youth and parents, and among siblings. We coded this with 4 levels: no conflict, some conflict that is well managed, distressing conflict, and severe con-flict.1 Harsh parenting, based on answers to parental love, caring, and support of youth, was coded with 3 levels: supportive (consistent or usual love, caring and support); inconsistently supportive; and not supportive ("indifferent, uncaring, uninterested, unwilling to help" or "hostile toward youth, berating and belittling"). Gang involvement was included because they show inordinately high levels of psychiatric morbidity (Coid *et al.*, 2013). Gang involvement was defined as yes when the youth "associates or has been seen with gang members" or "youth is a gang member." Living arrangement, a binary variable, distinguishes adolescents living with parents, stepparents, or other relatives (in-home) from those living in a foster home or group home, living independently, with no permanent address, living with other non-relative adults, or with any other living arrangement (out-of-home). Non response was coded as out-of-home.2 Special education distinguishes between those without or with special education status. Behavioral disability was defined as yes if "behavioral" was the selected response for the YASI special

[1]Distressing conflict included "some conflict that is distressing," "verbal intimidation, yelling, heated arguments," and "threats of physical violence." Severe conflict was any physical violence between parents, parents and children, or between siblings. When more than one answer was selected, the variable was defined as the most severe category selected.

[2]Those who gave answers in both categories were coded as out-of-home, except when the out-of-home placement was only living with non-relative adults (which, given that they were also living in-home, we took to mean that non-relatives were also staying at the house).

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education or disability question. Parental supervision distinguishes those with “good” or “some good” supervision from those with “some inadequate” or “consistently inadequate” supervision.

5.6. Protective Factors

Problem-solving skills distinguishes those with the ability to apply appropriate solutions or generate different solutions to problems, from those who cannot do so consistently. Close to family members was coded as yes for those close to at least one family member (male or female care-giver, sibling, or extended family). Having prosocial peers was coded as yes for any adolescent who maintains contact with responsible and goal-focused peers, admires or emulates older adolescents in school or work, or has a best friend who is supportive and a positive influence. Comfort with teachers was coded as yes if the adolescent likes or feels comfortable talking with at least one teacher, staff, or coach.

5.7. Statistical Analyses

Using logistic regression, we examined the association between STB and all model covariates. Our primary model included the interaction between mental health and substance use, as we were specifically interested in evaluating potential non-homogeneous effects of mental health disorders for youth with different extents of substance misuse. In a secondary model, we also included the interaction between gender and family violence. We evaluated model assumptions by checking for: (a) multiple collinearity between covariates, (b) nonlinearity between age and STB, (c) overall model fit, (d) overdispersion, and (e) whether a bias correction for rare events was necessary.3

6. Results

The findings in this study contribute to the literature about juvenile offenders as they provide a context for STB of youth probationers, an understudied population that, by definition, has continued exposure to community context and, perhaps, compromised access to therapeutic interventions available to their detained counterparts. Scholars have established that suicidal ideation may interfere with successful probation sentence completion and reflects a need for psychiatric care (Wasserman *et al.*, 2010), so this study sought to examine STB and risk and protective factors with a local sample of youth probationers. Among youth probationers (N = 11,607), 5.79% (n = 672) reported STB. In unadjusted comparisons (Table 1), the percentage with STB was significantly greater for each risk factor and significantly lower for each protective factor, except for comfort with teachers. STB and special education status were strongly correlated; the percentage of adolescents with STB for subjects without and with

[3]To check for multiple collinearity between living arrangement and all risk and protective factors, we examined the variance inflation factor (VIF, typically used for linear regression; Weisberg, 2005) and McFadden's R^2 (a logistic regression version of R^2; McFadden, 1973) for each of these variables; where McFadden's R^2 was based on a multinomial logistic regression for variables with more than two levels. We used generalized additive models (Hastie and Tibshirani, 1990) to evaluate the assumption of linearity between age and STB, adjusted for model covariates. We checked model fit using the Hosmer and Lemeshow lack of fit test (2000), and overdispersion by comparing results from logistic regression to the corresponding quasi-logistic regression model. The latter includes an additional dispersion parameter that allows greater variability around the fitted values (McCullagh and Nelder, 1989). Finally, because suicidal thoughts and behaviors were relatively uncommon, we refit the logistic regression model with a bias correction for rare events (King and Zeng, 2001).

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special education status were 4.61% and 8.37% respectively. We conclude that Hypothesis 1 was partially supported.

The percentage of males with STB by ethnicity ranged from 3.52% (African American) to 9.09% (White), whereas in females it ranged from 13.61% (African American) to 24.1% (Hispanic; see Table 2). Race is an important factor for the SDH framework, especially since African American youth probationers are overrepresented in the sample, however; the sub sample of African American youth are less likely to endorse STB in this study even though there is recent evidence (Bridge *et al.*, 2015) that African American male youth in the general population are more likely to die by suicide.

Table 3 shows the number of subjects with and without STB in categories of mental health by substance use. For those with mental health disorders, the percentage with STB ranged from 2.82% (no substance use) to 5.68% (use of 2+ types); for those without mental health disorders, the percentage ranged from 20.83% (no substance use) to 34.15% (use of 2+ substances).

For the remainder of this section we present co-variate-adjusted results from the multivariate logistic regression. Odds Ratios (OR) for the categorical covariates compare the odds of STB for subjects with a particular value of the covariate to those in the corresponding baseline group, adjusted for all other model covariates (Table 4). Females were significantly more likely to have STB than males, OR = 3.41, CI [2.80, 4.16]. White, Hispanic, and Mixed/Other ethnic groups were significantly more likely to have STB than African American adolescents. Our secondary model with the additional interaction of gender and ethnicity did not support differences in STB rates across racial/ethnicity as being different across gender, so results are presented without this interaction ($p = 0.62$ for the interaction, 3 d.f. test).

We expected each risk factor to significantly increase the adjusted OR for STB. For mental health, conduct disorder, family violence, harsh parenting and substance use, results were consistent with this expectation. Living arrangements and the remaining risk factors were non-significant predictors. Therefore, we conclude that Hypothesis 2 was not supported by these results.

Mental health and substance use were two crucial predictors of STB, yet the interaction between these variables was not statistically significant ($p = 0.64$, 2 d.f. test). In other words, the estimated odds of STB for youth with both a mental health disorder and a substance use issue were not significantly different from the estimated odds obtained from the effects of having a mental health disorder and having a substance use issue. Nonetheless, the interaction results suggest that among youth without mental health issues, any substance use has a smaller impact on STB (the odds increased by 44.82% and 49.17% for use of one substance and 2+ substances respectively, compared to no use) relative to youth with a mental health issue (the odds increased by 79.72% and 67.06% respectively for use of one and 2+ substances, relative to no use). Due to the non-significance of this interaction, we also fit a model without the interaction. In that model, mental health was a strong and significant predictor of STB, OR = 6.00, 95% CI [4.96, 7.25]. Substance use was also a

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significant predictor of STB, OR = 1.60, 95% CI [1.26, 2.02] for use of 1 substance and OR = 1.58, 95% CI [1.21-2.07] for use of 2+ substances. Consequently, we conclude that Hypothesis 3 was supported by this analysis.

We expected each protective factor to decrease the odds of STB, yet only closeness to family members was a significant predictor, OR = 0.65, 95% CI [0.50, 0.86]. The odds of STB was 33.78% less for adolescents who were close to at least one family member versus none.

Model assumption checks showed no issue with multiple collinearity, nonlinearity of the age effect, overdisperson, and no need for bias correction.4 We did detect some lack of fit from the Hosmer and Lemeshow test. The major discrepancies were in the groups with the smallest predicted probabilities of STB where the expected counts were larger than the observed counts, and in the group with the next-highest predicted probability where the expected count was smaller than the observed count. Thus, the fitted model was conservative for assessing the suicidal tendencies for youth with the lowest probability of STB—resulting in lower false-negative rates and higher false-positive rates in this group—and anti-conservative among a group of subjects with fairly high probability of STB.

7. Discussion

Criminal/juvenile justice interventions often focus on the individual offender, in this case, the youth probationer, and changes that need to happen: cessation of drug and alcohol use, getting a high school diploma or GED, *etc*. While the criminal justice system considers how health and life circumstances play a role in youth probationers' success, they often don't think about those risk factors as modifiable. In the current study, we investigated psychological distress and STB among youth probationers based on the SDH framework. Analysis showed that both risk and protective factors matter across the portions of the SDH framework. Findings on the structural portion of the SDH framework about race and gender are consistent with existing research about suicide risk (Domalanta, Risser, Roberts, & Risser, 2003; Joe & Kaplan, 2002; Shaffer, Gould, & Hicks, 1994). All other racial/ethnic groups were more likely to have STB than African Americans. However, this racial gap has been decreasing among general population youth due to an increase in suicide among African American males (Bridge et al., 2015; Joe & Niedermeier, 2008; Joe & Kaplan, 2002; Sickmund, 2004), so there is a need to further investigate STB across race, especially for African American youth who are overrepresented in the juvenile justice system. Gender is a significant predictor of STB as females were more than 3 times as likely as males to report STB. This is considerably higher than that found within the general population, where female STB rates are generally twice as high as males (CDC, 2014). This gender difference is consistent with the most recent CDC government report (2014), which indicates the ratio of suicide attempts to suicide death in youth is estimated to be about 25 to 1, also consistent with the high rate among the youth in this sample (American Foundation for Suicide

[4]All variance inflation factors were below 2, suggesting the lack of colline-arity. The nonlinear components of the age effect from the generalized additive model were not significant ($p = 0.35$) and this model did not substantially improve the model. The dispersion parameter from the quasi-logistic regression model was not significantly different from 1, indicating no evidence of overdispersion. Results after bias correction for rare events were essentially the same as obtained from logistic regression, indicating no need for bias correction.

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Prevention, 2016; CDC, 2014: Mościcki, 1994). While we cannot change ones race or gender as an intervention, probation officers can be trained to integrate cultural and gender specific interventions to enhance youth probationers' sense of self and reduce the risk of suicide and suicidal planning presented by a youth being a member of a marginalized, often vulnerable, group (Kubiak, Fedock, Kim, & Bybee, 2016).

Consistent with research findings about suicide risk and detained and/or incarcerated youth, STB was significantly greater for many of the psycho-social risk factors. Significant psychological risk predictors of STB at the intermediary portion of the SDH framework were conduct disorder, family violence, and harsh parenting. However, mental health and substance use increased STB risk. Substance use alone added moderate risk for STB, but when co-occurring with mental health disorders, it substantially increases lethality for STB. Either risk factor poses significant risk for this population, but the co-occurrence of them both renders substance use even more dangerous. Given the strong presence of psychological distress—problems with family violence and parenting—there should be a focus on effectively intervening with parents and family members who also experience psychological distress to restore youth probationers' mental wellness, especially those that use drugs and alcohol. Though unexpected, some risk factors did not predict greater STB after adjusting for other model covariates: living arrangements, gang involvement, special education status, behavioral disability, and poor parental supervision. Much attention is often paid to these variables in delinquency proceedings, yet to protect these vulnerable youth, we may need to broaden our scope to identify effective ways to restore their mental health and well-being.

Mental illness and substance use are the most consistent predictors of suicidal behavior (Qin, Agerbo, & Mortensen, 2003; Cavanagh, Carson, Sharpe, & Lawrie, 2003). Furthermore, adverse childhood experiences (ACEs), and co-occurring mental health and substance use disorders degrade quality of life and increase the likelihood of delinquent behavior (Baglivio, Epps, Swartz, Huq, Sheer, & Hardt, 2014). Similar to other study findings, the presence of mental health issues and substance use greatly impacted STB of youth in this study (Schubert, Mulvey, & Glasheen, 2011). In addition, study findings about suicide risk of post-adjudicated youth suggest that formal processing through the juvenile justice system may play a crucial role in the development of STB in youth probationers (Mallett *et al.*, 2012). Consequently, incorporating mental health care and substance misuse treatment is needed in community supervision of youth to enhance the chances of them successfully completing their probation (Mann *et al.*, 2005). It particularly is the case that interventions for the mental health problems of youth, including STB, are not developmentally tailored (Weisz & Hawley, 2002). Also, interventions for juvenile offenders tend to focus primarily on reducing recidivism. Canadian scholars Craig Dowden and Donald Andrews have identified relationship-building — the ability to foster open, warm and enthusiastic communication — as “arguably the most important” of the five “core correctional practices' that have consistently proven effective in improving recidivism outcomes. Specifically, interventions should focus on reducing risk factors and promoting protective factors in the lives of youth probationers who may be living in high-risk environments, especially adolescents whose parents have histories of suicide, addictions and/or criminality. Clinicians and juvenile justice professionals have a responsibility to inquire about psychological health

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and interactions with family, and to educate parents and family members early about the importance of family integration and communication. Incorporating approaches that focus on reducing suicidal and delinquent behaviors of youth probationers is needed (Dowden & Andrews, 2004). Referrals to mental health, substance use and social service providers should be made as appropriate, especially for youth probationers with both mental health and substance use disorders. Most often, these interventions are not available to youth probationers based upon their community and living situation, so the potential to enhance protective factors related to their family relationships may not be realized.

There is limited evidence regarding protective factors for adolescent suicide, and what exists has produced mixed evidence regarding the impact of family cohesion (Gould, Greensberg, Velting, & Shaffer, 2003; Roberts, Roberts, & Xing, 2010; Taliaferro & Muehlenkamp, 2014). Youth probationers who reported having a good relationship with one or more individuals within the immediate or extended family were significantly less likely to experience STB, even in the presence of other risk factors (Cicchetti, & Toth, 1998; Cicchetti, Rogosch, Sturge-Apple, & Toth, 2009). Thus, psychosocial protective factors at the intermediary portion of the SDH framework represent important aspects of social support for youth probationers, which is consistent with previous research (Svetaz, Ireland, & Blum, 2000). In essence, relationships with parents and family members make a difference in the lives of youth probationers.

Recent literature about adults suggests that interactions with the criminal justice system might provide legal leverage to help people in need of services link with care (Lamberti *et al.*, 2014). Court ordered treatment can move an individual from coercive control to intrinsic motivation (Kothari, Butkiewicz, Williams, Jacobson, Morse, & Cerulli, 2014; Morse, Cerulli, Bedell *et al.*, 2014). It is possible that probation can become that legal leverage youth need to connect to care and begin seeing their behavior through a different lens (Lamberti *et al.*, 2014). Perhaps, their behaviors are not because they are “bad kids” with hopeless futures, but rather their behaviors are the result of emotional dysregulation, attachment issues, and their ACEs.

7.1. Limitations, Implications and Future Directions

This study has limitations that future research may improve upon. First, this is a cross-sectional secondary analysis of administrative data collected from one county. Future studies should include linked data from multiple publicly funded state systems (Medicaid, juvenile Justice, child welfare, education, *etc.*) to longitudinally assess composite risk and protective factor indicators to implement interventions that will reduce the threat, risk, lethality and planning of STB. Longitudinal studies will help inform whether mental health and substance use increases STB, or if there is a reciprocal relationship. Second, the variables in the study were dichotomized to determine which variables would predict the odds of STB. For example, it would have been ideal to examine both ideations and attempts, however; the sub-sample of each were too small and had to be combined. Consequently, having a more exact measure for STB, including time points for when the thoughts and behaviors occurred would have been useful. A more exact measure of mental health disorders would provide more specificity in understanding if certain disorders (*e.g.*, depression) reflect mental health

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disparities and significant predictors of STB. Future work should consider using measures that assess psychiatric diagnoses. Major depression and alcohol/drug dependence have been noted as consistent predictors of attempted or completed suicide (Roy & Linnoila, 1986; Takahashi, 1993), so these indicators would provide more concise measures for future investigations in larger samples of court-involved youth that endorsed STB. Lastly, study findings suggest that one caring adult could protect juvenile offenders, especially girls from engaging in delinquent behavior (Hawkins, Graham, Williams, & Zhan, 2009), so we used this approach in devising the family measure for this study. Future research, which includes a family measure that delineates the differences between types of support persons would be prudent.

Despite these limitations, these study's findings provide some clinical implications. The large sample size allowed us to explore a relatively understudied field of research with high practical relevance. Of particular note is that some youth have supportive families, so they need services that will strengthen these relationships. Zimring (1998) noted, “The juvenile justice system has become the main youth development institution for a large number of [vulnerable] youth.”

Conclusion

As discussed in this study, many youth probationers are facing difficult life consequences, and have been affected by ACEs (Ramiro, Madrid, & Brown, 2010a). The two decades of studies have shown that risk factors like family violence, harsh parenting, and substance misuse lead to poor health outcomes for youth affected by ACEs. We must build upon what we already know about risk factors and identify effective interventions, which also build upon the protective factors to help youth probationers and their families improve their current life situations, while addressing their ACEs. Also, with training, clinicians and juvenile justice staff can work with youth to help them further ameliorate the effects of risk exposure and boost the positive effects of protective factors in their lives. We have a window of opportunity with youth probationers to enhance their social determinants of health (Adler & Stead, 2015; CDC, 2014; Garg & Dworkin, 2016), and improve their physical and mental health, which in turn may decrease their STB and recidivism. The time is now to examine how to treat young women and men so they can successfully recover from their past experiences and continue to live lives that are healthy, and free of psychological distress and violence (Volpe *et al.*, 2015).

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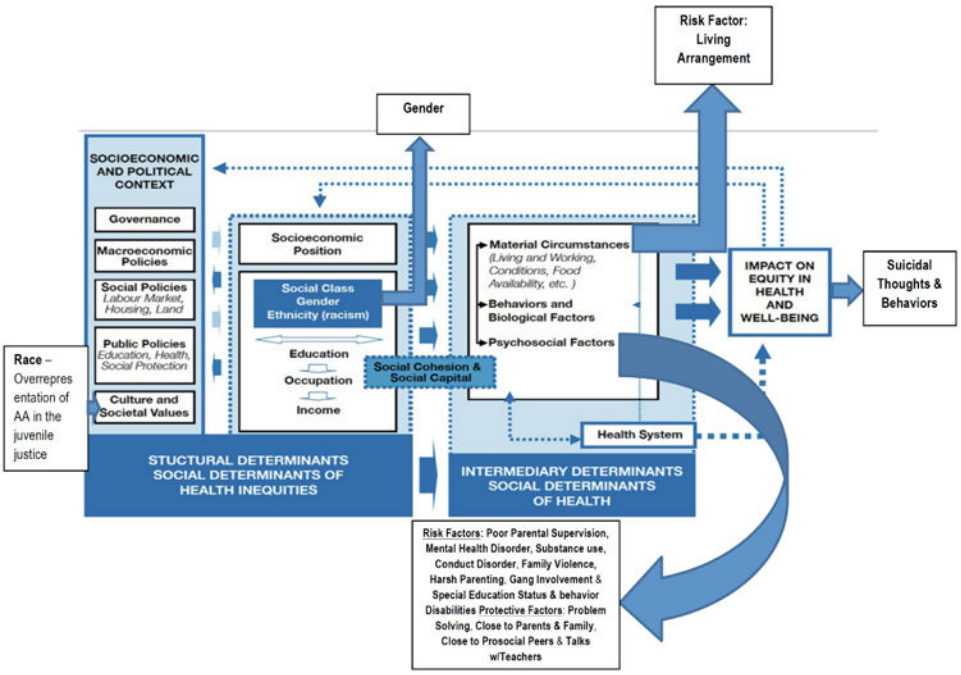

Fig. 1.
Social determinants of health.

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Table 1

Number and percentage of subjects with and without suicidal thoughts and behavior in each level of all categorical variables of interest.

Covariates	Categories	No[1]	Yes	Proportion[2]	p-value[3]
Demographic factors					
Gender	Male	9729	436	4.29%	<0.01
	Female	1206	236	16.37%	
Ethnicity	African American	8175	405	4.72%	<0. 01
	White	674	86	11.32%	
	Hispanic	1262	111	8.08%	
	Mixed and Others	824	70	7.83%	
Living Arrangement	Home	10702	631	5.57%	<0. 01
	Out-of-home	233	41	14.96%	
Risk factors					
Mental Health Disorder	No	9826	317	3.13%	<0. 01
	Yes	1109	355	24.25%	
Substance Use	0	8912	450	4.81%	<0. 01
	1	1373	121	8.10%	
	≥ 2	650	101	13.45%	
Conduct Disorder	0	5342	177	3.22%	<0. 01
	1	3472	233	6.29%	
	≥ 2	2121	262	10.99%	
Family Violence	No conflict	3913	98	2.44%	<0.01
	Manageable conflict	3290	146	4.25%	
	Distressing conflict	2863	274	8.73%	
	Severe conflict	869	154	15.05%	
Gang Involvement	No	7156	411	5.43%	<0. 01

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Covariates	Categories	No[1]	Yes	Proportion[2]	p-value[3]
	Yes	3779	261	6.46%	
Harsh Parenting	Supportive	9506	464	4.65%	<0. 01
	Inconsistently supportive	1234	169	12.05%	
	Not supportive	195	39	16.67%	
Special Education Status	No	7598	367	4.61%	<0. 01
	Yes	3337	305	8.37%	
Behavior Disabilities	No	9418	494	4.98%	<0. 01
	Yes	1517	178	10.50%	
Parental Supervision	Good	9259	510	5.22%	<0. 01
	Bad	1676	162	8.81%	
Protective factors					
Problem Solving	No	2403	239	9.05%	<0.01
	Yes	8532	433	4.83%	
Close to Family	No one	569	90	13.66%	<0. 01
	1 or more	10366	582	5.32%	
Close to Prosocial Peers	No	6303	435	6.46%	<0. 01
	Yes	4632	237	4.87%	
Comfort with Teachers	No	7506	474	5.94%	0.32
	Yes	3429	198	5.46%	

[1] no and yes indicate whether the subject has STB.

[2] proportions refer to the percentage of subjects with STB for each subset of data.

[3] p-values are calculated from Pearson's chi-square test of independence, where a smaller p-value means the covariate of interest is not independent of STB.

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Table 2

Number of adolescents with and without suicidal thoughts and behavior in levels of gender by ethnicity.

Gender	Ethnicity	STB		Proportion
		No	Yes	
Male	African American	7293	266	3.52%
	White	570	57	9.09%
	Hispanic	1114	64	5.43%
	Mixed and Others	752	49	6.12%
Female	African American	882	139	13.61%
	White	104	29	21.8%
	Hispanic	148	47	24.1%
	Mixed and Others	72	21	22.58%

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Table 3

Number of adolescents with and without suicidal thoughts and behavior in levels of mental health and substance abuse.

Mental Health	Substance Abuse	STB		Proportion
		No	Yes	
No	No	8095	235	2.82%
	1 type	1216	51	4.03%
	≥ 2 types	515	31	5.68%
Yes	No	817	215	20.83%
	1 type	157	70	30.84%
	≥ 2 types	135	70	34.15%

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Table 4

Results of multivariate logistic regression model for suicidal thoughts and behavior.

Covariates	Odds Ratio[1]	95% Confidence Interval		p-value
Demographic factors				
Age	0.99	0.91	1.07	0.75
Gender				
Male	1			
Female	3.41	2.80	4.16	<0.01
Ethnicity				
African American	1			
White	1.49	1.12	1.98	<0.01
Hispanic	1.76	1.37	2.25	<0.01
Mixed and Others	1.59	1.18	2.13	<0.01
Living Arrangement				
Home	1			
Out-of-Home	1.32	0.89	1.96	0.16
Risk factors				
Mental Health × Substance use				
No × 0	1	-	-	-
No × 1	1.45	0.66	3.19	0.36
No × ≥ 2	1.49	0.61	3.64	0.38
Yes × 0	5.68	2.92	11.03	<0.01
Yes × 1	10.20	2.50	41.61	<0. 01
Yes × ≥ 2	9.48	2.10	42.78	<0. 01
Conduct Disorder				
0	1	-	-	-
1	1.30	1.05	1.62	0.02
≥ 2	1.47	1.16	1.86	<0.01
Family Violence				
No conflict	1			
Manageable conflict	1.38	1.05	1.81	0.02
Distressing conflict	1.77	1.36	2.31	<0.01
Severe conflict	2.11	1.54	2.89	<0. 01
Gang Involvement				
No	1	-	-	-
Yes	0.95	0.78	1.16	0.62
Harsh Parenting				
Supportive	1	-	-	-
Inconsistently supportive	1.41	1.12	1.77	<0. 01

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Covariates	Odds Ratio[1]	95% Confidence Interval		p-value
Not supportive	2.11	1.37	3.24	<0. 01
Special Education Status				
No	1	-	-	-
Yes	1.21	0.96	1.53	0.10
Behavioral Disabilities				
No	1	-	-	-
Yes	0.92	0.70	1.20	0.52
Parental Supervision				
Good	1	-	-	-
Bad	0.81	0.65	1.03	0.08
Protective factors				
Problem Solving				
No	1	-	-	-
Yes	0.87	0.71	1.06	0.17
Close to Family				
No one	1			
1 or more	0.65	0.49	0.86	<0. 01
Close to Prosocial Peers				
No	1			
Yes	1.10	0.90	1.33	0.35
Comfort with Teachers				
No	1	-	-	-
Yes	1.02			
Mental health × Substance no × 0	1			

[1] odds ratio of STB of each covariate compared to the corresponding baseline category by holding the other covariates constant. The baseline categories are as follows: male for gender; African American for ethnicity; in-home placement for living arrangement; no conflict for family violence; supportive for harsh parenting; the negative responses are treated as baseline categories for mental health, conduct disorder, gang involvement, special education status, behavioral disabilities, substance abuse, parental supervision, problem solving, close to family members, close to prosocial peers and comfort with teachers. The odds ratios for the baseline categories are 1.