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EMOTION REGULATION AS A PREDICTOR OF JUVENILE ARREST

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Abstract

The current study examines emotion regulation as a novel dynamic factor of juvenile arrest as it compares with known static and dynamic risk factors. Participants included seventh graders at five urban public schools (N = 420, M_{age} = 13, 53% male). The predictive relationship between adolescent self-, parent-, and teacher-report of baseline adolescent emotional competence and arrest at 30-month follow-up was assessed. Stepwise logistic regression analyses revealed that teacher report of emotion regulation strategies, minority status, and lifetime marijuana use were significant predictors of arrest. Findings indicate teacher report of emotion regulation competence in early adolescence may be an important consideration for prevention program development.

Keywords

juvenile justice; arrest; emotion regulation; risk factors; adolescence

INTRODUCTION

Although juvenile arrests have declined over the last decade, youth continue to enter the juvenile justice system at a considerable rate (Puzzanchera, Adams, & Sickmund, 2011; Puzzanchera & Hockenberry, 2013). This is unfortunate given the higher prevalence of negative outcomes for justice-involved youth, including substance use disorders, psychiatric symptoms, poor educational outcomes, and other health-related problems (e.g., HIV/sexually transmitted infections [STIs]; Chassin, 2008; Shufelt & Cocozza, 2006; Tolou-

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Shams et al., 2014). Previous research has identified a number of individual static and dynamic factors associated with juvenile arrest (Bishop, 2005; Feldstein Ewing, Venner, Mead, & Bryan, 2011; Huizinga et al., 2007; Mulvey, 2011; Tolou-Shams et al., 2014; Vermeiren, Jespers, & Moffitt, 2006; Zahn et al., 2010). Although these factors have been helpful in identifying some treatment needs, the dynamic picture of risk of arrest during adolescence remains incomplete. The present article proposes emotion regulation as a novel factor that may be predictive of juvenile arrest, above and beyond those previously identified in the literature. Elucidating the relationship between emotional regulation and juvenile arrest has the potential to enhance current treatment options and decrease arrest rates for at-risk youth.

Static risk factors identified in prior research include race/ethnicity, socioeconomic status, and gender. African American and other racial minority youth enter the system at disproportionate rates relative to other offending youth (Kakade et al., 2012; Office of Juvenile Justice and Delinquency Prevention, 2011; Pope, Lovell, & Hsia, 2002). Race statistically influences the likelihood of arrest and the severity of juvenile justice outcomes (Bishop, Leiber, & Johnson, 2010; Stevens Andersen, 2015; Tapia, 2010, 2011). In addition, racial disparities tend to overlap with socioeconomic disparities with regard to likelihood of arrest and number of arrests (Kakade et al., 2012; Stevens Andersen, 2015). Males account for a larger proportion of juvenile arrests and are more likely to be involved in criminal behavior than females (Puzzanchera, 2014; Puzzanchera & Hockenberry, 2013).

Dynamic risk factors, such as substance use, aggression, and hyperactivity, are also associated with arrest in adolescence. Studies have shown that early onset of substance use, primarily alcohol and marijuana use, is predictive of juvenile justice involvement (Dembo, Wareham, & Schmeidler, 2007; Loeber, Green, Lahey, Frick, & McBurnett, 2000; Mulvey & Schubert, 2012). Many substance abusing court-involved youth meet criteria for substance use disorders (Teplin et al., 2007; Teplin, Welty, Abram, Dulcan, & Washburn, 2012). Adolescent self-report of substance use and the presence of a substance use disorder is strongly related to number of arrests (Mulvey & Schubert, 2012). Although aggression and hyperactivity are a risk factor for juvenile arrest, it is important to note that mental health diagnoses, despite being more prevalent among juvenile justice–involved youth than the general population, are not predictive of arrest (Grisso, 2008).

A dynamic risk factor recently emerging as a target for juvenile arrest is emotion regulation (Ford, Steinberg, Hawke, Levine, & Zhang, 2012). Emotion regulation, or the lack thereof, underlies many mental health diagnoses and may serve as a more specific mechanism to target for change in youth at risk of arrest. In particular, anxiety, depression, conduct disorder, and attention-deficit hyperactivity disorder (ADHD) are common concerns among court-involved youth (Abram, Teplin, McClelland, & Dulcan, 2003; Schubert, Mulvey, & Glasheen, 2011; Teplin et al., 2007; Tolou-Shams et al., 2014; Vermeiren et al., 2006). Emotion regulation (ER) is conceptualized as the process of “shaping which emotions one has, when one has them, and how one experiences or expresses these emotions” (Gross, 2014, p. 6). The most widely used and supported ER model is the Gross Process Model, which describes three primary aspects of ER: the regulation goal that is trying to be accomplished, the strategy used to achieve it, and the outcome from this attempt (Webb,

Miles, & Sheeran, 2012). The model is based on the modal model of emotion (Barrett, Ochsner, & Gross, 2007) and posits that emotions can be regulated at each step in the process of generating emotions. For example, individuals can redirect their attention from a stimulus or modify how one thinks about a situation to alter its emotional impact as ways to regulate their emotions (Gross, 2014). To use such strategies, individuals benefit from general emotional competence skills, such as the ability to recognize their emotions and efficacy around accessing emotion regulation strategies.

Effective ER is associated with resilience, strong social relationships, and higher academic achievement (Cole, Michel, & Teti, 1994; Rawana, Flett, McPhie, Nguyen, & Norwood, 2014), while maladaptive ER is predictive of many internalizing problems including anger, anxiety, depression, dissociation, and posttraumatic stress (Rawana et al., 2014; Sundermann & DePrince, 2015). Maladaptive ER is also associated with factors demonstrated in the literature as enhancing likelihood for juvenile justice involvement. For example, Rawana et al. (2014) reported associations between ER and externalizing problems such as substance use and impulsivity, especially in those with mental health concerns. Adolescents with maladaptive ER are more likely to cope with stressors through confrontation rather than acceptance (Boekaerts, 2002). Research has also shown that adolescents who engage in minor delinquent acts are more likely to have difficulty regulating negative emotions (Pihet, Combremont, Suter, & Stephan, 2012).

There is a dearth of research, however, directly examining the relationship between ER and juvenile arrests. Prior research on ER has focused primarily on adult offenders and the association between ER and anger/aggression. For example, adult offenders with maladaptive ER had more extensive histories of aggression, but learning emotional awareness and effective ER strategies contributed to adaptive emotion regulation (Roberton, Daffern, & Bucks, 2014). Such studies show promise that ER interventions may have the potential to be effective in curbing justice involvement.

Thus, more research is needed examining ER as a risk factor for future arrest to further inform intervention for at-risk youth prior to ever entering the system. As stated previously, juvenile arrest is linked to a number of negative outcomes, thus, understanding ER as a dynamic and modifiable factor could help shape interventions designed to prevent juvenile arrest and court contact. This study aimed to determine whether youth ER is predictive of future arrest among a school-based population of early adolescents with mental and behavioral health concerns over 30 months.

We hypothesized the following:

> **Hypothesis 1:** Adolescents with poor ER, as reported by youth, parent, and teacher, would be predictive of arrest above and beyond factors known to be important such as race, socioeconomic status, gender, and substance use.

METHOD

PARTICIPANTS

A total of 470 seventh graders from five urban public schools were enrolled in an intervention study comparing the impact of a health education program that integrated emotion regulation concepts with a program more similar to typical public school education that focused on providing information without consideration of the emotional context of health behaviors (Project Talking about Risk and Adolescent Choices [TRAC]). Adolescents were eligible if they were between 12 and 14 years old, in the seventh grade at a participating school, spoke English, and were identified by school personnel as exhibiting symptoms of emotional or behavioral problems, substance use, or sexual activity. Exclusion criteria included a history of sexually aggressive behavior, known HIV infection, developmental delays, current pregnancy, or having a sibling who had previously participated. These criteria were reassessed with parents during the consent process to confirm eligibility before participation. Consistent with national data on the frequency of mental health problems in adolescence (Merikangas et al., 2010), schools referred about 27% of students to the program; about 40% of those referred were enrolled. The 40% enrolled reflects the percentage of youth who participated in the study from the total population who received a written note asking for permission to contact them (parents of adolescents identified by staff as meeting eligibility requirements). Of those providing permission to contact them, 65% of participants participated. To reduce contamination of the interventions and avoid nesting conditions within schools, schools participated in one condition each school year. Additional details regarding project procedures are available elsewhere (see Houck et al., 2016).

PROCEDURE

All procedures were approved by the hospital's institutional review board. Parent-informed consent and adolescent assent were obtained prior to participation. At baseline, assessments were administered to adolescents, individually or in small groups, in a quiet location after school, with a trained research assistant nearby to answer questions. Questionnaires were completed on laptop computers using audio-assisted computer self-interview (ACASI). At baseline, measures took approximately 1.5 hr and were completed in multiple sessions if needed. Follow-up assessments used the same format, but took less time (approximately 1 hr) and were completed individually in convenient locations (e.g., library, home) if scheduling after school was difficult for the participant. At baseline, parents completed questionnaires via ACASI in the language of their choice (English, Spanish, or Portuguese).

Adolescents then participated in a 12-session (twice weekly), after school, small-group (four to eight adolescents) intervention, with one-time review sessions offered after the 6- and 12-month follow-up assessments. All groups were led by male–female pairs consisting of a mental health clinician (or clinician in training) and a research assistant and used games, videos, discussions, and workbook activities to convey group content.

The ER intervention aimed to enhance ER skills to reduce poor decision making. The focus of the intervention was on sexual risk behaviors, though other risks (substance use, physical

violence) in the context of emotion regulation were also discussed. Developmentally, appropriate strategies for regulating emotions during moments of decision making were presented. Games and role-plays were used to apply these strategies to a variety of risk situations. The aim of the health promotion (HP) intervention was to encourage healthy decision making by providing health information, similar to the structure of many public school health education curricula. Matched for time and engagement, the HP intervention addressed a variety of health topics, but without emotion education.

MEASURES

Demographics—Adolescents reported demographic information, including gender, race, and ethnicity at baseline.

Emotional regulation—Adolescents completed two self-report subscales of the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004): Lack of Emotional Awareness (LEA; six items) and Limited Access to Emotion Regulation Strategies (LAERS; eight items). Adolescents rated statements related to self-perceived emotional awareness (e.g., “I pay attention to my feelings”) and abilities to manage negative emotions (e.g., “When I’m upset, I believe that there is nothing I can do to make myself feel better”) on a five-point scale. Higher scores indicate more problems. The DERS has been previously validated in adolescent samples (Neumann, van Lier, Gratz, & Koot, 2010; Vasilev, Crowell, Beauchaine, Mead, & Gatzke-Kopp, 2009; Weinberg & Klonsky, 2009) and demonstrated strong reliability in the current sample (LEA α = .88, LAERS α = .83).

Parents and teacher perspectives of adolescent emotional competence were also obtained at baseline via the Emotion Regulation Checklist (ERC; Shields & Cicchetti, 1997). The ERC contains two subscales assessing children’s emotion regulation ability from the perspective of others: Lability/Negativity and Emotion Regulation. The Lability/Negativity subscale consists of 15 items (e.g., “Is easily frustrated”), and higher scores indicate greater inflexibility, unstable moods, and negative affect. The Emotion Regulation subscale consists of eight items (e.g., “Can say when s/he is feeling sad, angry or mad, fearful or afraid”), and higher scores indicate greater perceived emotional understanding, self-awareness, and empathy. Parents and teachers responded on a four-point scale ranging from 1 (*rarely/never*) to 4 (*almost always*). Adequate internal reliability was observed for both the Lability/Negativity (parent α = .75, teacher α = .95) and Emotion Regulation (parent α = .62, teacher α = .84) subscales. The current study used parent- and teacher reports from baseline. See Table 1 for the area under the receiver operating characteristic area under the curve (AUC) on the emotion regulation measures.

Substance use—The frequency of alcohol and marijuana use (assessed separately) in the 6 months prior to each assessment as well as lifetime history of use at baseline was collected from adolescent report. For the current analyses, responses were dichotomized (yes/no) to reflect whether participants had used in their lifetime prior to baseline.

Conduct disorder symptoms—At baseline, adolescents completed the Conduct Disorder Scale from the Youth Inventory–4 (YI-4; Gadow & Sprafkin, 1995), which assesses

symptoms of common emotional and behavioral disorders of early adolescence. Scores were compared with normative samples to determine whether participants met recommended cutoffs for conduct disorder by adolescent report of symptoms. Cronbach's alpha for the Conduct Disorder Scale was .87.

Neighborhood environment—Adolescents also completed the environment subscale of the Neighborhood Environment Scale (NES; Crum, Lillie-Blanton, & Anthony, 1996) at baseline. These six items measure neighborhood conditions and include "In my neighborhood, many yards and alleys have broken bottles and trash lying around." Internal consistency of the measure was good ($\alpha = .83$).

Arrest history—Arrest history was assessed only at the final assessment point of the study (30-month follow-up) with the question "Have you ever been arrested?" Those who endorsed an arrest history were also asked "What were you arrested for?" as an open-ended question. The most common responses were assault ($n = 23$), larceny/shoplifting ($n = 6$), carrying a weapon ($n = 4$), breaking and entering ($n = 3$), substance use ($n = 3$), trespassing ($n = 3$), and other ($n = 11$). Other charges included offenses such as harassment, automobile accident, or refusal to identify a charge.

ANALYSES

The relationship between baseline emotional competence (self-, parent-, and teacher report) and arrest history by the end of the study was examined using a stepwise logistic regression. The first two steps of the model examined factors related to the study's design, specifically school and intervention condition. To account for variables previously shown to be related to legal involvement among adolescents, the third step of the model included gender, race/ethnicity, alcohol use, marijuana use, and neighborhood environment. The remaining steps examined the emotion regulation variables from the perspectives of adolescents (DERS Awareness, DERS Access to Regulation Strategies; Step 4), parents (ERC Emotion Regulation, ERC Lability/Negativity; Step 5), and teachers (ERC Emotion Regulation, ERC Lability/Negativity; Step 6). Differences between each step were evaluated using likelihood ratio tests and the overall effect sizes for each step were calculated using Nagelkerke's pseudo R^2, which can be interpreted as variance explained for dichotomous outcomes. Effect size for individual predictor variables were calculated using odds ratios. Analyses were conducted using SPSS, version 24.

RESULTS

The majority of participants ($N = 420$) were male (53%), with an average age of 13.0 years. Youth identified their race as Caucasian (32%), African American (28%), Mixed Race (18%), Native Hawaiian/Other Pacific Islander (3%), American Indian (2%), and Asian (1%); 15% of youth did not identify a race. Thirty-eight percent of the sample identified their ethnicity as Hispanic. Of the 420 participants recruited at baseline, 360 (86%) completed the 30-month follow-up; of these, 314 had complete data for the analyses. Of these 314 youth, 17% ($n = 53$) endorsed an arrest history in their lifetime. There were no significant differences in arrest history by age, sex, or study condition (see Table 2). Prior to

collapsing race and ethnicity, there was no significant association between either race or ethnicity and arrest history. However, upon collapsing race and ethnicity (no minority status/minority status), the dichotomous variable was associated with arrest ($\Phi = .114$, $p = .03$) such that minority youth had a greater likelihood of arrest. Of the youth who reported an arrest history, 52% endorsed consuming alcohol in their lifetime at baseline compared with 36% of youth with no history of arrest ($\Phi = .117$, $p = .03$). Youth with a lifetime history of arrest reported lifetime marijuana use at baseline (26%) at higher rates than youth with no arrest history (10%; $\Phi = .180$, $p = .001$).

STEPWISE LOGISTIC REGRESSION

A stepwise logistic regression was conducted to evaluate whether measures of emotion regulation added to the model of known predictors of arrest history. The correlations among variables entered into the model are presented in Table 3.

Step 1. At Step 1 with only school location entered as a predictor variable, a test of the overall effect of school location was significant, χ^2 (4, $n = 314$) = 9.75, $p = .04$, $R^2 = .05$, and there were no differences among the predictive ability of any given location.

Step 2. Study intervention condition was not a significant predictor of lifetime history of arrest, $\chi^2(1, n = 314) = 1.46$, $p = .23$, $R^2 < .01$.

Step 3. As expected, known predictors of arrest including gender, minority status, lifetime history of alcohol use, lifetime history of marijuana use, and neighborhood environment helped predict arrest, $\chi^2(6, n = 314) = 23.43$, $p = .001$, $R^2 = .12$. Specifically, lifetime marijuana use ($p = .015$) and minority status ($p = .04$) uniquely predicted lifetime history of arrest.

Step 4. The addition of adolescent self-reports on the DERS LAERS and LEA, did not significantly improve the predictive model, $\chi^2(2, n = 314) = 1.67$, $p = .44$, $R^2 = .02$.

Step 5. The addition of parent reports on the ERC subscales (Lability/Negativity and Emotion Regulation) did not significantly improve the predictive model, $\chi^2(2, n = 314) = 2.26$, $p = .32$, $R^2 = .01$.

Step 6. In contrast to Steps 4 and 5, teacher reports on the ERC subscales of Lability/Negativity and Emotion Regulation did improve the predictive model, $\chi^2(2, n = 314) = 14.91$, $p = .001$, $R^2 = .07$. Specifically, teacher report of emotion regulation uniquely predicted lifetime history of arrest ($p = .005$).

The final logistic regression model with all variables entered was also significant, $\chi^2(17, n = 313) = 53.48$, $p < .001$, $R^2 = .26$ (see Table 4). The independent contribution of significant predictors are as follows: teacher report of better emotion regulation strategies (odds ration [OR] = 0.36, 95% CI = [0.18, 0.73], $p = .005$), minority status (dichotomized race/ethnicity: 0 = *majority*, 1 = *minority*; OR = 2.80, 95% CI = [1.09, 7.20], $p = .03$), and baseline lifetime marijuana use (OR = 4.03, 95% CI = [1.48, 10.98], $p = .007$). Given the finding of minority status as a significant predictor of arrest, and the possibility that there may be a bias in how teachers report on emotion regulation of minority students, we conducted post hoc analyses

to examine the relationship between teacher-reported regulation and minority status and whether the predictive utility of teacher-reported regulation differed by minority status. Neither type of relationship was significant—point biserial correlation, rpb = .053, $n = 414$, $p = .29$; interaction term from full model: $b = .085$, $\chi^2(1) = 0.010$, $p = .92$—suggesting no evidence for bias in teacher ratings.

SUPPLEMENTAL ANALYSES

A second stepwise logistic regression was conducted to address missing data associated with parent report of emotion regulation (i.e., parent reports on the ERC subscales Lability/ Negativity and Emotion Regulation), which did not significantly contribute to the model in the primary analyses. Without parent ERC, the final logistic regression model with all variables entered remained significant, $\chi^2(15, n = 339) = 54.73$, $p < .001$, $R^2 = .25$, and there were no differences among the predictive ability of the significant variables (minority status, lifetime marijuana use at baseline, and teacher report of emotion regulation) from the primary stepwise logistic regression described above.

DISCUSSION

Juvenile justice research has more recently begun to emphasize public health approaches to understanding juvenile justice involvement, by focusing research efforts on risk factors for involvement as compared with traditional theoretical pathway models. This new approach has the benefit of identifying possible risk factors that may be targeted for early prevention or intervention. The current finding, that emotion dysregulation, as reported by teachers, predicted arrest with high-risk adolescent youth, is consistent with the public health approach, which concentrates prevention and intervention efforts on modifiable risk factors. The current study builds upon the existing literature of risk factors contributing to an increased likelihood of juvenile justice involvement.

It is noteworthy that teacher reports of adolescent emotion regulation were significant predictors of arrest even when controlling for symptoms consistent with conduct disorder and that parent and self-reports were not. Several hypotheses for these findings are possible. First, it may be that teachers are more objective observers of adolescent emotion regulation. Adolescents likely model emotion regulation tendencies exhibited by parents. Thus, parents may be biased by similarities with their own regulation skills and less inclined to interpret such behaviors or abilities as problematic. Similarly, adolescents' abilities to self-report their emotional competence, although reliable in this sample, may lack validity during this developmental period because of limits in their abilities to label their own emotional processes (such as awareness or regulation). This may be especially true for those with the most deficits in emotion regulation, and may explain the lack of relationship observed between self-reports and arrest.

Alternatively, the significant effects may be related to the context of the teachers' observations. A school setting may place additional stressors on some young people that are not present at home and, thus, evoke dysregulation responses that are better observed by teachers than parents. Similarly, it may be that emotion regulation described by teachers is strongly influenced by the context of authority, eliciting emotions, and dysregulation that are

similar to those evoked in teens' interactions with police. Emotion regulation may also represent the underlying mechanism explaining school suspension in elementary school (which is predictive of future legal problems).

Consistent with national discussion on disproportionate minority contact with the legal system, self-identification with minority race/ethnicity was a significant predictor of arrest. There are two important factors to consider. First, race and ethnicity were collapsed into a dichotomous categorization of nonminority and minority status. Second, race/ethnicity did not emerge as a significant predictor until the final stepwise logistic model. This suggests that among youth with mental health indications, race/ethnicity helps to explain arrests only after accounting for the contribution of emotion regulation for youth with mental health symptoms. There was no significant relationship between teachers' observation of adolescent emotion regulation and race/ethnicity, which suggests independent contributions for teacher observation of adolescent emotion regulation and adolescent race/ethnicity to the increased likelihood of arrest. Regardless, the disproportionate rate of minority arrest remains an ongoing issue in the juvenile justice system, and although minority status does not represent a modifiable individual risk factor, it represents a larger systemic risk factor related to increased rates of arrest that is modifiable from the systems, structural-level, or policy intervention perspectives.

Early substance use predicting future arrest parallels prior research findings. It is important to note that the current findings suggest that marijuana, but not alcohol, consistently predicted arrest at each step. Yet, given that aggressive behaviors (e.g., fighting), and not substance use offenses, were the most frequently identified reason for arrest, the contributing role of substance use is not completely clear. Adolescents may consume marijuana as an unhealthy method of emotion regulation to reduce negative, unwanted feelings such as anger and irritability. However, marijuana use may also be a marker of exposure to early neighborhood disadvantage (e.g., neighborhood violence, gang membership) or family dysfunction (e.g., lack of parental monitoring, poor parent–child relationship). The early initiation of marijuana use (prior to seventh grade) may also indicate an association with a negative peer group. Finally, marijuana use may lower inhibitions of already emotionally dysregulated youth that contribute to physical altercations. A combination of these factors cannot be dismissed.

Several possibilities exist to explain the relationship between poorer teacher-reported emotion regulation and increased likelihood of arrest. First, youth with poorer emotion regulation skills may engage in more illegal activities because of poor judgment and risky decision making that is more strongly determined by emotions. The inability to manage anger or embarrassment may lead to retaliatory behaviors, such as fighting, which is consistent with the most common causes for arrest provided in these data. Poorly managed emotions may interfere with cognitive processes that remind teens of rules during decision making, and thus increase the frequency of behaviors that may eventuate in contact with the justice system.

It is also possible that impaired emotion regulation may affect the management of affective arousal that might occur during interactions with law enforcement, independent of the

frequency of “arrestable” behaviors. During police encounters, verbal and behavioral responses that are influenced by emotion regulation may play an important role in the outcome. Adolescents who are better able to manage their emotional responses during stressful encounters may be less likely to end these interactions with arrests, whereas those who appear less controlled may be interpreted by law enforcement as more at risk and, thus, evoke an arrest. However, it should be noted that historical biases (e.g., disproportionate racial/ethnic minority contact) in interactions between law enforcement and minority populations make it difficult to fully discern the role of emotion regulation during police contacts. These biases also may affect the validity of arrest as a study outcome; yet, being arrested remains a risk factor for youths’ long-term trajectories, and, thus, is a meaningful indicator.

Finally, youth with deficits in emotion regulation may exhibit dysregulated behavior in class more often (and thus, be observed by teachers) than peers who are better able to delay such reactions and, in turn, behaviors. In short, it may be that there is little difference in the frequency of illegal behaviors, but that those with poor emotion regulation are less selective about when and where they engage in them, which puts them at risk of arrest.

The current study has several strengths, including the consideration of emotion regulation from a broader perspective than anger in a justice-involved population. Although anger may be a critical factor in some criminal behavior, other emotions, such as jealousy, depression, irritability, or embarrassment, may play important roles and should be included in such research. This is particularly salient because emotion regulation is potentially modifiable, and may serve as a public health target for reducing justice involvement if addressed early in development. Other strengths include the study’s diverse sample, the use of longitudinal data, and the collection of collateral perspectives.

It also has several limitations. First, the sample, although ethnically and racially diverse, was drawn from a narrow age range from one region of the country. The study also focused on youth with mental health symptoms, which may limit generalizability, but may also be more relevant for those most at risk of arrest, given the relationship between mental health problems and justice system involvement (Shufelt & Cocozza, 2006; Teplin, Abram, McClelland, Dulcan, & Mericle, 2002). Measurement of emotion regulation remains a challenge to the field, and using self-reports of adolescents with mental health symptoms is subject to potential biases. Similarly, teacher reports of student behaviors, which significantly predicted arrest, have been shown to be subject to biases (Pas & Bradshaw, 2014). Neither was information related to the timing of the arrest collected, nor were data related to behavior problems and suspensions in the school setting. The current analyses also had data missing for 25% (n = 106) of the initial sample (N = 420) due largely to the attrition of 60 participants (14%) at the final timepoint who did not have data for the outcome variable. Missing data may result in sample bias due to the potential for selection bias. In the current study, supplemental analyses were conducted with one of the key nonsignificant variables removed to increase the sample size (n = 339; 81%) and found the same results as the primary analyses; however, bias may still exist. Finally, most of the reasons for arrest provided were related to fighting, thus, it may be that emotion regulation is more closely related to assault-related arrests and not arrest in general.

Nonetheless, these data have important implications for at-risk youth. Emotion regulation in early adolescence, as measured by teacher reports, is a predictor of juvenile justice system involvement later in life. Thus, greater attention to emotion regulation in schools may have important benefits for preventing future legal involvement. School systems might serve youth by providing emotion education as part of early adolescent curricula as well as by identifying youth with emotion regulation challenges who require additional skills training. To this end, training school staff to address emotion dysregulation observed in the school setting by recognizing the influence of emotions on behavior and increasing self-efficacy for emotion regulation by coaching young people to use regulation skills may improve these abilities in adolescents beyond what can be achieved through practices focused on discipline. Furthermore, the combination of substance use and emotion regulation deficits may be particularly meaningful, as it further highlights the need in prevention program development for using known risk factors to identify youth most at risk of justice involvement. This knowledge may make the goal of matching the right youth with the right intervention to get the best outcome more attainable.

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Biography

Kathleen Kemp, PhD, is an assistant professor in the Department of Psychiatry and Human Behavior at Brown University and a staff psychologist at Rhode Island Hospital in Providence, Rhode Island. She received a PhD in clinical psychology from Drexel University. Her research interests focus on juvenile justice and adolescent suicide risk prevention interventions. She also works as clinical psychologist specializing in youth forensic mental health evaluations.

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TABLE 1:

ROC Analyses: Area Under the Curve

Variable	Area	*SE*	Asymptotic significance	Confidence interval
Access regulation	0.58	0.04	0.06	[0.50, 0.66]
Emotional awareness	0.56	0.05	0.19	[0.47, 0.65]
Parent-negativity/lability	0.60	0.04	0.03	[0.52, 0.68]
Parent-emotion regulation	0.51	0.04	0.91	[−0.42, 0.59]
Teacher-negativity/lability	0.70	0.03	0.00	[0.63, 0.77]
Teacher-emotion regulation	0.69	0.04	0.00	[0.62, 0.76]

Note. ROC = receiver operating characteristic.

TABLE 2:

Baseline Characteristics of Youth Stratified by Outcome Groups (n = 360)

Characteristics	Participants with lifetime arrest history n = 58	Participants without lifetime arrest history n = 302	*P*
Age at baseline	13.02 (SD = 0.52)	12.92 (*SD* = 0.53)	.82
Gender (male)	62% (36)	51% (155)	.15
Race			
Caucasian	26% (15)	34% (104)	.37
African American	36% (21)	27% (82)	
Multiracial	15% (9)	18% (56)	
Native Hawaiian or other Pacific Islander	7% (4)	3% (9)	
American Indian			
Asian	2% (1)	2% (5)	
Missing	0% (0)	1% (3)	
Ethnicity (Hispanic)	47% (27)	36% (108)	.14
Race/ethnicity dichotomous (Y) *	86% (50)	73% (221)	.04
Neighborhood Environment Scale **	2.43 (*SD* = 2.18)	1.48 (*SD* = 1.85)	.001
Marijuana use (lifetime) **	26% (15)	10% (30)	.001
Alcohol use (lifetime) *	52% (30)	36% (109)	.03
Condition			
Health promotion	55% (32)	45% (135)	.153
Emotion regulation	45% (26)	55% (167)	

* $p < .05$.

** $p < .01$.

Table 3:

Correlations Among Variables Entered Into the Stepwise Logistic Regression Model

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Gender	—														
2. School	−.03	—													
3. Neighborhood environment	.08	−.16**	—												
4. Marijuana	−.002	.10	.11*	—											
5. Alcohol	.10	.10*	.25**	.45**	—										
6. Race/ethnicity	.04	−.32**	.03	−.09	−.04	—									
7. Intervention group	.01	.10*	−.03	−.10*	−.05	.03	—								
8. Conduct disorder	−.03	.10*	.29**	.34**	.24**	−.02	−.12*	—							
9. Emotional awareness	−.18**	−.02	.04	.12*	.11*	−.01	−.06	.21*	—						
10. Access regulation	.17**	−.03	−.26	.04	.17**	.05	.08	.08	−.11*	—					
11. Parent–negativity/lability	−.07	.01	.07	.11*	.09	.02	.06	.13*	.10*	.09	—				
12. Parent–emotion regulation	.11*	−.06	.06	−.03	−.05	−.08	−.03	−.15**	−.15**	−.09	−.43**	—			
13. Teacher–negativity/lability	−.07	−.10	.23**	.09	.12*	.03	−.04	.17**	.08	.15**	.38**	−.11*	—		
14. Teacher–emotion regulation	.10*	.08	−.21**	−.02	−.03	.05	−.08	−.017**	−.13**	−.10*	−.21**	.12*	−.49**	—	
15. Arrest	−.08	−.07	.18**	.18**	.12*	.11*	−.08	.19**	.08	.11*	.10	.001	.24**	−.23**	—

*$p < .05$.

**$p < .01$.

TABLE 4:

Final Model of Relationship With Lifetime Arrest History (n = 314)

Predictors	β	*SE*	OR	95% CI
Step 1				
School 1	0.03	0.65	1.03	[0.29, 3.65]
School 2	−0.32	0.66	0.73	[0.20, 2.69]
School 3	0.07	0.62	1.08	[0.32, 3.66]
School 4	−0.32	0.66	0.73	[0.20, 2.64]
Step 2				
Condition	−0.21	0.37	0.81	[0.39, 1.66]
Step 3				
Female	−0.45	0.36	0.64	[0.32, 1.29]
Race/ethnicity	1.03*	0.48	2.80	[1.09, 7.20]
Neighborhood Environment Scale	0.13	0.09	1.14	[0.95, 1.36]
Marijuana use (lifetime)	1.39**	0.51	4.03	[1.48, 10.98]
Alcohol use (lifetime)	−0.16	0.42	0.85	[0.37, 1.96]
Conduct disorder	0.35	0.44	1.43	[0.95, 1.36]
Step 4				
DER lack of emotional awareness	0.05	0.17	1.05	[0.75, 1.46]
DER emotion regulation	0.11	0.21	1.12	[0.73, 1.70]
Step 5				
ERC parent report lability/negativity	0.34	0.42	1.40	[0.61, 3.22]
ERC parent report emotion regulation	0.21	0.42	1.24	[0.54, 2.86]
Step 6				
ERC teacher report lability/negativity	0.38	0.30	1.46	[0.82, 2.58]
ERC teacher report emotion regulation	−1.02**	0.36	0.36	[0.18, 0.73]

Note. OR = odds ratio; CI = confidence interval; DER = Difficulties in Emotion Regulation; ERC = Emotion Regulation Checklist.

* $p < .05$.

** $p < .01$.