

Developmental Maturity and Risk Behaviors of First-Time Offending, Court-Involved, Non-Incarcerated Youth

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ABSTRACT

Objective: Youth in contact with the justice system have higher rates of risky behaviors such as substance use than youth not in contact, yet the mechanisms underlying these behaviors are not clearly understood. Research with incarcerated and post-adjudicated adolescent samples have examined some of the individual level factors by examining the relationship between psychosocial maturity and substance use; however, adolescents at point of first contact with the juvenile justice system, a crucial point of intervention and diversion, have been given little attention. **Method:** The current study examined the relationship between psychosocial maturity, including emotion regulation, and high-risk behaviors such as substance use and delinquency in court-involved, non-incarcerated youth at point of first juvenile court contact. **Results:** MANCOVA analyses and logistic regressions partially supported our hypotheses that lesser psychosocial maturity was associated with earlier onset of substance use and increased delinquent behaviors. **Conclusion:** Findings inform potential intervention needs around specific elements of psychosocial maturity for youth involved in the justice system.

KEYWORDS: Adolescent, Juvenile Justice, Development, Delinquency, Substance Use

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INTRODUCTION

Adolescence is an important developmental period with physical, emotional, and social areas of growth

and vulnerability (Moffitt 1993; Steinberg 2008). Many have argued that risky decision making is a

hallmark of this developmental period with behaviors such as reckless driving, physical fights and risky sexual behavior being heightened during this time (Cauffman & Steinberg, 2000; L. Steinberg, 2005). For many youths, risky decision making also leads to engagement in other problematic behaviors including substance use and illegal activities (Kann et al., 2012; Piquero, 2008; Piquero et al., 2001). Factors at the individual, family, and community level can serve as risk or protective factors of adolescent risky decision making, such as substance use (see Nawi et al., 2021 for a review). At the individual level, traits such as adolescent impulsivity, rebellion, and lack of emotion regulation skills serve as risk factors for adolescent substance use (as cited in Nawi et al., 2021).

Research with incarcerated and post-adjudicated adolescent samples have examined some of the individual level factors by examining the relationship between psychosocial maturity and substance use (e.g., Chassin et al., 2010; Cruise et al., 2008); however, adolescents at point of first contact with the juvenile justice system, a crucial point of intervention and diversion, have been given little attention. Without intervention, these youth may penetrate further into the juvenile justice system (i.e., juvenile detention), and therefore may be at increased risk of negative outcomes such as criminal recidivism, school dropout, and unemployment into adulthood. Understanding risk behaviors in the context of the adolescent psychosocial maturation process may help improve our understanding of initiation of these risky behaviors and our ability to provide early intervention (Chassin et al., 2010). The current study examines the relationship between psychosocial maturity, substance use, and delinquency among a sample of youth in first-time contact with the juvenile courts.

Psychosocial Maturity Development

Cauffman and Steinberg (1995), with influence from

GLOSSARY

PSM (Psychosocial Maturity)

CINI (Court-involved, non-incarcerated)

FTO-CINI (First-time offending, court-involved, non-incarcerated)

EPICC (Epidemiological Project Involving Children in the Court)

ACASI (Audio Computer-Assisted Self-Interview)

PSMI (The Psychosocial Maturity Inventory)

RPI (Resistance to Peer Influence Scale)

FOI (Future Outlook Inventory)

WAI (Weinberger Adjustment Inventory)

ARBA (The Adolescent Risk Behavior Assessment)

NYS-SRD (The National Youth Survey-Self-Reported Delinquency)

MANCOVA (Multivariate analysis of covariance)

Greenberger and Sorenson (1974), describe psychosocial maturity (PSM) as the psychosocial processes that youths undergo when making decisions. PSM is comprised of three specific psychosocial factors. First, responsibility characterizes an ability to function independently and make autonomous decisions and overall general self-reliance. Second, perspective incorporates the ability to see both short- and long-term consequences of potential actions, as well as the ability to recognize and consider the viewpoints of another person in the decision-making process. Lastly, temperance involves the ability to delay action and limit impulsivity, which involves curbing immediate responses and exhibiting self-control.

More recently, psychosocial maturity was described with similar distinct functional domains that map onto the original PSM theory but with the addition of a fourth distinct domain: emotion regulation (Kemp et al., 2017). Emotion regulation is

a skill that aids individuals in regulating responses to stimuli or situation, which is an imperative skill during decision making. Furthermore, emotion regulation has a well-established literature that underscores its role as an important component of adolescent development (Boyer, 2006; Frick, 2004; Silk et al., 2003). Emotion regulation is associated with numerous positive outcomes, such as academic achievement and resilience to negative outcomes in the face of adversity (Rawana et al., 2014), as well as various risk behaviors, such as substance use (Tolou-Shams et al., 2011), delinquency (Kemp et al., 2017), and sexual activity (L. K. Brown et al., 2013); thus, understanding more about the role of emotion regulation during adolescent development is important as a possible target for intervention particularly for youth at high risk for escalating juvenile justice involvement.

PSM Changes from Adolescence into Young Adulthood

To date, research from 11 countries has indicated PSM improves as a function of age (Icenogle et al., 2019). Yet, for many adolescents, PSM will continue to develop into their 20s. In fact, responsibility and perspective achieve stability at the beginning of young adulthood (around age 19), while temperance continues development until the mid-20s (Modecki, 2008). These findings have been supported in cross-sectional, longitudinal community-based, and juvenile justice samples as well (Cauffman & Steinberg, 2000; Chassin et al., 2010; Modecki, 2008).

Differences within age groups have also been observed indicating relative deficits of PSM in any age group may play an important role in risk-taking behaviors. For example, in a sample of court involved youths for serious offenses, lower levels of PSM in adolescence relative to their peers was associated with persistence of antisocial behavior into young adulthood (Steinberg et al., 2015).

Understanding PSM levels among youth at point of first court contact may elucidate the relationship between PSM and risk-taking decisions related to delinquent behaviors.

PSM and Delinquency in Adolescence

PSM is associated with risky behaviors and delinquency in both justice and non-justice involved samples. For youths who are not justice-involved, PSM is associated with risky behaviors such as distracted driving, alcohol use, and self-reported delinquency (Riggs Romaine et al., 2018). Doherty and O'Neill (2021) found similar findings with a similar sample of 7th and 8th grade non-justice involved youths; low levels of psychosocial maturity (low impulse control, anger control, resistance to peers etc.) was related to higher levels of delinquency reported in the past 6 months.

Research with samples of justice-involved youth have found maturity correlates with self-reported delinquency for both girls and boys (Cruise et al., 2008; Simmons et al., 2020). PSM has also been consistently demonstrated to parallel changes in antisocial decision-making, with improvements in PSM related to fewer antisocial decisions and delinquent behaviors. Across age groups, lower PSM levels were associated with more antisocial decision-making (Cauffman & Steinberg, 2000; Ozkan & Worrall, 2017). In fact, PSM predicts delinquent behavior above and beyond certain demographic factors (e.g., age, gender, education level, socioeconomic status) (Modecki, 2008; Monahan et al., 2009).

Temperance, in particular, may be the most important factor for males. Temperance predicts self-reported delinquency for both violent and nonviolent acts (Cruise et al., 2008). Further, an increased temperance is associated with a likelihood of desistance in trajectories of delinquent behavior (Monahan et al., 2009). Context may also bear particular rele-

vance. Following incarceration in a secure setting, temporary reductions in temperance and responsibility were observed among adolescents, highlighting that PSM may be influenced by environmental factors (Steinberg et al., 2004). In sum, psychosocial maturity appears to have a relationship with antisocial decision-making and behaviors.

PSM and Substance Use in Adolescence

Substance use is particularly prevalent in adolescence; 1 in 8 teenagers have abused an illicit drug within the last year (NCDAS, 2022)). Yet, the relationship between adolescent substance use and PSM is much less clear. The directional influence – how adolescent substance use may influence PSM and how PSM may influence adolescent substance use – has received little attention. Initial studies with incarcerated youth who re-enter into the community showed that, after a period of forced abstinence, marijuana use predicted lower PSM levels compared with other male court involved youths for serious offenses who did not endorse marijuana use (Chassin et al., 2010). When abstinent, PSM levels were no longer significantly different from their non-using counterparts. Some theorize that adolescent substance use may impede the normal developmental process by reducing the opportunity to engage in normal challenges and coping associated with adolescents (Baumrind & Moselle, 1985). As a consequence, the growth of psychosocial maturity may be delayed or impaired. Nonetheless, the directionality or interaction of the relationship between substance use and psychosocial maturity remains unclear.

Current Study Hypotheses

There is a current gap in research around PSM, delinquency and substance use, particularly for justice-involved youth who are not detained for more serious violent offenses. Given that the majority of justice-involved youth are diverted from detention and supervised in the community, exploring these

constructs among a sample of court-involved, non-incarcerated (CINI) youth at the point of first contact with the juvenile court system is important. Research suggests that adolescents may differ in terms of delinquency and substance use risk factor severity and needs depending on stage of court contact and incarceration status (Gatti et al., 2009; Mulvey et al., 2010) and juvenile justice system context may influence PSM development (Steinberg et al., 2004). Elucidating PSM development in relation to risky decision making including delinquent behaviors and substance use is important among this population, given these youth are at higher risk for future juvenile justice involvement and substance use. As such, identifying deficits in PSM at this critical point may present as an opportunity for targeted intervention prior to further enmeshment in the juvenile justice system. Therefore, the current study aims to first examine psychosocial maturity including responsibility, perspective, temperance, and emotion regulation with first-time offending, court-involved, non-incarcerated (FTO-CINI) adolescents. Given prior literature showing the relationship between psychosocial maturity, substance use, and delinquency, we expect that lower psychosocial maturity including responsibility, perspective, temperance, and emotion regulation will be associated with increases in alcohol and marijuana use as well as delinquent behaviors in this sample.

METHODS

Participants

This study was not preregistered, but the research questions, hypothesis, variables, and the analytic plan was described in detail before requesting the data. The current study used baseline data obtained from the Epidemiological Project Involving Children in the Court (EPICC), which was collected in 2014-2016 from 423 FTO-CINI juveniles. Project EPICC

is a longitudinal study that explored the impact of numerous risk and protective factors on behavioral and health outcomes of FTO-CINI juveniles with an open status and/or delinquent (criminal) petition within a Northeastern Family Court. Eligible juveniles included those 12-18 years old, with a recent first-time offense, and the willing participation of an involved primary caregiver. An involved caregiver was defined as a biological parent or legal guardian that lived with the juvenile for at least six months prior to study enrollment. If a juvenile did not meet these criteria, and/or the juvenile or caregiver had a cognitive impairment that would impede the ability to fully consent or complete surveys, they were not eligible for participation. Informed consent and assent were obtained by trained research assistants, and surveys were administered electronically via Audio Computer-Assisted Self-Interview (ACASI) in participant homes or community locations with ample privacy (e.g., library or coffee shop). Further details about study design and procedures for Project EPICC have been published elsewhere (Tolou-Shams et al., 2019). Study protocols were approved by the Institutional Review Boards at the University of California, San Francisco and Rhode Island Hospital.

Measures

Demographic Characteristics. Participants completed a demographic questionnaire at baseline that included gender (male, female), age in years, race (Caucasian, African American/Black, Other) and ethnicity (Latinx, non-Latinx).

Index Offense. Participants had either status or delinquent family court petitions. Status petitions are offenses that would typically only be filed against youth such as truancy, running away, or curfew violations. Delinquency petitions are offenses regardless of age (e.g., simple assault, theft, possession of stolen goods).

Developmental Maturity. As conceptualized by Cauffman and Steinberg (2000), and in line with prior research involving juvenile justice populations (e.g., Chassin et al., 2010; Monahan et al., 2009), overall psychosocial maturity (PSM), as well as responsibility, temperance and perspective subscale scores, were calculated using the following scales:

The Psychosocial Maturity Inventory (PSMI Form D; Greenberger & Sørensen, 1974) is used to assess the construct of psychosocial maturity among youth. The current study included the 30-item personal responsibility subscale, which itself includes three subscales: Self-Reliance, Work Orientation, and Identity. Respondents indicated on a 4-point Likert-type scale to what degree they agreed (1 = “agree strongly” to 4 = “disagree strongly”) with each statement. Higher scores are indicative of more responsible behavior. High internal consistency ($\alpha = .98$) was found in the current sample.

The Resistance to Peer Influence Scale (RPI; Steinberg & Monahan, 2007) measures the extent to which a youth is susceptible to influence from their peers and their willingness to participate in autonomous anti-social behaviors. Participants are presented with 10 paired statements and asked to specify which statement best described them (e.g., “Some people go along with their friends just to keep their friends happy” BUT “Other people refuse to go along with their friends, even though they know it will make their friends unhappy”), by indicating whether one of the statements is “really true” or “sort of true”. Higher scores indicate greater resistance to peer pressure. With the current sample, the RPI demonstrates high internal consistency ($\alpha = .95$).

Future consideration and planning was assessed using the Future Outlook Inventory (FOI; Cauffman & Woolard, 1999). The 15-item FOI ($\alpha = .94$) instructs participants to rate on a 4-point Likert-type scale (1 = “never true” to 4 = “always true”) to what degree each statement applies to them (e.g., “I

usually think about the consequences before I do something”).

Lastly, the Weinberger Adjustment Inventory (WAI; Weinberger & Schwartz, 1990) is an assessment of individual emotional adjustment. Respondents completed the self-restraint scale, which is comprised of 22 items and includes three subscales: Suppression of Aggression, Impulse Control, and Consideration of Others. On a 5-point Likert-type scale (1 = “false” to 5 = “true”), participants indicated how true each statement (e.g., “I try very hard not to hurt other people’s feelings”) was of how they usually felt or what they were usually like over the past year.

Scores were combined from the four measures to create standardized responsibility, temperance and perspective scores. Responsibility was calculated from standardized and averaged total PSMI and RPI scores. Next, temperance was created using the average score of the Impulse Control ($\alpha = .90$) and Suppression of Aggression ($\alpha = .92$) subscales of the WAI. Perspective was calculated by combining average scores on the FOI and the Consideration of Others subscale of the WAI ($\alpha = .95$). Finally, the PSM composite score combined the averages of all standardized scores from each sub-score (i.e., responsibility, temperance, and perspective). For ease of interpretation, averaged scores for each scale were categorized into three groups: Low maturity (range: 0-1), Medium maturity (range: 2-3), and High maturity (range: 4-5).

Emotion Regulation. The Affect Dysregulation Scale is comprised of six items measuring the frequency of issues related to affect regulation ($\alpha = .92$) in the past 4 months. Prior studies with youth in psychiatric care populations utilized and validated this measure (L. K. Brown et al., 2012). Youth responded to statements on a 4-point Likert-type scale (1 = “not at all” to 4 = “often”). Summed scores ranged from 6-24, and lower scores indicate greater dysregulation.

Substance Use. The Adolescent Risk Behavior Assessment (ARBA; Donenberg et al., 2001) includes self-report of lifetime and recent (past 4-months) alcohol and marijuana use. This measure also captured the age at first use of each substance.

Delinquency. The National Youth Survey-Self-Reported Delinquency (NYS-SRD; Elliott et al., 1985; Thornberry and Krohn, 2000) scale is a widely used and well-validated self-report measure of delinquent activity. The current study includes a count score comprised of items on the General Delinquency subscale, which assesses lifetime endorsement of delinquent behaviors, such as theft, selling drugs, and assault of family, friends, or school personnel. A higher count indicates that the youth endorsed more delinquent acts in their lifetime and past 4 months, and scores range from 0-231.

Analytic Plan

First, we calculated descriptive statistics (means, medians) for all variables of interest and scales as described above. Then, the standardized PSM (total, responsibility, perspective and temperance) scores were categorized into low ($Z = 0-1$), medium ($Z = 2-3$), and high ($Z = 4-5$). Bivariate correlations were calculated to determine the relationship between developmental maturity subscales (perspective, temperance, responsibility), overall PSM, and emotion regulation, as well as the correlation of these variables with primary outcomes, lifetime and recent (past 4 month) alcohol and marijuana use. Next, chi-square tests were conducted to explore gender differences across levels of developmental maturity, and report of lifetime and past 4-month substance use (alcohol and marijuana). We examined how age of onset for alcohol and marijuana use, psychiatric distress, and self-reported delinquency differed across low, medium, and high levels of each development maturity subscale, PSM and emotion regulation delinquency using a multivariate analysis of covariance (MANCOVA). Finally, binary logistic regressions examined the relationship between emotion regulation and lifetime and past 120-day

alcohol and marijuana use when controlling for gender and index offense. All statistical analyses were conducted in SPSS version 24 (Armonk, NY: IBM Corp), and all *p*-values are two-sided. Materials and analysis code for this study are not available.

RESULTS

Sociodemographic Characteristics

A total of 423 FTO-CINI youth enrolled in the current study. Of those youth, 48 (11%) had missing data such that PSM scores could not be calculated. Thus, the final analytic sample included the FTO-CINI youth (*N* = 375) with complete PSM data. FTO-CINI youth had a mean age of 14.6 (*SD* = 1.54) and 53% were male. The breakdown of self-identified race was 46% Caucasian, 18% African American/Black, 20% Other. Forty-one percent identified ethnically as Latinx. The racial and ethnic composition was diverse but was also disproportionately higher among African American and Latinx youth compared to the youth general population per regional census data (U.S. Census Bureau, 2014). The majority of youth were in high school (61.3%). Table 1 provides a summary of the demographic characteristics.

Primary Outcomes

Thirty-five percent of youth endorsed lifetime alcohol use, with most (68%) of those youth reporting drinking in the past 120 days (see Table I). The mean age of first alcohol use was 13.6 years old (*SD* = 1.99). More youth endorsed a lifetime history of marijuana use (51.5%) than alcohol use (35.5%). Of those who endorsed marijuana use, more than three quarters smoked marijuana in the past 120 days. The mean age of marijuana use onset was similar to alcohol use. FTO-CINI youth reported an average of two delinquent behaviors (*M* = 2.22, *SD* = 2.76) in their lifetime.

Bivariate Associations

Responsibility, perspective, and temperance were all significantly inter-correlated (responsibility and perspective, $r = .291$; responsibility and temperance, $r = .349$; perspective and temperance, $r = .283$, all $ps < .01$). Emotion regulation was also correlated with responsibility and temperance ($r = .166$ and $r = .442$ respectively, all $ps < .01$) but not perspective ($r = .070$). Mean values for each subscale are provided in Table II. There were no significant differences in PSM means by type of index offense (status versus delinquent).

Responsibility ($X^2 [2] = 6.10$, $p = .05$) and temperance ($X^2 [2] = 8.09$, $p = .02$) were significantly associated with lifetime alcohol use for females, while only temperance ($X^2 [2] = 10.61$, $p = .005$) was significantly associated with lifetime alcohol use for males. None of the PSM subscales or the PSM total score were significantly associated with past 120 day alcohol use.

Regarding lifetime marijuana use, responsibility ($X^2 [2] = 14.62$, $p < .001$) was significantly associated for females and temperance ($X^2 [2] = 8.14$, $p = .02$) was for males. Of the PSM subscales, only perspective ($X^2 [2] = 7.14$, $p = .03$) was significantly associated with past 120-day marijuana use and only for males. Past 120-day marijuana use was associated with the PSM total score ($X^2 [2] = 13.17$, $p < .001$) for females only.

Multivariate Analyses

A MANCOVA was performed using the categorical (low, medium, high) variable for responsibility, perspective, temperance, and PSM total score with age of onset for alcohol and marijuana use as well as delinquency behaviors, adjusting for gender and index offense. See Table III.

Alcohol. Lower temperance scores were related to lower age of onset for alcohol ($p = .001$) when controlling for gender and type of index offense.

Marijuana. Lower temperance scores were associated with lower age of marijuana initiation when controlling for gender and index offense ($p = .032$).

Delinquency. Low temperance scores were significantly associated with more delinquent behavior

compared to medium or high temperance scores ($p < .000$).

Overall. There was no statistically significant difference on the combined dependent variables after controlling for gender and index offense for responsibility, $F [8, 212] = 1.30, p = .25, \text{Wilks}' \Lambda = .909, \text{partial } \eta^2 = .047$, or PSM total score, $F [8, 214] = 0.99, p = .41, \text{Wilks}' \Lambda = .930, \text{partial } \eta^2 = .036$.

Table I. FTO-CINI youth demographics, education, substance use, and psychiatric diagnoses (N=375)

	Total
	N= 375 Mean (SD) or N (%)
Demographics	
Age (mean, SD)	14.6 (1.54)
Gender (% female)	175 (46.8%)
Race	
Caucasian	172 (45.87%)
Black, African American, or Haitian	67 (17.87%)
American Indian	37 (9.87%)
Asian	5 (1.33%)
Native Hawaiian or other Pacific Islander	6 (1.60%)
Multi-Racial	61 (16.27%)
Other	78 (20.80%)
Hispanic or Latinx	153 (40.80%) 179 (47.7%)
Type of Index Offense (status offense)	
Education	
Middle school	141 (37.6%)
High school	230 (61.33%)
Not currently in school	4 (1.07%)
Ever repeated a grade in school	125 (34.1%)
Ever had Individualized Education Plan	125 (33.1%)
Psychiatric Treatment History	
Psychiatric diagnosis, lifetime	84 (22.40%)
Substance use	
Alcohol use, lifetime	133 (35.50%)
Alcohol use, past 4 months	90 (24.00%)
Alcohol, Age of first use (mean, SD)	13.61 (1.99)
Marijuana use, lifetime	193 (51.50%)
Marijuana use, past 4 months	157 (41.90%)
Marijuana, Age of first use (mean, SD)	13.28 (1.68)
Delinquency	
NYS Delinquent Behaviors (General Delinquency Scale, mean, SD)	2.22 (2.76)

Table II. FTO-CINI youths' baseline Developmental Maturity (N=375)

	Mean (SD)	Low N (%)	Medium N (%)	High N (%)
Psychosocial Maturity				
Total	2.72 (.66)	46 (12%)	314 (84%)	15 (4%)
Responsibility	2.76 (.87)	69 (18%)	279 (72%)	37 (10%)
Perspective	2.74 (.65)	51 (13%)	333 (84%)	14 (3%)
Temperance	2.65 (1.15)	124 (30%)	220 (54%)	64 (16%)
Emotion Regulation				
Affect Dysregulation Scale score	17.02 (4.39)			

Table III. Multivariate analyses of covariance examining the association of temperance with age of alcohol and marijuana onset and delinquent behavior (N=375)

Temperance	Low Mean (SD)	Medium Mean (SD)	High Mean (SD)	Multivariate (F)	<i>p</i>	Partial η^2
Alcohol Age of Onset	13.02 (2.02) _{b,c}	14.25 (1.50) _a	14.50 (1.31) _a	7.288	0.001	.117
Marijuana Age of Onset	12.60 (1.83) _{b,c}	13.51 (1.62) _a	13.38 (1.30) _a	3.559	0.032	.061
Delinquent Behaviors (NYS)	4.98 (4.24) _{b,c}	2.65 (2.33) _{a,c}	1.13 (1.81) _{a,b}	10.803	<0.000	.164

Note: Different subscripts in the same row indicate a significant difference ($p < 0.05$) between the indicated groups.

Regression Analyses

Binary logistic regression models were statistically significant for both lifetime alcohol use ($X^2 [3] = 11.45, p = .01$) and marijuana use ($X^2 [3] = 19.117, p = .002$), when controlling for gender and index offense for responsibility. Higher emotion regulation scores were associated with a reduction in the likelihood of lifetime alcohol (OR = .94) or marijuana (OR = .92) use. However, there was no significant association between emotion regulation and past 120 day marijuana or alcohol use. See Table IV.

Finally, separate multiple linear regressions were calculated to examine the relationship of emotion regulation with delinquent behaviors, alcohol age of onset, and marijuana age of onset when controlling for gender. Delinquent behaviors, but not age of alcohol or marijuana onset, was significantly associated with emotion regulation, ($F [2,361] = 11.56, p < .000$), with an R^2 of .06 for delinquent behavior.

Table IV. Binary logistic regression examining the association of emotion regulation with lifetime alcohol and marijuana (N=375)

Lifetime Alcohol Use						
Covariate	β	SE β	Wald χ^2	<i>p</i>	OR	95% CI OR
Index Offense	-.31	.22	1.93	.165	.74	[.48, 1.13]
Gender	-.26	.23	1.30	.255	.77	[.49, 1.20]
Affect Dysregulation	-.06	.03	6.07	.014	.94	[.89, .99]
Lifetime Marijuana Use						
Covariate	β	SE β	Wald χ^2	<i>p</i>	OR	95% CI OR
Index Offense	-.47	.21	4.92	.027	.63	[.41, .95]
Gender	-.27	.22	1.50	.221	.77	[.50, 1.17]
Affect Dysregulation	-.08	.03	10.00	.002	.92	[.88, .97]

DISCUSSION

Existing literature regarding adolescent development at the point of first juvenile justice contact and its relationship with substance use and delinquent behaviors is scarce. The current study examined the cross-sectional associations between psychosocial maturity, substance use and delinquent behaviors among a sample of first-time CINI youth. Our hypotheses, in part based on prior research with non-justice involved community-based samples and incarcerated youth, were partially supported. Aspects of psychosocial maturity were associated with earlier substance use onset, higher rates of substance use and an increased number of delinquent behaviors. Both boys and girls with lower temperance scores had earlier ages of onset for alcohol and marijuana use and a higher frequency of delinquent behaviors. Furthermore, lower responsibility was associated with higher rates of lifetime marijuana and alcohol use, but only for girls. Lastly, youth with better emotion regulation had lower rates of lifetime marijuana and alcohol use and less frequent delinquent behaviors.

It is noteworthy that the majority of youth (87%) at the time of first court contact did not demonstrate impaired psychosocial maturity. Yet, when examining each component of maturity separately, impairment in specific tenants of maturity was present. A greater portion of youth (30%) at time of first court contact demonstrated impaired development of temperance compared to overall psychosocial maturity (12%), responsibility (16%) and perspective taking (12%). Given this finding, there may be value in distinguishing and assessing the different components of psychosocial maturity, as suggested in prior work (Monahan et al., 2009), as we evaluate the relationship of maturity, substance use, and delinquent behaviors.

Regarding substance use, only lower temperance was significantly related to younger age of alcohol and marijuana use initiation. Different explanations may underlie this finding. One possibility is that early initiation of substance use may dampen the development of temperance, including impulsivity and feelings of aggression, compared to other first-time offending peers. Some initial evidence suggests substance use may hamper expected normal increases in maturity, and that those maturity levels

improve following abstinence (Chassin et al., 2010). Alternatively, early deficits in temperance maturation may result in greater risk-taking decisions and behavior, such as early initiation of substance use. Consistent with this theory, impulsivity (Dévieux et al., 2002) and negative affect (Lucenko et al., 2003), related components of temperance, have been previously associated with higher rates of alcohol and marijuana use. It is also plausible that a synergistic effect between slowed development of adolescent psychosocial maturity, primarily temperance, and initiation of substance use may result in a cycle of substance use and lower maturity levels.

Similarly, earlier substance use initiation and lifetime endorsement of alcohol and marijuana use were also associated with lower emotion regulation at time of first juvenile court contact. This finding is supported by a growing body of literature linking emotion dysregulation to risk behaviors (e.g., substance use and sexual risk behaviors) among adolescents (Brown et al., 2013; Houck et al., 2014; Tolou-Shams et al., 2011). Among CINI peers, youth with greater emotion dysregulation have an earlier initiation of substance use at time of first court contact. This would suggest that early identification of emotion regulation impairments, in the context of development, may help identify those youth most at risk for ongoing involvement with the juvenile justice system.

Emotion (dys)regulation may underlie many mental health diagnoses (Rawana et al., 2014; Sundermann and DePrince, 2015), and youth involved with the juvenile justice system receive a disproportionate number of diagnoses, particularly substance use disorders, compared to their non-court involved peers (Abram et al., 2003, 2007). Yet, mental health diagnoses alone do not predict juvenile justice involvement (Grisso, 2008) and dual diagnosis (psychiatric and substance use) is the most

salient predictor of recidivism for CINI youth (Tolou-Shams et al., 2014). Taking the results of this paper, court-involved youth may benefit from interventions that target or tailor treatment to a youth's temperance and emotion regulation. These two areas of target are essential given the relationship with substance use initiation, a risk factor for juvenile justice recidivism.

Higher numbers of self-reported delinquent behaviors at first court contact were also associated with lower levels of temperance and emotional regulation. These findings parallel previous research with court involved youths (for serious offenses) re-entering from incarceration, which found that re-entry youth with greater improvements in temperance demonstrated significant decreases in juvenile arrests compared to their peers (Monahan et al., 2009). Observing this relationship between temperance, emotion regulation, and self-reported delinquent behaviors at point of first court contact is essential for early identification as these youth may be most at risk for penetrating deeper into the juvenile justice system and the associated negative outcomes. Regardless of pathway, maturity and emotion regulation (or rather dysregulation) are important potential targets for interventions. Promising initial research suggests that interventions addressing emotion dysregulation (Tolou-Shams et al., 2011) and maturity (Riggs Romaine et al., 2018) are both feasible and effective with justice-involved youth. In time, improved maturity through emotional management could decrease involvement in behaviors that lead to re-involvement in the justice system.

An important limitation of this study is that findings are based solely on adolescent self-report. Thus, we cannot exclude the possibility of bias, particularly given that these youths may not have accurately reported involvement in substance use or delinquent behaviors for fear of their parents or the

justice system finding out. Study procedures, such as use of the ACASI and strategic placement of caregiver and youth to ensure privacy while completing the surveys, were in place to limit this occurrence and maximize validity of self-reported measures. Data shows that use of ACASI helps maintain participant privacy and increases the quality of data (Brown et al., 2013). Additionally, the inclusion of caregiver report of child's psychosocial maturity and emotion regulation could have provided an alternative assessment of these predictors. While reliable in the current study, self-report of psychosocial maturity and emotion regulation during this phase of adolescent development could be complicated by the youth's inability to fully comprehend their emotional and developmental processes. This is another possible explanation for the inconsistent relationships observed between components of psychosocial maturity and study outcomes.

Second, the cross-sectional nature of these data limits the ability to understand the causal relationships between the different components of psychosocial maturity and study outcomes. Studies that examined the longitudinal trajectories of psychosocial maturity among court involved youths for serious offenses found that anti-social behaviors decreased and psychosocial maturity increased as youth entered early adulthood (Monahan et al., 2009; Mulvey et al., 2010). Future longitudinal analyses will examine the developmental trajectory of psychosocial maturity among this sample of FTO-CINI youth, and the association of this trajectory to alcohol and marijuana use, delinquency, and recidivism. Finally, a limitation of this study is that the cross-sectional data was collected 10 years ago, prior to the COVID-19 pandemic. Given the significant societal, economic, and mental health impacts of the pandemic, the findings may not fully reflect current trends in risk behaviors related to youth. As a result, the findings should be interpreted with caution, and future research using more recent

data is recommended to validate and extend these conclusions. Despite these limitations, this study has contributed to the literature by providing evidence of a significant association between psychosocial maturity, age of substance use onset and delinquent behaviors in a sample of first-time offending youth.

Although some elements of psychosocial maturity significantly relate to outcomes in the current study, methodological issues are common in the measurement of this construct (Colwell et al., 2005; Cruise et al., 2008). More consistent and reliable measurement of psychosocial maturity would allow for replicable assessment across studies of justice-involved as well as comparison with non-justice-involved youth and may also have clinical implications especially if we can distinguish first-time court-involved youth from the general population. Resource-limited systems like the juvenile justice system benefit from more targeted approaches. Given that 30% of youth experienced difficulties with emotion regulation, developing effective screening tools is crucial. These tools would enable researchers and clinicians to better assess emotion regulation challenges and identify youth who may benefit from brief interventions aimed at improving emotional functioning. Measurement of this abstract construct is challenging, but improvements in measurement could precisely identify youth with greater deficiencies in psychosocial maturation and emotion regulation. Improved clinical measurement and identification may lead to enhancing aspect of maturity and allow for tailored secondary prevention methods that could derail involvement in antisocial behaviors in the future. Once youth with emotion dysregulation can be more effectively identified, the development of brief, targeted interventions becomes essential. Research has highlighted several promising approaches to improving emotion regulation. For instance, Dialectical Behavior Therapy (DBT) skills training has shown efficacy in a transdiagnostic treatment to reduce emotional distress and

impulsivity among adolescents (Neacsiu et al., 2014). Similarly, mindfulness-based interventions, such as Mindfulness-Based Cognitive Therapy (MBCT), have demonstrated benefits in enhancing emotional awareness and reducing affective symptoms (Zoogman et al., 2015). These promising strategies underscore the importance of integrating brief, accessible interventions to support youth struggling with emotion dysregulation but should be further tested with first-time court-involved youth to avoid any potential iatrogenic effects. As youth mature out of crime they also mature in general (Steinberg et al., 2015), but targeting the development of psychosocial maturity at the earliest point of court contact could decrease the likelihood of recidivism and participation in risk behaviors, including substance use.

This study provides evidence of a significant association between psychosocial maturity (including emotion regulation) and age of onset for substance use and participation in delinquent behaviors in a sample of first-time offending youth. Given that substance use is especially prevalent among justice-involved youth, and increases the likelihood of recidivism (Chassin et al., 2016; Mason & Windle, 2002; Tolou-Shams et al., 2014), early age of onset for alcohol and marijuana use could serve as a critical indicator of future offending for youth entering the juvenile justice system. Furthermore, identification of deficiencies in psychosocial maturity that influence substance use and delinquency has significant implications for the development of prevention and intervention methods. Such methods could emphasize the development of psychosocial maturation to target substance use and delinquency early enough in the justice process to divert youth from further penetration into the justice system.

Endnote.¹ *The original subscale includes 24 items. Due to an error in the ACASI development, item 24 of the NYS general delinquency scale, “Have you had sexual intercourse with a person who was not your serious partner when involved in a relationship?” was not administered to study participants; therefore, subscale scores range from 1-23 but still accurately indicate that greater scores equal greater number of delinquent acts.*

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ETHICAL APPROVAL

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

INFORMED CONSENT

Informed consent was obtained from parents of all participating adolescents in the study. Child assent was also obtained.

DECLARATION OF INTEREST

The authors declare that they have no conflict of interest.

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