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## Affect regulation and HIV risk among youth in therapeutic schools

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### Abstract

The acquisition of affect regulation skills is often impaired or delayed in youth with mental health problems but the relationship between affect dysregulation and risk behaviors has not been well studied. Baseline data from adolescents ( $N = 418$ ; ages 13–19) recruited from therapeutic school settings examined the relationship between affect dysregulation, substance use, self-cutting, and sexual risk behavior. Analyses of covariance demonstrated that adolescents who did not use condoms at last sex, ever self-cut, attempted suicide, used alcohol and other drugs and reported less condom use self-efficacy when emotionally aroused were significantly more likely ( $p < .01$ ) to report greater difficulty with affect regulation than peers who did not exhibit these behaviors. General patterns of difficulty with affect regulation may be linked to HIV risk behavior, including condom use at last sex. HIV prevention strategies for youth in mental health treatment should target affect regulation in relation to multiple risk behaviors.

### Keywords

Affect regulation; HIV risk; adolescents; therapeutic schools

### Introduction

When adolescents are faced with challenging situations, they may act impulsively in an attempt to relieve their distress. Short-term self-soothing behaviors are often used rather than other, more adaptive self-regulatory skills (1). Youth with mental health problems are especially likely to have difficulties in this area because they often experience negative emotions, are impulsive, and make poor decisions. It is possible and even likely, therefore, that when troubled youth become distressed, they undertake self-soothing behaviors that put them at risk for HIV, such as risky sex, sharing of cutting or piercing instruments, or substance use (2). Improvement in the processes that mediate an individual's response to an emotional situation, such as affect regulation, may be important in the prevention of adolescent risk behaviors (3). Affect regulation is a set of processes individuals use to manage and express emotions to accomplish goals and is a function of affective temperament, environmental stimuli, and adaptive emotional coping responses (3–6). Based

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on these models of affect regulation, personal stress would lead to risk behavior and emotional / behavioral problems if affect is not well regulated. Thus, among youth with emotional and behavioral problems who are frequently exposed to stressful, challenging circumstances, better affect regulation should result in safer, less self-destructive behaviors.

Emotional distress or emotional symptoms have often been used as a proxy for deficient affect regulation skills and have been tied to several problem behaviors in adolescents, including suicide attempts, depressive symptoms, cigarette use and negative family interaction patterns (7–10). Affect dysregulation could also lead to HIV risk behaviors (e.g. self-cutting, unprotected intercourse, substance abuse). Research suggests this may be true among adolescents in the community and those in mental health treatment (11–13). For example, self-cutting and sharing of cutting instruments has been associated with sexual risk and emotional distress among youth in mental health treatment (14, 15). Sexual situations may be particularly challenging for adolescents with poor affect management because of relationship concerns (e.g., “What if my partner rejects me?”), previous traumatic experiences, or low self-esteem or self-efficacy. In fact, greater self-efficacy in emotionally challenging situations has been found to be significantly associated with consistent condom use among psychiatrically hospitalized adolescents (16) and emotional distress has been found to predict sexual risk over time in community youth (17). Studies also document the association between drug use in sexual situations and unprotected sex (18–20). In addition, youth with more distress or anger have greater rates of substance use, implicating substance use as a way to self-medicate dysregulated affect (12, 21, 22). Despite the theoretical rationale that links affect dysregulation to HIV risk behavior among adolescents, research to date has been limited by the use of emotional distress or behavioral symptoms as a proxy for affect regulation (rather than a self-report of perceived difficulty in regulating affect). Two studies have used either a structured interview or observational coding to assess affect dysregulation but neither included sexual behavior as an outcome (10, 12). An examination of adolescents’ perceptions of difficulties with affect regulation and the associations of HIV risk behavior and current emotional and behavioral symptoms is needed.

Youth with behavioral or emotional symptoms are likely to have difficulties regulating their affect, and therapeutic schools provide care for many such youth. Therapeutic schools are designed for children and adolescents with emotional and behavioral difficulties who are unable to benefit from less restrictive environments and school-based interventions (e.g., resource teacher, in-class aide), requiring full-time special education. Youth in therapeutic schools may be more likely to have difficulties with affect regulation, as well as to have psychiatric disorders. Distorted cognitions, dysfunctional thinking about relationships, and problems in accurate judgment, risk assessment, decision making, problem-solving, information processing, and reality testing are present in troubled youth (23), indicating the need to incorporate affect regulation into models of HIV-risk in these youth(24–27).

The present study examined adolescent self-report of affect regulation skills in relation to substance use, sexual risk behavior, self-injury, and emotional/behavioral problems among a sample of youth attending therapeutic schools. Based on a model, which posited that personal stress was related to risk behavior and emotional / behavioral problems via affect dysregulation, it was hypothesized that adolescents with more frequent difficulties with affect regulation would report engaging in riskier behavior (e.g., greater likelihood of ever having had sex, less likelihood of using a condom at last sex, greater likelihood of substance use, greater likelihood of self-cutting) and would have reduced self-efficacy for condom use during affective arousal.

## Methods

### Participants

Participants were 418 adolescents recruited between 2005–2009 from two U.S. sites (Providence, RI and Chicago, IL) for a project designed to evaluate sexual risk prevention interventions in therapeutic school settings. All adolescents ages 13 to 19 attended one of 20 therapeutic day schools for students with mental health concerns and behavioral problems and were able to speak and read English fluently. Adolescents with a pervasive developmental or active psychotic disorder, those who were known to be HIV positive, currently pregnant, or wards of the state (Chicago only), and those with a history of sexual aggression were excluded from the study. Of the 569 adolescents for whom consent to be contacted by study staff was obtained, 68 could not be subsequently reached, 29 were ineligible, 32 declined participation, and 22 no longer attended the school, leaving 418 (73%) who were consented and assessed at baseline.

### Procedures

The institutional review board at each location approved all study protocols. Eligible students were identified by therapeutic school staff who obtained permission from the youth or the family (as appropriate) for permission to provide contact information to study staff. Once permission to contact was obtained, face-to-face meetings with parents or guardians (or students 18 years or older) were scheduled to obtain consent. Minor participants also provided written assent to participation.

Participants completed questionnaires via audio computer-assisted self-interviews (ACASI). Since parts of the ACASI asked for behavior recall, participants were asked to recall a list of significant life events in prior months for their reference during the assessment. Study staff supervised assessments and answered questions as needed. The assessment battery took about 75 minutes to complete, in 1–3 sittings. Participants were compensated (\$25) for their time spent completing questionnaires.

### Measures

**Affect Dysregulation Scale**—The measure created for the current study focused on the frequency of adolescents' difficulties with affect regulation. Although there are several scales that measure affect regulation among children, often using parent report, there are few that assess adolescents. Scales used in other adolescent studies often focus on the strategies used to regulate affect, which was not the focus of the current study. For example, the Regulation of Emotions Questionnaire (28) uses items that identify a tendency to use internalizing and externalizing strategies of regulation. Other measures that assess success at affect regulation tend to be parent- or teacher-report, such as the Emotion Regulation Checklist (29). Other measures of affect assess emotional awareness, such as the Toronto Alexithymia Scale (30) or Difficulties in Emotion Regulation Scale (DERS) (31). These are important constructs but did not address the frequency of dysregulation, as needed for the present study. Finally, some measures with subscales that address perceived success at affect regulation do so in a narrow context, such as the Children's Sadness Management Scale (CSMS) (32), which focuses on regulation of sad affect. For the current study, six items were generated to assess adolescents' reports of their frequency of difficulties with affect regulation. Items were suggested by the Structured Interview for Disorders of Extreme Stress (SIDES) (33) with modifications made to simplify the wording for the adolescent sample of this study and to generalize items to reference all feelings rather than just anger. The six items included "In the past 3 months... small problems got me very upset; my feelings got in the way of doing things; I had trouble controlling my feelings; people have suggested that I 'calm down'; I have felt able to manage strong feelings (reverse scored); I

have felt overwhelmed by strong feelings.” Participants responded on a 4-point scale (“not at all, a little, sometimes, often”), and higher scores indicate more difficulty managing feelings. Cronbach’s alpha for the current sample was .72.

**Adolescent Risk Behavior Assessment (ARBA) (25)**—The ARBA is designed specifically for use with adolescents to assess their self-reported sexual and drug use behaviors. A skip structure was used so that adolescents who denied engaging in a behavior were not asked for further details regarding that activity. Adolescents were asked to report whether they had ever had vaginal sex. Sexually active participants also provided the number of times they had vaginal or anal sex in the last 6 months and the number of times they used condoms, which was used to determine whether sexually active participants had been consistent condom users. Participants also reported whether they had used a condom during their last sexual intercourse.

The ARBA also assessed adolescents’ substance use, including whether teens had ever used alcohol, marijuana, cocaine, unprescribed prescription medications, club drugs, or inhalants; item wording included examples and slang names. Participants reported whether they had ever used alcohol or other drugs prior to having oral, vaginal, or anal sex.

Finally, participants were asked about whether they had ever engaged in self-cutting or attempted suicide.

**Self-Efficacy for Condom Use during Affective Arousal(34)**—This four-item subscale assessed adolescents’ perceived abilities to use condoms when experiencing emotional distress. The four items included “How sure are you that you could use a condom when... you are depressed; you are feeling angry; you are upset; you are feeling bad about yourself?” Participants responded on a 4-point scale (“very sure I could, kind of sure I could, kind of sure I could not, very sure I could not”), and higher scores indicate less self-efficacy for using condoms in these situations. Cronbach’s alpha for the current sample was .91.

**Strengths and Difficulties Questionnaire (SDQ) (35)**—The SDQ is a 25-item self-report measure of psychopathology and prosocial behaviors yielding five subscales: Conduct Problems (alpha = .58), Emotional Symptoms (alpha = .75), Hyperactivity-Inattention (alpha = .58), Peer Problems (alpha = .40), and Prosocial Behavior (alpha = .71). Items on the Hyperactivity scale had minor changes for comprehension with the current sample (e.g., “I consistently fidget or squirm,” was changed to “I am constantly fidgeting or squirming.”), as were two items on the Prosocial scale and one item on the Peer Problems scale. Participants responded on a 3-point scale (“not true, somewhat true, certainly true”). Except for the Prosocial subscale, higher scores indicate more problems. Cutoffs based on measure norms classify scores into Normal, Borderline, or Abnormal ranges (36).

## Data analysis

Analyses were performed using SPSS 15.0 for Windows (37). Relationships between Affect Dysregulation Scale scores and demographic characteristics were examined using *t*-tests and correlations, as appropriate. Next, differences in Affect Dysregulation Scale scores by participation in risk behaviors (e.g., using condoms, drinking alcohol, self-cutting) were examined using analyses of covariance (ANCOVA), adjusting for demographic variables that had significant relationships in bivariate analyses. Separate models were created for each risk behavior. This procedure was also used to compare participants in the Normal range of scores for each subscale on the SDQ to those above these cutoffs. Cohen’s *d* was also calculated on the adjusted means to show the magnitude of associations.

## Results

The mean age of the sample was 15.25 years ( $SD = 1.47$ ). Fifty-nine percent of participants were between the ages of 13 to 15 years and 41% were age 16 years or older. The majority of the sample was male (70%) and many reported being White, non-Hispanic (44%). The composition of the rest of the sample was 26% Black, 12% Hispanic (7% White/Hispanic, 4% Black/Hispanic, 1% reporting Hispanic only), 13% other biracial, 4% multiracial, 1% American Indian or Alaskan Native, <1% Asian, and <1% Native Hawaiian or Pacific Islander. Over half (52%) of the sample reported eligibility for the free or reduced-price school lunch program; an additional 26% did not know whether they qualified for the program.

Scores on the Affect Dysregulation Scale for this sample of adolescents in therapeutic schools ranged from the minimum possible to the maximum possible (6–24), with a slight negative skew representing somewhat greater than expected frequencies of low scores (skewness = .427, standard error of skewness = .120, kurtosis =  $-.601$ , standard error of kurtosis = .240, Kolmogorov-Smirnov = .097,  $p < .001$ ). The distribution of total scores is shown in Figure 1. The mean score for the sample was 13.47, with a standard deviation of 4.12. Table I describes associations between Affect Dysregulation Scale scores and demographic variables. Females reported significantly greater difficulty managing affect than males ( $t = 4.49$ ,  $p < .001$ ), and Latino adolescents reported greater difficulty than non-Latinos ( $t = 3.89$ ,  $p < .001$ ). No significant associations were observed for age, race, or SES (free/reduced lunch status).

Table II presents the analyses of covariance models (covarying for gender and ethnicity) for each risk behavior and scale with the adjusted mean scores of the Affect Dysregulation Scale. Also included is Cohen's  $d$  calculated on the adjusted means. Adolescents who reported not using a condom at last sexual intercourse, self-cutting, or suicide attempts reported more difficulties with affect regulation. Furthermore, those who had ever used alcohol, marijuana, cocaine, prescription downers, or prescription uppers reported greater difficulty with affect regulation than non-substance users. On the SDQ, participants who were in the Normal range on the Conduct Problems, Emotional Symptoms, Hyperactivity-Inattentive, and Peer Problems subscales reported fewer difficulties on the Affect Dysregulation Scale than other participants. Finally, those who were in the top half of scores on the Self-Efficacy for Condom Use during Affective Arousal measure using a median split (median = 6, range = 4 to 16) reported significantly greater difficulty with affect regulation (14.10 ( $SE = .27$ ) vs. 12.85 ( $SE = .28$ );  $F(1, 408) = 10.34$ ,  $p = .001$ ). No significant findings were observed in comparisons of adolescents who had and had not ever had sex, engaged in sex recently (last six months), engaged in consistent condom use, used drugs or alcohol around the time of sex, used club drugs, or used inhalants, nor were there differences between those who were in the Normal range of scores on the Prosocial Behaviors scale of the SDQ and those who were not.

## Discussion

This is the first study to examine the perceived extent of difficulties with affect regulation among youth in relation to HIV risk behaviors and problems with emotion or behavior. Even among youth in alternative schools who were likely to have difficulty with affect regulation, the measure showed a reasonable distribution, with the 18% one standard deviation above the mean experiencing affect dysregulation “sometimes” or “a lot.” Moderate to large effect sizes were observed in the associations of dysregulation with many of the predicted measures, suggesting that affect dysregulation is an important factor for many youth.



Whether affect dysregulation will change with time, maturity, or be amenable to interventions targeting affect regulation is an area for future research (3).

In this young sample with a mean age of 15, affect dysregulation was found to be associated with recent sexual risk and a history of substance use. Self-report of condom use at last sex may be among the most reliable assessments of sexual safety since it is easily recalled and is a yes / no option that does not require counting or approximation. Adolescents with dysregulation were less likely to report condom use at last sex and they tended ( $p=.09$ ,  $d= .29$ ) to report less consistent condom use in the last six months. Consistent with these findings, they reported less self-efficacy for condom use during emotionally difficult situations. The general pattern of difficulty with affect regulation may be linked to sexual risk behavior by its relationship to self-efficacy at the time of sex (34). It also suggests that strategies to improve affect regulation, if meant to reduce sexual risk behavior, should target affect regulation at the time of sex. In contrast to recent condom use, a history of any sexual activity was not associated with affect dysregulation, suggesting that there are other more proximal factors that influence the opportunity and onset of sex. Consistent with research in other adolescent populations, a problem with affect regulation was associated with a history of using most of the drugs studied, including alcohol, marijuana, cocaine, and downers (38, 39). This could reflect a general propensity to engage in risk behaviors at a younger age, susceptibility to peer influences, or an attempt to regulate emotions using substances. Only further research will disentangle these potential mechanisms.

Self-injurious behavior and emotional symptoms were also associated with difficulties in affect regulation, similar to other research (10). In addition to the association with emotional problems, this study found that affect dysregulation was associated with behavioral problems. Youth who reported either emotional or behavioral symptoms on the Strengths and Difficulties Questionnaire beyond the normal range reported significantly greater difficulty with affect regulation (Cohen's  $d$  of 0.83. and 0.59 respectively). That both conduct and emotional symptoms were related to poor affect regulation underscores the fact that behavioral and emotional problems are often coexistent in youth in intensive treatment services. In addition, improved affect regulation may benefit youth with a variety of problems. However, while our measure of affect dysregulation had acceptable internal consistency, its external validity has not been empirically assessed. Although it examined frequency of difficulties in regulating affect, and not specific emotional symptoms, adolescents could have found it similar to the measure of emotional symptoms on the SDQ. Future research establishing the discriminant validity between the two measures would improve the strength of the conclusions that can be drawn regarding the relationships between affect regulation, emotional distress, and behavioral problems.

Other limitations to the research exist. Although this study enrolled a large sample of youth from two U.S. cities and administered reliable measures and a computerized assessment of sexual behavior, there are limitations. The sample was composed of youth in alternative and therapeutic schools and thus may not be representative of all youth in the community nor youth in other mental health treatment settings. This may be particularly relevant in considering the adolescents' self-reports of symptoms of distress, which may have had a narrower range of variance in this sample than in one with less significant mental health concerns. In addition, all adolescents were enrolled in a program designed to test the efficacy of a multi-week HIV prevention intervention, so excluded adolescents who were to be discharged soon or whose parents were uninterested in such programs. In addition, the measures of sexual risk and affect management were self-reported and are subject to social desirability biases. Nevertheless, this project did use a computer-based assessment that has been shown to be reliable and to enhance the report of sensitive behaviors (40). Future research could include teacher/parent reports of both affect regulation and emotional and

behavioral difficulties to augment our understanding of these relationships. Also, there was no measure of the adolescents' stresses, so the relationship between extent of stress and frequency of dysregulation was not examined. In addition, affect regulation was a target of this investigation, but other factors can influence sexual behavior, such as peer and family norms.

Despite these limitations, this study makes a unique contribution to the literature by expanding knowledge about the process by which youth with mental health and behavioral disorders engage in HIV risk and substance use behaviors. Cognitive skills-based models of HIV prevention have typically been limited in their efficacy in increasing condom use among this adolescent subgroup. Our findings suggest that innovative interventions focusing more on improving affect regulation skills may have a significant impact on HIV risk reduction for youth in mental health treatment.

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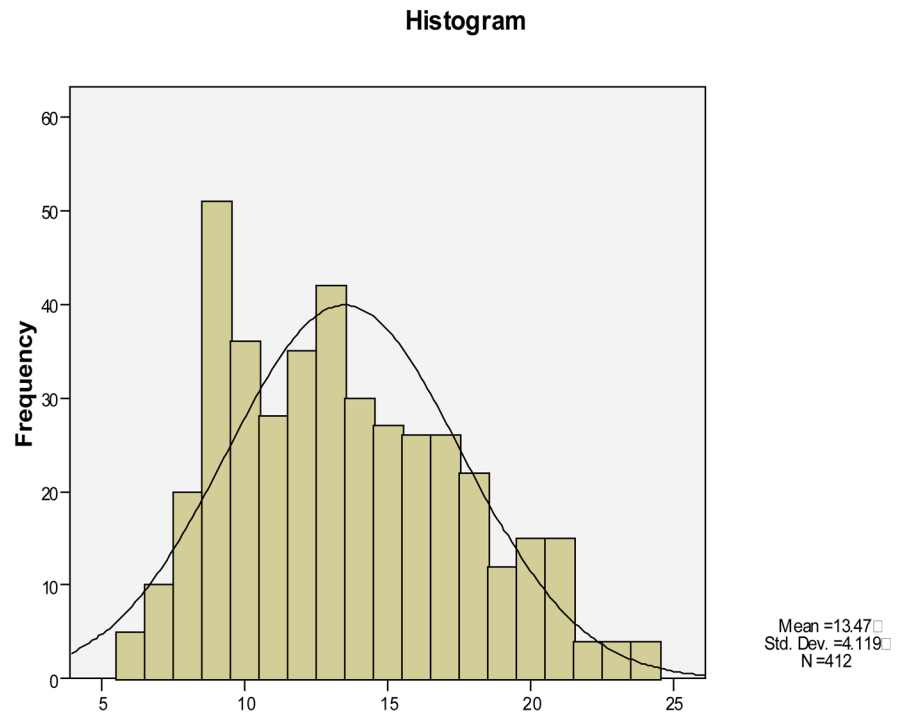
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**Figure 1.** Distribution of Affect Dysregulation Scale scores among 417 adolescents in therapeutic schools

**Table 1**

Relationships between Affect Dysregulation Scale scores and demographic variables among 417 adolescents in therapeutic schools

	<i>M</i>	<i>t</i>	<i>df</i>	<i>p</i>
<b>Gender</b>				
Male	12.89			
Female	14.83	4.49	410	.000
<b>SES- free lunch</b>				
No	13.45			
Yes	13.34	.217	144.9	.829
<b>Ethnicity</b>				
Non-Latino	13.10			
Latino	15.11	3.89	410	.000
<b>Race</b>				
Other	13.68			
White	13.27	1.00	410	.316
<b>Age</b>		<i>r</i> = .049		.326

**Table II**

Adjusted means for Affect Dysregulation Scale scores by engagement in risk behavior or presence of emotional / behavioral symptoms among 417 adolescents in therapeutic schools

	Affect Dysregulation Scale score		N	Mean (SE)	N	Mean (SE)	F <sup>a</sup>	p	d
	No	Yes							
<b>Sexual Behaviors</b>									
Ever had vaginal sex	13.11 (.30)	13.75 (.26)	177	13.75 (.26)	234	2.56	.111	-.16	
Used a condom at last sex	14.70 (.39)	13.43 (.29)	88	13.43 (.29)	157	6.86	.009	.35	
Used a condom 100% of the time in the last 6 months	14.40 (.39)	13.31 (.50)	95	13.31 (.50)	56	2.92	.090	.29	
Had vaginal and/or anal sex in the last 6 months	13.81 (.43)	13.92 (.28)	72	13.92 (.28)	173	.04	.837	-.03	
<b>Self-injurious Behaviors</b>									
Ever cut self	13.01 (.22)	15.08 (.44)	320	15.08 (.44)	92	16.89	.000	-.51	
Ever attempted suicide	13.12 (.23)	14.73 (.44)	307	14.73 (.44)	88	10.13	.002	-.39	
<b>Substance Use Behaviors</b>									
Ever used alcohol or drugs during sex	13.38 (.40)	14.19 (.36)	86	14.19 (.36)	109	2.27	.134	-.22	
Ever used alcohol	12.81 (.30)	13.99 (.26)	181	13.99 (.26)	231	8.81	.003	-.30	
Ever used marijuana	12.90 (.27)	14.08 (.28)	213	14.08 (.28)	199	9.10	.003	-.30	
Ever used cocaine	13.31 (.20)	15.34 (.69)	379	15.34 (.69)	33	7.81	.005	-.51	
Ever used downers	13.11 (.21)	15.60 (.51)	352	15.60 (.51)	60	20.61	.000	-.64	
Ever used uppers	13.33 (.21)	14.66 (.59)	367	14.66 (.59)	45	4.45	.035	-.33	
Ever used club drugs	13.36 (.20)	14.69 (.69)	378	14.69 (.69)	34	3.42	.065	-.33	
Ever used inhalants	13.43 (.21)	13.90 (.63)	370	13.90 (.63)	42	.50	.478	-.12	
<b>Behavioral Symptoms by SDQ<sup>b</sup></b>									
Normal range of SDQ- Conduct Problems	14.58 (.27)	12.33 (.27)	209	12.33 (.27)	203	35.43	.000	.59	
Normal range of SDQ- Emotional Symptoms	16.15 (.46)	12.85 (.21)	78	12.85 (.21)	334	39.98	.000	.83	
Normal range of SDQ- Hyperactivity	14.28 (.30)	12.89 (.26)	173	12.89 (.26)	239	12.31	.001	.35	
Normal range of SDQ- Peer Problems	14.15 (.32)	13.08 (.25)	151	13.08 (.25)	261	6.77	.010	.27	
Normal range of SDQ- Prosocial	13.65 (.37)	13.40 (.23)	119	13.40 (.23)	293	.33	.564	.06	

Note.

<sup>a</sup>All ANCOVAs adjusted for gender and ethnicity.

<sup>b</sup>SDQ = Strengths and Difficulties Questionnaire.

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