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Affect Management for HIV Prevention with Adolescents in Therapeutic Schools: The immediate impact of Project Balance

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Abstract

Adolescents in therapeutic schools are at greater risk for HIV and other STIs than their peers due to earlier higher rates of sexual risk and difficulty managing strong emotions. HIV prevention programs that incorporate techniques for affect management during sexual situations may be beneficial. This paper determined the immediate impact of such an intervention, Affect Management (AM), compared to a standard, skills-based HIV prevention intervention (SB) and a general health promotion intervention (HP) for 377 youth, ages 13 to 19, in therapeutic schools in two cities. One month after the intervention, analyses that adjusted for the baseline scores found adolescents in AM were more likely to report condom use at last sex than those in HP (.89 vs. .67, $p=.02$) and that their HIV knowledge was significantly greater. These data suggest that affect management techniques might improve the impact of standard skills-based prevention programs for adolescents in therapeutic schools.

Keywords

adolescents; therapeutic schools; affect management

As adolescents begin to engage in sexual activity, their actions have important implications for their health and well-being (1). In 2011, roughly half of current high school students reported having had sexual intercourse, and 15.3% reported having sex with at least four partners. Nearly 40% of sexually active students did not use a condom the last time they had sex (2). These behaviors carry substantial risk of harm. Almost half of all new sexually transmitted infections occur each year among individuals ages 15–24 (3), and the number of HIV/AIDS diagnoses among 15–19-year-olds increased by nearly 60% from 2004 to 2007 (4). In addition, approximately three out of ten American women will become pregnant while they are adolescents (5, 6), thereby underscoring the need to promote safer sexual behavior of adolescents.

In emotionally charged situations, adolescents tend to make riskier decisions, in part, because their cognitive capacities are not fully developed and they are vulnerable to social pressures and personal emotions (7–9). Sexual situations are likely to be highly emotionally charged due to their novelty and adolescents' conflicting personal attitudes (risk vs. rewards of the behavior) (10). Adolescents' ability to manage strong emotions may significantly

influence the likelihood that they will engage in sexual risk (11). Those with poor affect regulation - who lack effective skills for managing and expressing emotions - may be especially likely to engage in risky sexual behavior in order to manage distressful, negative emotions (11–13).

Some adolescents may be more likely to have difficulty regulating affect than others and, thus, more likely to engage in sexual risk. Youth in therapeutic schools are one such high risk group. Therapeutic schools are a unique setting for at-risk adolescents who have not been able to succeed in traditional school environments. Adolescents in therapeutic settings have higher rates of psychiatric disorders, substance use, learning disorders, and academic difficulties (14). Youth in these schools, compared to those in traditional schools, are also more likely to be sexually active and less likely to use condoms (14, 15). The increased sexual and substance use risks are similar to those reported among youth in other mental health treatment settings, which is not surprising given the high rates of psychiatric disorders among youth in therapeutic schools. (16–19). Several factors are associated with this increased risk and a prominent one is affect dysregulation (20–23). Among adolescents in therapeutic schools, poor affect regulation is prevalent (24). In addition, those who report dysregulation are less likely to use condoms and report less self-efficacy for using them when emotionally distressed (24).

Interventions aimed at integrating HIV-risk reduction and mental health services for adolescents are needed, given the increased vulnerability to negative consequences associated with sexual risk behavior among adolescents with emotional and behavioral problems (17). These interventions may be particularly effective if they teach at-risk adolescents affect regulation skills and behavioral strategies to reduce their likelihood of exposure to HIV/AIDS and other consequences of sexual risk behavior (11, 17, 25). A previous HIV prevention program for adolescents in alternative/therapeutic schools found that the program, which targeted cognitive monitoring and affect management in sexual situations as well as HIV knowledge and prevention self-efficacy, was efficacious at reducing sexual risk (26). The study suggested the value of improving affect management for youth with mental health issues but was limited by being conducted at a single site, having a focus on two novel constructs (affect management and cognitive monitoring in sexual situations), which obscures the unique, independent impact of each construct, and having a brief HIV informational comparison condition, rather than a time and attention matched condition.

In the current study, we examined the short-term effects of a 3-arm randomized controlled trial comparing the relative efficacy of a HIV prevention intervention targeting affect management, a standard HIV knowledge and skills intervention, and a time and attention matched general health promotion intervention, in order to contrast the relative impact of the two HIV prevention interventions. We hypothesized that, compared to teens in the general health promotion program, adolescents who received the two HIV-prevention interventions would report improvements in factors targeted by both interventions (e.g., HIV knowledge, attitudes); and that those in the affect management intervention would report better affect management skills than those in the two other conditions. It is important to examine change in the constructs targeted by an intervention shortly after its conclusion, since the impact on attitudes can diminish with time and impact may differ immediately after an intervention (27). In addition, detection of immediate change, or lack of change, in constructs may help guide intervention modifications. However, since the assessment occurred one month after the conclusion of the intervention, this provided little time for practice of new skills; therefore examination of sexual and drug risk behaviors was exploratory. It was anticipated that a trend towards safer behavior among those in the two HIV prevention interventions

might be observed, as well as a trend for the affect management intervention to outperform the skills intervention.

Method

Participants

Participants were 13 – 19 years old from two U.S. cities (Providence, RI and Chicago, IL) attending therapeutic day schools for students with emotional or behavioral problems. Schools were approached for participation based on their focus on adolescents with mental health issues who were unable to succeed in a traditional school environment. To be eligible, schools needed to be able to participate for three years, to permit delivery of all three interventions. Twenty schools participated in the interventions and two schools declined because of programming concerns. Adolescents with a pervasive developmental delay or active psychotic disorder, those who were known to be HIV positive (the interventions were not designed to address disclosure of HIV and treatment), currently pregnant, or wards of the state (Chicago only), and those with a history of sexual aggression were excluded from the study. Eligibility was initially determined by staff at the therapeutic schools and then verified over the phone by study staff. As shown in Figure 1, of the 568 adolescents whose families consented to be contacted by study staff, 68 could not be subsequently reached, 51 were ineligible, and 32 declined participation, leaving 417 (81% of eligible youths) who were consented and assessed at baseline. Of these, 40 (10%) youth did not participate due to withdrawal from the study, leaving the school, or logistical problems preventing their attendance. Thus, 377 (90%) were allocated to one of the interventions and followed over time.

Procedures

The Institutional Review Board at both locations approved study protocols. Informed consent was obtained from participants 18 years old or older and from parents or guardians of minors 13–17 years of age. Minor participants provided written assent. School staff obtained permission from eligible families to provide contact information to study staff, and face-to-face meetings were scheduled to obtain written consent and assent.

Youth completed baseline and follow up assessments using audio computer-assisted self-interviews (ACASI). This study focused on the assessments conducted one month after the final intervention session to gauge the intervention's immediate impact. Baseline and one-month follow up assessments took about 75 minutes and 15 minutes to complete respectively. Participants were compensated for the assessments but not the intervention.

Randomization—Schools were randomized to one of three conditions: Affect Management HIV-prevention, Skills-Based HIV-prevention, or Health Promotion. Each new academic year, schools were randomized to one intervention condition to minimize cross talk and treatment contamination. Over the course of the study, each school received all three conditions, thus controlling for potential school-related differences.

Intervention Process—All three interventions consisted of twelve 45-minute, manualized sessions conducted during the school day. Sessions were delivered either once or twice a week, depending on the school's schedule, by two trained facilitators. All three conditions included didactic instruction, games, role-plays, and group discussions delivered in mixed gender groups. Participants personalized their experience by identifying a health behavior and plan to target for improvement.

Intervention Conditions—The Affect Management (AM) condition addressed the connection between feelings and HIV-risk behavior and emphasized interpersonal skills needed to translate personalized knowledge into behavior change. Affect regulation techniques were informed by the principles of Dialectical Behavior Therapy (DBT), which emphasizes correctly recognizing emotions and utilizing distress tolerance skills (28, 29). Teens learned to identify and monitor their own and others' emotions. To manage feelings in risk situations, youth discussed and practiced a variety of techniques, such as distraction, deep breathing, thinking positively, considering other options, and expressing themselves. Teens learned about sexuality, assertive communication, HIV-risk, and the importance of regular HIV and STI testing. They also practiced using condoms correctly.

The Skills-Based (SB) condition emphasized HIV-prevention behavioral strategies without affect regulation and was based on the principles of Social Learning Theory, similar to other effective HIV prevention programs (30, 31). Participants learned to recognize triggers and use behavioral strategies (e.g., seeking alternative healthy behaviors, assertive communication) to avoid risky behavior. Youth were encouraged to practice these skills daily. Like the AM condition, they learned about sexuality, HIV-risk, and the importance of regular HIV and STI testing. They also practiced using condoms correctly. The program emphasized personal vulnerability to HIV and the need to stay HIV negative in order to reach personal goals.

The Health Promotion (HP) condition emphasized a variety of health topics, including nutrition, exercise, diet, sleep, smoking, drugs/alcohol, and violence. Teens received one session on HIV and sexual health information. Neither the SB nor HP conditions engaged in discussion of emotions in decision-making. For a comparison of the topics addressed in the three interventions, see Table 1.

Fidelity—All sessions were guided by a structured manual, and facilitators received initial training followed by annual re-trainings to prevent intervention drift. During training, facilitators read the manual in detail, reviewed project goals, discussed key issues related to implementation and treatment fidelity, and delivered mock sessions to other trainees, who acted as adolescent participants. Facilitators were deemed competent to deliver the program following observation by study investigators. In addition, quality monitors observed a portion of sessions to ensure fidelity to the scripted protocol.

Measures

Demographics—Participants reported demographic information including age, gender, race/ethnicity, and free lunch status (as a proxy for socioeconomic status).

Adolescent Risk Behavior Assessment (32)—The ARBA is designed to assess adolescent self-reported sex and drug use behavior. Skip patterns are used to minimize follow-up questions for non-endorsed behaviors. Adolescents reported whether they had ever had vaginal or anal sex (yes/no), whether they had had vaginal or anal sex in the last month (yes/no), and whether they had used a condom at their last episode of vaginal or anal sex (yes/no). The ARBA also assessed adolescents' substance use. Relevant to the present study, teens provided the number of days in the last month that they drank alcohol.

HIV Knowledge (33)—HIV knowledge was assessed using 20 true/false/don't know items addressing HIV/AIDS and condom use, such as "A birth control pill will protect you against AIDS." Scores indicate the number of correct items, with higher scores reflecting greater knowledge. Internal consistency for the scale was strong ($\alpha = .83$).

Self-efficacy for HIV Prevention—This measure was adapted from the AIDS Self-efficacy Scale (34). The measure used three items to assess perceived ability to prevent HIV (e.g., “If you decide not to have sex with a partner, how sure are you that you could tell your partner that you will not have sexual intercourse?”). Participants responded on a four-point scale (1=very sure to 4=couldn’t do it). Higher scores indicate less self-efficacy; $\alpha = .82$.

Affect Dysregulation Scale [ADS; (24)]—The ADS includes six items assessing the frequency of difficulties with affect regulation. Participants respond on a 4-point scale (1=not at all, 2=a little, 3=sometimes, 4=often) to items such as “In the past 3 months, my feelings got in the way of doing things.” Higher scores indicate more difficulty managing feelings; $\alpha = .72$.

Computerized Diagnostic Interview Schedule for Children [C-DISC-IV; (35)]—The C-DISC-IV is a structured audio computer-assisted diagnostic interview used to screen for a range of psychiatric diagnoses using DSM-IV criteria. The C-DISC-IV has demonstrated acceptable reliability and validity. For the current study, modules assessing symptoms of Generalized Anxiety Disorder, Post-Traumatic Stress Disorder, Major Depressive Disorder, Mania, Hypomania, Oppositional Defiant Disorder, and Conduct Disorder were administered.

Data Analysis

Independent t-tests and Chi-square analyses were conducted to examine whether differences existed between conditions on baseline demographic variables. Next, students who completed both baseline and follow-up assessments ($n=322$) were compared to those who completed baseline only ($n=55$) on demographic and outcome variables. The intraclass correlation (ICC) for each continuous outcome measure at baseline was calculated. ICCs ranged from .004 to .007, below the recommended cutoff of .25 used to determine the use of modeling techniques that account for group membership (36). Outcome scores at posttest were analyzed using analysis of covariance (ANCOVA), adjusting for baseline scores on all measures, with the exception of recent sexual activity, in which analyses adjusted for any history of sexual activity at baseline. Analyses of condom use at last sex were restricted to those sexually active in the past month. Post-hoc analyses directly compared groups on significant ANCOVAs. Finally, Cohen’s d was calculated to estimate the intervention effect sizes for the Affect Management condition compared to both the Skills condition and the Health Promotion condition. Data were analyzed using SPSS 15.0.

Results

Demographics

Demographics for the current sample can be found in Table 2. Sixty percent of participants were between the ages of 13 to 15 years, with an average age of 15.2 (1.5) years. The sample was 31% female. The majority of participants (51%) identified their race as White; the rest of the sample identified as Black (29%), bi- or multiracial (17%), and other categories (3%). Nineteen percent identified their ethnicity (not a racial category) as Latino. The majority of participants reported a heterosexual orientation (81%).

Sexual Risk Behavior and Mental Health

At baseline, 59% ($n=220$) of participants reported having had vaginal or anal sex, and 69% of sexually active youth ($n=152$) reported having had vaginal or anal sex in the last six months. Sixty-four percent of the sample of sexually active youth reported using a condom the last time they had vaginal or anal sex. Consistent with Brown et al. (18), 58% of the youth met threshold or subthreshold criteria for one or more of the CDISC-IV diagnostic

categories assessed. The most common diagnoses were Conduct Disorder (29%), Oppositional Defiant Disorder (32.8%), Generalized Anxiety Disorder (15%), Major Depressive Disorder (13.7%), and Post-Traumatic Stress Disorder (12.3%).

Randomization and Retention

Tests of demographic differences between intervention conditions at baseline indicated no significant differences (see Table 1). Comparisons of retained ($n=322$, 85%) and non-retained ($n=55$, 15%) youth at follow-up revealed no significant differences on age, gender, race, ethnicity, sexual orientation, or free lunch ($p>.10$ for all variables). Similarly, there were no baseline differences between groups on having ever had vaginal or anal sex, condom use at last sex, days drinking alcohol in the last month, self-efficacy for HIV Prevention, or affect dysregulation. Sex in the previous six months was significantly more common among adolescents retained in the intervention (72% vs. 54%, $p=.03$) and baseline HIV knowledge was somewhat lower among those retained (10.2 vs. 11.4, $p=.08$). A trend ($p=.06$) also emerged for retention by condition, in which a greater percentage of HP participants (92%) completed the follow-up assessment than SB (82%) or AM (84%) participants.

Intervention Effects

Intervention effects were examined covarying for baseline scores (see Table 3). Significant omnibus tests were observed for condom use at last sex, $F(2, 95) = 3.22$, $p = .04$, and HIV knowledge, $F(2, 314) = 7.89$, $p < .001$. Post-hoc comparisons of adjusted means for condom use at last sex indicated a significant difference between the AM and HP groups (.89 vs. .67, $p=.02$; $d=.57$) though not between the AM and SB groups (.89 vs. .72, $p=.08$; $d=.45$) or SB and HP groups (.72 vs. .67, $p=.62$; $d=.13$). Post-hoc comparisons of adjusted means for HIV Knowledge indicated a significant difference between the AM and HP groups (13.91 vs. 12.30, $p<.001$; $d=.54$) and the SB and HP groups (13.31 vs. 12.30, $p=.01$; $d=.34$) but not between the AM and SB groups (13.91 vs. 13.31, $p=.148$; $d=.20$).

No significant effects were observed for recent sexual activity, $F(2, 317) = .70$, $p = .50$, alcohol use in the last month, $F(2, 257) = .66$, $p=.52$, affect dysregulation, $F(2, 313) = .34$, $p = .71$, or self-efficacy for HIV prevention, $F(2, 314) = .56$, $p = .57$.

Discussion

This project successfully implemented structured, multisession group HIV prevention interventions for adolescents in therapeutic schools in two U.S. cities. The majority of youth contacted about the project were enrolled and participated in one of the three intervention conditions that were delivered with fidelity by trained facilitators. Despite the potential barriers of urgent mental health needs and conflicting school schedules, the interventions were well received by youth and by school staff, resulting in excellent intervention attendance and retention one month after the intervention ended. The HIV prevention intervention that included a focus on affect management (AM) resulted in a significant increase in condom use at last sex, compared to the time and attention matched control condition (HP).

Adolescents in mental health treatment and/or in alternative schools are at risk for HIV and previous programs have found behavior change to be challenging. The one project that demonstrated a significant improvement in behavior (and which was the basis of the interventions) used a brief educational control condition (26), rather than the more rigorous time and attention matched condition utilized in this project. Despite the common assumption that time and opportunity for practice would be needed for behavior change, the

improvement increase in condom use was found shortly after the end of the intervention. Perhaps this interval provided enough time for behavior to begin to change. Also, both HIV prevention interventions (AM and SB) resulted in a significant improvement in HIV knowledge compared to the general health condition (HP), which also had a session devoted to HIV and other STI information. This finding suggests that the additional time devoted to HIV and sexual health skills reinforced the knowledge acquired in the educational sessions, even without providing new information.

There was some indication that HIV prevention tailored for youth with mental health concerns was more efficacious in reducing sexual risk with the addition of affect management techniques since the AM intervention, but not the SB intervention, was associated with greater condom use at last sex compared to HP. The moderate effect size ($d=.57$) of this improvement with AM is comparable or greater than those reported in other prevention programs (37). In addition, there was a trend to greater condom use among those in AM compared to those in SB ($p=.08$, $d=.45$) and SB demonstrated little effect compared to HP ($d=.13$). The mechanism for this intervention efficacy was not revealed in this brief follow-up assessment. Contrary to expectations, the AM intervention did not result in improvement in perceived affect dysregulation or self-efficacy for HIV prevention behaviors, and neither was change observed in the other conditions. It is possible that the intervention had its impact by other mechanisms or that the scales were not sensitive to changes that will be more observable as these skills develop and generalize. For example, the measure of affect dysregulation, ADS, assesses perception of affect dysregulation in general day-to-day situations and is not specific to sexual situations. Likewise, the self-efficacy measure assesses multiple HIV behaviors, in addition to condom use, which is the only behavior that was significantly improved at the one-month assessment.

Despite the strengths of this multisite RCT, there are limitations. The outcomes are self-report and so susceptible to bias; however, the use of audio assisted computer interviews and an active attention matched comparison condition are thought to improve the accuracy of self-report and diminish differential bias (38). Brief measures of outcomes were collected one month after conclusion of the intervention to provide an immediate assessment of the impact of the interventions on targeted knowledge and attitudes, and a signal of the behavioral impact. Longer follow-up will provide more information; nevertheless, it is promising to find an immediate improvement in condom use. There is some suggestion from the results that affect management techniques provided additional benefits for these youth but, even if confirmed, the results may not generalize to other populations with less severe mental health issues. In addition, although the project recruited a large and diverse sample, it may not be representative of all youth in therapeutic schools or those in mental health treatment.

Adolescents in therapeutic schools are one of the most vulnerable groups in the U.S. with high rates of trauma, abuse, behavioral/emotional symptoms, as well as poor social support and chaotic life circumstances. The adolescents, and the therapeutic schools that serve them, confront all of these challenges simultaneously and with limited resources. Even with these immediate pressures, all prevention interventions were seen as relevant and useful by adolescents and staff. It was possible to conduct a rigorous RCT with fidelity despite constraints imposed by time and resources. The HIV prevention intervention that included a focus on affect management resulted in safer sexual behavior for these at-risk adolescents. Further research will determine the duration of the impact and point to the mechanisms of change. Nevertheless it is of note that affect management techniques might improve the impact of more standard skills-based prevention programs for adolescents in these settings. The affect management techniques are consistent with common clinical therapies so the HIV

program should be easy to disseminate to schools, or the techniques, if proven useful, could be integrated into clinical practice.

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Figure 1.
CONSORT summary of participant retention

Table 1

Project Balance Session Topics by Intervention

	Affect Management	Skills-Based	Health Promotion
1	Introduction	Introduction	Introduction
2	Feelings; Check in	Personal Triggers	Marijuana
3	Affect Management I	Assertiveness I	Cigarettes
4	Affect Management II	Assertiveness II	Nutrition I
5	Reproduction; STDs	Reproduction; STDs	Nutrition II
6	Personal Vulnerability	Personal Vulnerability	Exercise
7	Contraception; Abstinence I	Contraception; Abstinence I	Contraception; Abstinence
8	Assertiveness	Contraception; Abstinence II	Violence
9	Life Goals; HIV Testing	Life Goals; HIV Testing	Sleep Hygiene
10	Personal Affect Management Plan	Personal Risk Plan	Caffeine; Drugs
11	HIV Risk Evaluation	HIV Risk Evaluation	HIV Risk Evaluation
12	Review	Review	Review

Table 2

Participant demographics by intervention condition

	Total	AM	SB	HP	F/x ²	p
Age - <i>M</i> (SD)	15.2 (1.5)	15.4 (1.5)	15.1 (1.5)	15.1 (1.4)	1.46	.23
% Male	69.0% (n=260)	67.2% (n=86)	70.0% (n=91)	69.7% (n=83)	.288	.87
Race						
% White	50.7% (n=191)	50.8% (n=65)	52.3% (n=68)	48.7% (n=58)	.32	.85
% Black	29.2% (n=110)	29.7% (n=38)	27.7% (n=36)	30.3% (n=36)	.22	.90
% Multiracial	17.2% (n=65)	16.4% (n=21)	18.5% (n=24)	16.8% (n=20)	.21	.90
% Other	2.9% (n=11)	3.1% (n=4)	1.5% (n=2)	4.2% (n=5)	1.59	.45
% Latino	18.6% (n=70)	16.4% (n=21)	16.9% (n=22)	22.7% (n=27)	1.97	.37
% Free Lunch	52.8% (n=199)	53.1% (n=68)	50.8% (n=66)	54.6% (n=65)	.38	.83
% Heterosexual	81.7% (n=268)	85.7% (n=96)	83.6% (n=97)	75.0% (n=75)	4.50	.11

AM = Affect Management; SB = Skills-Based; HP = Health Promotion

Table 3

Pre and Post-intervention scores by intervention condition

	AM		SB		HP			
	Pretest	Post	Pretest	Post	Pretest	Post	F	P
Knowledge and Attitude Scales – M (SD)								
HIV Knowledge	10.46 (4.4)	13.94 (3.1)	10.07 (4.7)	13.22 (4.4)	10.18 (4.3)	12.28 (4.0)	7.89	.000
Self-Efficacy for HIV Prevention	5.87 (2.7)	4.97 (2.5)	6.11 (2.7)	5.35 (2.5)	6.10 (2.6)	5.06 (2.5)	.56	.57
Affect Dysregulation Scale	13.76 (4.4)	13.50 (4.1)	13.52 (3.9)	13.16 (4.2)	13.53 (4.0)	13.06 (4.1)	.34	.71
Risk Behaviors - % (SD)								
Vaginal/Anal Sex in Last Month	.59 (.49)	.40 (.50)	.57 (.50)	.32 (.47)	.57 (.50)	.36 (.48)	.70	.50
Condom Use at Last Sex (among those active in last month)	.62 (.49)	.88 (.32)	.50 (.51)	.74 (.45)	.74 (.45)	.74 (.44)	3.22	.04
Days Used Alcohol in Last Month	3.43 (5.0)	2.03 (5.1)	3.83 (5.5)	2.28 (5.1)	4.06 (4.7)	1.50 (4.3)	.66	.52

Note: F done on means at post test, adjusted for baseline report. AM = Affect Management; SB = Skills-Based; HP = Health Promotion