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Authors

Carrico, Adam W
Nation, Austin
Gómez, Walter
et al.

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Pilot trial of an expressive writing intervention with HIV-positive methamphetamine-using men who have sex with men

Carrico, Adam W; Nation, Austin; Gómez, Walter; Sundberg, Jeffrey; Dilworth, Samantha E; Johnson, Mallory O; Moskowitz, Judith T; Dawson Rose, Carol

Adam W. Carrico, School of Nursing and Center for AIDS Prevention Studies, University of California, San Francisco; Austin Nation and Walter Gómez, School of Nursing, University of California, San Francisco; Jeffrey Sundberg, Graduate School of Transpersonal Studies, Sofia University; Samantha E. Dilworth and Mallory O. Johnson, Center for AIDS Prevention Studies, University of California, San Francisco; Judith T. Moskowitz, Osher Center for Integrative Medicine, University of California, San Francisco; Carol Dawson Rose, School of Nursing, University of California, San Francisco.

Abstract

Among men who have sex with men (MSM), the co-occurrence of trauma and stimulant use has negative implications for HIV/AIDS prevention. HIV-positive, methamphetamine-using MSM were recruited to pilot test a 7-session, multicomponent resilient affective processing (RAP) intervention that included expressive writing exercises targeting HIV-related traumatic stress. An open-phase pilot with 10 participants provided support for feasibility of intervention delivery such that 99% of the RAP sessions were completed in a 1-month period. Subsequently, 23 additional participants were enrolled in a pilot randomized controlled trial of the RAP intervention ($n = 12$) versus an attention-control condition that included writing exercises about neutral topics ($n = 11$). Acceptability was evidenced by participants randomized to RAP expressing significantly more negative emotions in their writing and reporting greater likelihood of recommending expressive writing exercises to a friend living with HIV. Over the 3-month follow-up period, attention-control participants reported significant decreases in HIV-related traumatic stress while RAP intervention participants reported no significant changes. Compared to attention-control participants, those in the RAP intervention reported significant reductions in the frequency of methamphetamine use immediately following the 1-month RAP intervention period. Thematic analyses of RAP expressive writing exercises revealed that multiple negative life events characterized by social stigma or loss contribute to the complex nature of HIV-related traumatic stress. Findings support the feasibility and acceptability of an exposure-based intervention targeting HIV-related traumatic stress. However, more intensive intervention approaches that simultaneously target trauma and stimulant use will likely be needed to optimize HIV/AIDS prevention efforts with this population.

Keywords: exposure, men who have sex with men, methamphetamine, HIV/AIDS, trauma

Informed by Pennebaker's General Theory of Disclosure and Language (Pennebaker, Kiecolt-Glaser, & Glaser, 1988; Pennebaker, Mayne, & Francis, 1997), expressive writing interventions encourage individuals to confront thoughts and emotions surrounding traumatic events. Facilitating disclosure through writing is theorized to reduce inhibition, which is conceptualized as a chronic, ruminative stressor that depletes psychological resources (Pennebaker & Susman, 1988). These beneficial effects are thought to be further enhanced by cognitive and affective changes stemming from the writing experience (O'Leirigh et al., 2003).

Meta-analyses indicate that expressive writing interventions enhance psychological adjustment as well as improve physical functioning across a range of populations and settings (Frattaroli, 2006; Frisina, Borod, & Lepore, 2004; Smyth, 1998). Although more research is needed to determine the optimal dosage, expressive writing interventions with three or more sessions generally yield better outcomes (Frattaroli, 2006). However, a recent randomized controlled trial (RCT) with 244 HIV-positive persons without substance dependence observed that only women randomized to receive a four-session expressive writing intervention reported greater decreases in posttraumatic stress symptoms, depression, and HIV symptoms (Ironson et al., 2013). Clinical research is needed to develop and pilot test interventions targeting the co-occurrence of trauma and stimulant use (Carrico, Johnson, Colfax, & Moskowitz, 2010; Herrick et al., 2013; Semple, Patterson, & Grant, 2002), which fuels the HIV/AIDS epidemic in men who have sex with men (MSM).

The primary objectives of this formative clinical research were to examine the feasibility, acceptability, and potential clinical utility of a seven-session expressive writing intervention with HIV-positive, methamphetamine-using MSM. Qualitative thematic analyses also characterized the content of expressive writing exercises focusing on HIV-related traumatic stress.

Method

Procedures

Participants completed a brief telephone screen to determine eligibility according to the following criteria: 1) identify as male; 2) report having anal sex with a man in the past year; 3) diagnosed with HIV for at least 3 months; and 4) report using methamphetamine in the past 30 days. Of 79 individuals screened, 49 (62%) were eligible. Of those who were eligible, 33 (67%) attended an initial study visit during which they provided evidence of HIV-positive serostatus (i.e., a letter of diagnosis or antiretroviral medication bottles bearing their name) that was verified using photo identification. All participants who completed an initial study visit provided informed consent, study procedures were approved by the Committee on Human Research at the University of California, San Francisco, and the pilot RCT was registered (NCT01237366).

This project employed a widely utilized stage model for behavioral intervention research (Carroll & Onken, 2005). Informed by the results of an open-phase pilot, the project team refined the intervention protocol and conducted a pilot RCT. After completing a baseline assessment for the pilot RCT, participants were randomized to complete either a seven-session, multicomponent resilient affective processing

(RAP) intervention that included expressive writing exercises or a seven-session attention-control condition over a 1-month period. Randomization was accomplished using a computer-based algorithm with randomly permuted block sizes that was only accessible to the study data manager. Follow-up assessments were conducted immediately after the conclusion of the 1-month intervention period and at 3 months postrandomization. All study assessments were administered via computer. A urine sample was collected at each assessment for on-site toxicology screening. Participants received a \$50 preloaded debit card for completing each study assessment.

RAP intervention. RAP is a multicomponent intervention targeting HIV-related traumatic stress that consists of: a) psychoeducation regarding the nature of exposure-based treatments; b) expressive writing exercises about HIV/AIDS; c) writing prompts that are designed to cultivate positive psychological states; and d) in-session meditation and relaxation exercises. At the beginning of each of the seven sessions, participants completed expressive writing exercises for 20 min during which they were asked to, “write about your deepest emotions and thoughts about the most upsetting experience in your life related to living with HIV/AIDS, including finding out you were HIV-positive.” Consistent with a prior RCT of a guided expressive writing intervention with HIV-positive persons (Ironson et al., 2013), participants also wrote for an additional 10 min in response to writing prompts that were designed to enhance positive psychological states (e.g., benefit finding, forgiveness). Finally, participants completed meditation and relaxation exercises at the end of each session to assist with managing any acute increases in distress or methamphetamine craving related to the writing experience. Meditation and relaxation exercises were provided on an iPod shuffle to facilitate home practice. Table 1 summarizes writing prompts as well as meditation and relaxation exercises by session. Participants received \$20 cash for each intervention session.

Time and attention-control condition. Consistent with prior RCTs of expressive writing with HIV-positive persons (Ironson et al., 2013; Petrie, Fontanilla, Thomas, Booth, & Pennebaker, 2004), attention-control participants completed 20-min neutral writing exercises. Participants were asked to describe their past or planned experiences as if they were reporting facts, without discussing personal thoughts and feelings. Following the neutral writing exercise, participants completed self-report psychological measures (e.g., affect, coping) for time matching. Participants received \$20 cash for completing each session. An iPod shuffle was not provided to attention-control participants.

Pilot RCT Measures

Writing content. Writing exercises for participants were transcribed and coded using the Linguistic Inquiry Word Count (LIWC) software (Pennebaker et al., 1997). LIWC provides quantitative indices writing content, including emotional expression.

Satisfaction. After each writing exercise, participants indicated on a Likert-type scale from 0 (Not at All) to 10 (Definitely) how likely they would be to recommend the writing exercise to an HIV-positive friend. Average satisfaction across sessions was calculated.

HIV-related traumatic stress. The Impact of Event Scale–Revised (IES-R) was administered to assess HIV-related traumatic stress, the primary outcome. This 16-item, self-report measure assesses the severity of symptoms of intrusion (e.g., I thought about it when I didn't mean to) and avoidance (e.g., I tried to remove it from memory) related to HIV/AIDS during the past week (Sundin & Horowitz, 2003). The IES-R modified composite score (Cronbach's alpha = .94) comprised the intrusion (Cronbach's alpha = .90) and avoidance (Cronbach's alpha = .91) subscales.

Intensity of methamphetamine craving. Informed by prior research with crack-cocaine users (Freedman, Lester, McNamara, Milby, & Schumacher, 2006), all participants rated the current intensity of their craving for methamphetamine on a visual analogue scale from 0 (None) to 100 (Some of the Worst Cravings) before and after the writing exercises. Higher scores reflect greater increases in methamphetamine craving after the writing experience, on average.

Stimulant use. Participants reported the number of days they used methamphetamine in the past 30 days. Participants also provided a urine sample for on-site toxicology testing (Redicup®; Redwood Toxicology Laboratory, Inc.). Samples that were positive for methamphetamine or cocaine metabolites (1) were compared with those that were negative (0).

HIV transmission risk behavior. Participants reported the number of sexual partners with whom they had anal sex in the past 3 months, stratified by whether they were feeling the effects of methamphetamine during sexual intercourse. Estimates of the total number of HIV transmission risk partners (i.e., HIV-negative or unknown serostatus) and the subset of HIV transmission risk partners while using methamphetamine were examined as separate outcomes.

Data Analysis

Inferential analyses for the pilot RCT examined unadjusted changes over the 3-month follow-up period for each outcome stratified by intervention condition. Analyses were performed with generalized estimating equations (GEE) in SAS 9.3 using the binomial distribution and logit link for the proportion of urine samples that were positive for stimulants and the normal distribution and identity link for all other continuous dependent variables.

Formal qualitative analyses focused on transcripts of expressive writing exercises and responses to writing prompts from the 22 participants who received the RAP intervention in the open-phase pilot or pilot RCT. The team followed a protocol-driven procedure of sifting, coding, and sorting of the data (Koester et al., 2007). Consensus was reached among the research team regarding the operational definition of each code and its application. Two members of the research team independently coded 30% of the transcripts to ensure reliability in the coding process. Following coding procedures, this team utilized an inductive approach to create memos as a method of reducing these data into predominant themes during team meetings.

Results

Enrollment, Completion Rates, and Follow-Up

Participants were enrolled between March of 2011 and November of 2012. In the open-phase pilot, 10 participants completed 69 of the 70 possible intervention sessions (99%). In the pilot RCT, 23 participants were randomized to either the multicomponent RAP intervention ($n = 12$) or an attention-control condition ($n = 11$). Each of the 12 participants randomized to RAP completed all seven sessions and the 11 participants randomized to the attention-control condition completed an average of 6.45 ($SD = 1.81$) sessions. In total, 22 participants (96%) in the pilot RCT completed each of the 1-month and 3-month follow-up assessments.

Demographics and Health Status

The majority of participants were middle-aged ($M = 45.5$, $SD = 7.6$) men who described their sexual orientation as predominantly or exclusively gay ($n = 28$). The sample was multiethnic: 12 White, 7 African American, 7 Hispanic/Latino, 3 of multicultural heritage, 2 Native American, and 2 Asian/Pacific Islander. Participants were well educated with 24 completing at least some college and most ($n = 25$) were currently on disability. Participants had been living with HIV/AIDS for an average of 13.6 ($SD = 8.0$) years.

Pilot RCT of the RAP Intervention

As shown in Table 2, participants randomized to receive the RAP intervention expressed significantly more negative emotions, $t(21) = -5.63$, $p < .001$ but not more positive emotions, $t(21) = 0.83$, $p > .05$ in their writing exercises. Furthermore, the expressive writing exercises of participants in RAP had significantly more content related to health, $t(21) = -5.94$, $p < .001$, sexuality, $t(21) = -4.06$, $p = .001$, and death, $t(21) = -4.25$, $p = .001$. Participants in the RAP intervention were also significantly more likely to indicate that they would recommend expressive writing exercises to a friend living with HIV, $t(21) = -2.41$, $p < .05$.

As shown in Table 3, participants randomized to receive the attention-control condition reported significant reductions in HIV-related traumatic stress from baseline to the 3-month follow-up ($B = -7.05$, $p < .05$; Cohen's $d = 1.13$), which appeared to be attributable to a significant decrease in the HIV-related avoidance subscale ($B = -4.51$, $p < .05$; Cohen's $d = 1.11$). Participants randomized to receive the RAP intervention reported no significant changes in HIV-related traumatic stress over the follow-up period. Although participants in RAP reported reductions in the frequency of methamphetamine use from baseline to 1-month postrandomization ($B = -2.42$, $p < .05$; Cohen's $d = -0.75$), these were not significant at the 3-month follow-up. Participants in RAP also reported significant decreases in the number of HIV transmission risk partners while using methamphetamine from baseline to the 3-month follow-up period ($B = -1.67$, $p < .05$), but the mean was higher than the attention-control group.

Thematic Analysis of RAP Expressive Writing Exercises

Narratives from expressive writing exercises provided insight into the complex nature of HIV-related traumatic stress. Identified themes and representative quotations from participants are provided in Table 4. Approximately half (13 of 22) of the participants initially focused their expressive writing on experiences

surrounding HIV diagnosis. However, HIV-related traumatic stress was often compounded by other uncontrollable stressors related to living with HIV/AIDS.

Discussion

This formative clinical research provided support for the feasibility and acceptability of a seven-session, multicomponent RAP intervention targeting HIV-related traumatic stress. Feasibility was evidenced by the fact that participants completed the vast majority of scheduled sessions during the 1-month RAP intervention period. Participants also appeared to find the RAP intervention protocol acceptable, which is supported by greater expression of negative emotions observed in expressive writing exercises and higher satisfaction ratings of the expressive writing experience compared to neutral writing. Findings from this study contribute to an emerging literature demonstrating the safety and acceptability of exposure-based interventions with substance users (Brady, Dansky, Back, Foa, & Carroll, 2001; Foa et al., 2013).

Although this small pilot RCT cannot provide definitive evidence regarding the true direction or magnitude of the RAP intervention effects (Kraemer, Mintz, Noda, Tinklenberg, & Yesavage, 2006), findings provide some information regarding its clinical utility. Contrary to hypotheses, attention-control participants reported significant reductions in HIV-related traumatic stress while those in the RAP intervention reported no changes. At the same time, participants in the RAP intervention reported short-term reductions in methamphetamine use that were not sustained over the 3-month follow-up. This pattern of results suggests that more intensive intervention approaches that simultaneously target trauma and stimulant use may be necessary to optimize HIV/AIDS prevention efforts with this population.

Another important contribution of this research was the thematic analyses of expressive writing exercises which highlight that HIV-related traumatic stress is characterized by substantial social stigma and loss. Participants noted multiple instances of enacted stigma, discrimination, and interpersonal rejection related to being HIV-positive, sexual minority men. There were also descriptions of traumatic bereavement that entailed a pervasive sense of loss and guilt related to long-term survivorship as well as health-related anxiety stemming from a sense of a foreshortened future. These HIV-related traumatic stress symptoms were often reexperienced or exacerbated in response to reminders that one is living with HIV/AIDS. Further research is needed to better understand the consequences of HIV-related traumatic stress, particularly among long-term survivors with HIV/AIDS.

Key limitations of this study included a small sample size, short-term follow-up period, and the fact that attention-control participants did not receive iPod shuffles. These should be carefully addressed in clinical research testing more intensive intervention approaches that simultaneously target trauma and stimulant use in HIV-positive, methamphetamine-using MSM.

Table 1. Writing Prompts as Well as Meditation and Relaxation Exercises for the RAP Intervention

Session	Writing prompt	Meditation and relaxation
1	In what ways have things gotten better for you since this experience? (Positive reappraisal)	Breathing retraining (Antoni, Ironson, & Schneiderman, 2007)
2	What personal strengths or relationships with others help you to cope with this experience? (Strengths)	Breath meditation (Bowen, Chawla, & Marlatt, 2011)
3	What aspects of this experience are still unfinished for you? (Cognitive processing)	Capitalizing on positive events (Moskowitz et al., 2012)
4	How might it help to forgive yourself or someone else for aspects of this experience? (Forgiveness)	Lake imagery (Antoni et al., 2007)
5	What will you take away from this experience to remind you to live each day to the fullest? (Benefit finding)	Mountain meditation (Bowen et al., 2011)
6	What makes you feel hopeful or optimistic about the future? (Positive affect and optimism)	Loving-kindness meditation (Bowen et al., 2011)
7	What makes you feel happy and satisfied in life? (Positive affect and discovery of meaning)	Mountain meditation (Bowen et al., 2011)

Table 2. Process Measures Collected During the Writing Experience (N=23)

	Intervention (<i>N</i> = 12) <i>M</i> (<i>SD</i>)	Control (<i>N</i> = 11) <i>M</i> (<i>SD</i>)	Cohen's <i>d</i>
Writing content			
Negative emotional expression	2.35 (0.67)	0.78 (0.66)	2.36**
Positive emotional expression	3.88 (0.87)	3.67 (3.32)	0.09
Health-related content	3.42 (1.17)	1.09 (0.60)	2.51**
Sexuality-related content	1.52 (0.79)	0.45 (0.38)	1.73**
Death-related content	0.32 (0.24)	0.01 (0.03)	1.81**
Change in the intensity of methamphetamine craving	4.50 (20.24)	22.64 (41.62)	-0.55
Recommend writing to a friend with HIV	8.79 (1.27)	6.79 (2.55)	0.99*

* $p < .05$. ** $p \leq .001$.

Table 3. Preliminary Outcomes of the Pilot Randomized Controlled Trial of RAP (N=23)

	Baseline		1-Month		3-Month	
	RAP intervention (N = 12) M (SD)	Attention-control (N = 11) M (SD)	RAP intervention (N = 12) M (SD)	Attention-control (N = 10) M (SD)	RAP intervention (N = 12) M (SD)	Attention-control (N = 10) M (SD)
IES-R						
Modified total score	25.0 (18.6)	17.8 (13.9)	26.2 (15.1)	13.3 (15.5)	23.5 (11.2)	10.0 (12.7)*
Intrusion subscale	11.9 (9.9)	9.4 (6.6)	12.7 (8.9)	6.7 (6.4)	11.2 (6.7)	6.1 (7.3)
Avoidance subscale	13.1 (9.6)	8.5 (8.3)	13.5 (8.4)	6.6 (10.0)	12.3 (8.5)	3.9 (6.5)*
HIV transmission risk						
Total partners	2.0 (2.7)	1.2 (2.9)	—	—	0.5 (1.2)	0.5 (1.6)
Partners on meth	1.8 (2.6)	1.2 (2.9)	—	—	0.2 (0.6)*	0.0 (0.0)
Stimulant use						
Meth use (Past 30 days)	5.3 (4.0)	7.6 (8.4)	2.9 (4.6)**	9.1 (10.8)	5.3 (10.2)	7.4 (9.7)
	<u>N (%)</u>	<u>N (%)</u>	<u>N (%)</u>	<u>N (%)</u>	<u>N (%)</u>	<u>N (%)</u>
Tox + for Stimulants	6 (50)	6 (54)	7 (58)	6 (55)	7 (58)	7 (64)

Note. Meth = Methamphetamine; Tox+ = Urine sample reactive for stimulants.
* $p < .05$.

Table 4. Emerging Themes from Expressive Writing Exercises on HIV-Related Trauma

Theme	Representative quotation(s)
Enacted stigma following HIV diagnosis	The person that told me said, and I quote, “You have AIDS just like all the faggots in town you will die in a few months so go plan your funeral.” That was like I had been thrown in front of a bus. I’m still hurt and pissed now 26 years later. (HIV-positive for 25.3 years, White)
Bereavement and an uncertain future	So many bright and handsome people gone so early in life...I feel like I was on a 747 that crashed and I was the sole survivor. (HIV-positive for 28.3 years, White) I can say that deep down inside I know that my body is going to waste faster each day . . . To be honest I really feel like my life now has been dealt a really bad hand as far as my life span goes for my future. Seems like since I have been infected with the virus my health has really turned for the worst on top of dealing with my other sicknesses. (HIV-positive for 1.3 years, Multicultural)
Enacted stigma following HIV disclosure Triggers for HIV-related traumatic stress	My mom stops talking to me . . . my older brother he hates me now. He thinks that if I touch his hand he is going to get HIV. (HIV-positive for 1.3 years, Hispanic/Latino) I have to continue to take my HIV medication every day for the rest of my life. I think when you are just HIV positive and you are not on meds, that you can sometimes forget you are carrying this virus inside you . . . Its funny how taking something that was supposed to help you live could be so scary. (HIV-positive for 5.3 years, White) I see a sick person sporadically. I guess it’s a jarring reminder that I have it...I don’t think about having it as I make my way through a crowd of faces on a street I think I’m just like them. Then I see someone and I’m reminded. (HIV-positive for 11.8 years, White)

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