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Reductions in Traumatic Stress following a Coping Intervention were Mediated by Decreases in Avoidant Coping for People Living with HIV/AIDS and Childhood Sexual Abuse

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Abstract

Objective—To examine whether (1) Living in the Face of Trauma (*LIFT*), a group intervention to address coping with HIV and childhood sexual abuse (CSA), significantly reduced traumatic stress over a one-year follow-up period more than an attention-matched support group comparison intervention; and (2) reductions in avoidant coping over time mediated reductions in traumatic stress.

Method—In a randomized controlled trial, 247 participants completed measures of traumatic stress and avoidant coping at pre- and post- intervention, and at 4, 8, and 12 month follow-ups. Latent growth curve modeling examined changes over the 5 time points; standardized path coefficients provide estimates of effects.

Results—As compared to the support intervention, the coping intervention led to a reduction in traumatic stress over time ($b = -.20$, $p < .02$). Participants in the coping intervention also reduced their use of avoidant coping strategies more than did participants in the support intervention ($b = -.22$, $p < .05$). Mediation analyses showed reductions in avoidant coping related to reductions in traumatic stress ($b = 1.45$, $p < .001$) and the direct effect of the intervention on traumatic stress was no longer significant ($b = .04$, $p = ns$), suggesting that changes in avoidant coping completely mediated intervention effects on traumatic stress.

Conclusions—The *LIFT* intervention significantly reduced traumatic stress over time, and changes in avoidant coping strategies mediated this effect, suggesting a focus on current stressors and coping skills improvement are an important component in addressing traumatic stress for adults living with HIV and CSA.

Keywords

coping; HIV/AIDS; sexual abuse; traumatic stress; randomized controlled trial; mediation

Childhood sexual abuse (CSA) is among the most common traumatic experiences encountered in the United States, with as many as one in three women and one in six men having a history of CSA (Briere & Elliott, 2003; Finkelhor, Hotaling, Lewis, & Smith, 1990). The negative impacts of CSA are well documented and include mental disorders, substance abuse, sexual dysfunction, physical health problems and relationship difficulties (Briere & Elliott, 2003; Irish, Kobayashi, & Delahanty, 2010; Jumper, 1995; Neumann, Houskamp, Pollock, & Briere, 1996; Wyatt et al., 2002). CSA has also been associated with HIV risk behaviors, such as unprotected sex and multiple partners (Arriola, Loudon, Doldren, & Fortenberry, 2005; Mimiaga et al., 2009). The psychological difficulties that often arise from CSA, such as helplessness, low self-esteem, dissociation, denial, avoidance, and self-destructiveness, have been linked to HIV risk behavior, and likely mediate the relationship between CSA and HIV infection (Becker, Rankin, & Rickel, 1998; Briere, 2004; Mimiaga et al., 2009; Rotheram-Borus, Mahler, Koopman, & Langabeer, 1996). Further, CSA survivors are less responsive to HIV risk reduction interventions (Belcher et al., 1998; Kalichman, Carey, & Johnson, 1996; Mimiaga et al., 2009).

Given these psychological and behavioral sequelae of CSA, it is perhaps not surprising that the reported rates of CSA among HIV-infected persons are between 33% and 53% (Henny, Kidder, Stall, & Wolitski, 2007; Kalichman, Sikkema, DiFonzo, Luke, & Austin, 2002; Markowitz et al., 2011; Welles et al., 2009; Whetten et al., 2006). CSA among HIV-infected individuals is a public health concern because it is associated with engagement in unprotected intercourse and substance abuse (Holmes, 1997; Kalichman et al., 2002; Markowitz et al., 2011; O'Leary, Purcell, Remien, & Gomez, 2003; Welles et al., 2009). Despite the growing recognition of the need for HIV prevention and mental health interventions to take into account the experience of CSA (Chin, Wyatt, Carmona, Loeb, & Myers, 2004; Greenberg, 2001; Parillo, Freeman, Collier, & Young, 2001; Sikkema et al., 2004), few interventions have been developed specifically for HIV-infected persons with CSA (Sikkema et al., 2007; Sikkema et al., 2004; Williams et al., 2008; Wyatt et al., 2004).

Theory of change mechanisms underlying coping interventions

CSA has been associated with avoidant coping, such as emotional suppression, denial, and substance abuse (Batten, Follette, & Aban, 2001; Clum, Andrinopoulos, Muessig, & Ellen, 2009; Proulx, Koverola, Fedorowicz, & Kral, 1995), which in turn is associated with increased traumatic symptoms (Fortier et al., 2009; Walsh, Fortier, & DiLillo, 2010). Coping is typically conceptualized as being process-oriented and contextual (Lazarus & Folkman, 1984), yet studies consistently find that active approaches to coping are associated with better psychological outcomes (Kershaw, Northouse, Kritpracha, Schafenacker, & Mood, 2004; Moskowitz, Hult, Bussolari, & Acree, 2009), whereas avoidant approaches are associated with poorer psychological and behavioral outcomes (Moskowitz et al., 2009; Roesch & Weiner, 2001). This has also been shown specifically with HIV-infected persons, where avoidant coping strategies are related to poorer psychological outcomes (Folkman, Chesney, Collette, Boccia, & Cooke, 1996; Ingram, Jones, & Smith, 2001; Moskowitz et al., 2009; Sikkema et al., 2000; Simoni & Ng, 2000). In fact, a number of cognitive-behavioral interventions, some based on theories of stress and coping, have been developed specifically for HIV-infected individuals. Meta-analytic evidence suggests that these interventions have led to significant reductions in psychological distress and enhanced coping and immune functioning (Crepaz et al., 2008; Himelhoch, Medoff, & Oyeni, 2007; Scott-Sheldon, Kalichman, Carey, & Fielder, 2008). Collectively, however, these meta-analyses have also described limitations in the literature, including insufficient follow-up, absence of an attention matched control conditions, and limited diversity in the samples. In addition, few coping interventions have examined the mechanisms of action that contribute to outcomes.

Theory would suggest that interventions to improve coping skills would improve mental and physical health (Moskowitz et al., 2009; Taylor & Stanton, 2007). However, few studies have examined coping as a mediator in longitudinal change among HIV-infected samples. In a 10-session stress management group for HIV-infected men, changes in depression were mediated by denial coping post-intervention (Carrico et al., 2006) and positive reframing at post- and through follow-up (Carrico, Antoni, Weaver, Lechner, & Schneiderman, 2005). In another 10-session coping effectiveness training group, coping self-efficacy mediated observed changes in stress and burnout immediately following the intervention as compared to an HIV information only condition (Chesney, Chambers, Taylor, Johnson, & Folkman, 2003). Finally, findings from a 12-session group intervention for coping with AIDS-related bereavement indicated that changes in avoidant coping mediated changes in grief and depression at post intervention (Smith, Tarakeshwar, Hansen, Kochman, & Sikkema, 2009), and while active and avoidant coping strategies directly impacted psychological functioning and quality of life over a 1-year follow-up, the longitudinal effects of the group intervention on grief and psychiatric distress were associated with changes specifically in avoidant coping (Hansen et al., 2006).

Coping with CSA and HIV

Living in the Face of Trauma (LIFT), the experimental group intervention in the current study, is focused on improving coping, the purported mediator linking current stressors and negative outcomes (both psychological and behavioral) among HIV-infected women and men living with CSA (Sikkema et al., 2007; Sikkema et al., 2004). The maladaptive use of avoidance strategies for coping with CSA and HIV, and the potential synergistic effect of these stressors, may result in multiple detrimental outcomes. *LIFT* integrates cognitive appraisal and coping skills training, which are key to both the theory of stress and coping (Lazarus & Folkman, 1984) and the transactional framework (Spaccarelli, 1994), with cognitive behavioral treatment strategies to reduce psychological distress related to sexual trauma (Briere, 2002; Foa & Rothbaum, 1998; Najavits, 2002) and HIV. *LIFT* also utilizes a cognitive understanding of trauma symptoms as an approach/avoidance dialectic (Briere, 2002; Sikkema et al., 2004). From this perspective, intrusive experiences are conceptualized as attempts to make sense of and integrate traumatic memories (which are frequently somatic, episodic, and context specific) into conscious, narrative memory and to experience these memories in a way that desensitizes the painful responses. In contrast, avoidance symptoms are conceptualized as attempts to avoid anxiety-producing memories, persons, or contexts. In sum, *LIFT* is focused on decreasing traumatic stress by reducing the use of avoidant coping strategies.

LIFT was evaluated in a randomized controlled trial in which a diverse sample of HIV-infected men and women were assigned to the 15-session *LIFT* intervention or an attention matched therapeutic support group intervention. Participants completed assessments at baseline, immediately post the 15-week intervention, and at 4, 8, and 12 month follow ups (5 assessments over 16 months). Over the 12-month follow-up, *LIFT* participants had greater reductions in unprotected intercourse (Sikkema et al., 2008) and substance abuse (Meade et al., 2010), compared to the support group participants. A previous report has shown that participants in the *LIFT* coping intervention had greater reductions in traumatic stress than those in the support condition immediately post intervention (Sikkema et al., 2007). The current study used latent growth curve modeling to test whether the *LIFT* intervention significantly reduced traumatic stress over the one-year follow-up period more than the support group comparison intervention. Further, mediation analyses were conducted to examine whether reductions in avoidant coping over time mediated reductions in traumatic stress over the follow-up period.

Methods

Participants

Participants were recruited from AIDS service organizations and community health centers in New York City between March 2002 and January 2004. Brochures were distributed, and providers referred clients to *LIFT*. Eligibility requirements were 18 years of age, HIV-positive serostatus, and experience of sexual abuse as a child (0–12 years) or adolescent (13–17 years). Sexual abuse was defined as any unwanted touching of a sexual nature by an adult or someone at least 5 years older than the participant (Briere, Elliott, Harris, & Cotman, 1995). Individuals who reported acute distress due to sexual revictimization in the past month, impaired mental status, or extreme distress evidenced by suicidal intention or severe depressive symptomatology (≥ 30 on the Beck Depression Inventory; Beck & Steer, 1993) were excluded and referred to services as appropriate.

The sample ($n=247$) of enrolled participants exceeded the sample size calculation from our initial power analysis. With an estimated 25% attrition over the 12-month follow-up period, an alpha of 0.05 and a power of 0.85, 120 participants per study condition would be needed to detect an intervention by time interaction with an effect size equivalent to $d = 0.30$.

Although the power calculations were conducted for overall treatment effects rather than specifically for a test of mediating mechanisms, our sample size has been shown to have adequate power to detect mediation effects within a latent growth curve modeling framework when effect sizes are small to moderate (Muthén & Curran, 1997). Several design features improved the statistical power of our analyses including repeated assessments over five time points, and a balanced design across study conditions (Coping $n=124$, Support $n=123$). Participant flow is shown in Figure 1. Adhering to intent-to-treat principles, all participants were included in analyses regardless of intervention exposure. Seventy-six percent of participants completed at least one follow-up assessment, with no difference by condition.

Procedures

Participants completed a computer-assisted interview at five time points, every 4 months over a 16-month period. All intervention sessions were conducted between the first (baseline) and second (post-intervention) assessments. Participants received an average of \$40 at each assessment.

Following baseline assessments, participants were randomized to condition. Randomization occurred within ‘waves’ with approximately 10 participants allocated per condition within each wave. Randomization and intervention were conducted separately by gender to account for potential differences in coping and traumatic experiences; however, the intervention protocol was uniform across gender. All procedures were approved by an institutional review board, and participants provided written informed consent.

Treatment Conditions—In both intervention conditions, co-therapists delivered the 15 90-minute weekly sessions in a community health center. The therapists were experienced providers with master’s or doctoral degrees in either social work or clinical psychology. The mean number of sessions attended was 8.6 ($SD = 5.2$; range 0–15). With no difference by condition; 83% attended at least 1 session and 49% attended 11 or more sessions.

LIFT Coping Group Intervention: The experimental intervention was based on the cognitive theory of stress and coping (Lazarus & Folkman, 1984), utilizing the coping framework (Folkman et al., 1991) to guide appraisal of stressors related to HIV infection and sexual trauma, and to develop and utilize effective coping strategies. The primary focus

of the intervention was to reduce traumatic stress through the reduction of maladaptive coping strategies, primarily avoidant coping. During group sessions, participants learned skills to accurately appraise stressors, break stressors down into manageable pieces, assess whether current coping strategies were maladaptive, and appropriately match coping strategies to specified stressors, including the reduction or elimination of ineffective coping strategies. Techniques such as role-plays were used during this appraisal process and to improve coping skills related to living with both CSA and HIV.

Other therapeutic activities included identification of individual triggers, selection of attainable goals, narrative and exposure techniques, and relaxation strategies to regulate traumatic stress. Risk reduction skills were addressed in the context of elements necessary for healthy relationships (e.g., safety, intimacy, power and self-esteem), including sexual relations following sexual abuse, revictimization, substance use and HIV infection. The intervention occurred in a safe environment that provided mutual support and feedback.

HIV Support Group: The comparison intervention paralleled a standard therapeutic support group and was led by experienced co-therapists not trained on the coping intervention model. The purpose of the group was to provide a supportive environment for participants to address issues of HIV and trauma. As group leaders were skilled clinicians with substantial experience, this treatment condition resembled an interpersonal process group model more than a standard community based support group. Additionally, participants were aware that all group members shared the common experience of CSA (due to study inclusion), and this experience was frequently the first time participants had discussed their early sexual trauma in a group environment. Thus, despite the unstructured format, the group content had a predominant focus on the connections between CSA, HIV/AIDS, current relationships, and life events. This comparison intervention afforded the opportunity to evaluate the effectiveness of the coping skills framework that distinguishes the experimental intervention condition.

Adherence to LIFT Protocol: After each session, therapists independently completed quality assurance forms detailing themes, skills, and exercises covered within that session. An independent coder estimated level of adherence to the LIFT protocol, with 82.5% coverage specific to each session's protocol and in sequence across all intervention groups, and 99% of the coping intervention components covered over the course of each group.

Measures

Two measures, assessed at all five time points, were included in the current analyses. The outcome of interest was traumatic stress; the hypothesized mediator was avoidant coping. Intervention condition was included in the model as a dummy code (1 = Coping, 0 = Support) to represent the random assignment to condition.

Traumatic Stress—Traumatic stress was measured using the 15-item Impact of Events Scale (Horowitz & McElrath, 1979). This scale measures posttraumatic stress symptoms for any specific life event and has been used in multiple contexts. Further, it is sensitive to change following psychotherapy and appropriate for monitoring progress in treatment (Sundin & Horowitz, 2003). Participants were asked about the impact of their sexually traumatic experience in the previous month by indicating the extent to which they experienced each symptom on the following scale: 0 (not at all), 1 (rarely), 3 (sometimes), and 5 (often). Symptoms included intrusive thoughts, nightmares, intrusive feelings, numbing of responsiveness, and avoidance of feelings and situations. The 15 items were summed to create a total score that ranged from 0 to 75. The 15 items exhibited good reliability across all 5 time points ($\alpha = .92-.93$).

Avoidant Coping—Participants were asked about strategies they had used in the past month to cope with stress associated with their HIV infection and history of CSA. The Coping with AIDS scale (Namir, Wolcott, Fawzey, & Alumbaugh, 1987) assessed 31 strategies they may have used to deal with their HIV infection. Participants responded on a scale of 0 (never) to 3 (often). The Ways of Coping Questionnaire (Folkman & Lazarus, 1988) assessed 67 strategies they may have used to cope with their CSA. Participants responded on a scale of 0 (not at all used) to 3 (used a great deal). All 98 coping items were factor analyzed together to divide items into two factors that represented active and avoidant coping. The 23 items that loaded on the avoidant coping factor were summed to create an avoidant coping scale. Reliability was good at all 5 time points ($\alpha = .88-.90$).

Statistical analyses

Latent growth curve modeling (LGM) was used for all analyses to examine changes over the 5 time points. Mediation analyses within this LGM framework followed steps outlined by Cheong, MacKinnon and Khoo (2003). First, the growth trajectory of both traumatic stress and avoidant coping were examined separately. For each construct a model containing a latent intercept factor and a latent growth factor were estimated in which the intercept was set at baseline. The first two of the five loadings of the latent growth factors were set to 0 and 1. The third, fourth, and fifth factor loadings were allowed to be freely estimated to allow for examination of the shape of change in both constructs. In line with the freely estimated loadings, we found that fixing the loadings to 0 1 2 2 2 for both constructs fit the data as well as the model in which the loadings were freely estimated. Therefore, subsequent analyses utilized this pattern of change. This pattern followed the theory of change such that the intervention occurred between the first and second measurements; therefore that time period was when the greatest amount of change was expected. After the shape of the change trajectories were established, the effects of the intervention on traumatic stress and avoidant coping were examined by including the intervention dummy code as a predictor of the latent growth factor in each model. The estimate of the effect of the intervention on the change in traumatic stress provided an overall intervention effect, also referred to as the c path. Finally, a full conceptual model (Figure 2) was estimated that included the latent factors for both constructs and the intervention variable. Path coefficients from the completely standardized solution are included in Figure 2 to provide estimates of effects that may be considered within a standardized metric.

The a , b , and c' paths were the mediation paths of interest. The a path tested whether the experimental coping intervention had an effect on the change in the mediating variable (avoidant coping). The b path tested whether the change in the mediating variable was related to a change in the outcome variable (traumatic stress). The c' path was the direct effect of the intervention on the outcome when the mediator was included in the model.

Support for the mediation hypothesis was examined in several ways. First, a test of the mediated effect, the ab path was conducted. An estimate of the ab path was calculated as the product of the a path and b path. The statistical significance of the mediated effect was examined with asymmetric 95% confidence limits for the distribution of two normally distributed variables (MacKinnon, Lockwood, & Williams, 2004), computed by the PRODCLIN program (MacKinnon, Fritz, Williams, & Lockwood, 2007). Next, the significance levels of the c path, obtained from an initial model containing only the intervention as a predictor of change in traumatic stress, and the c' path, obtained from the model with avoidant coping as a mediator, were compared. When a c path is significant and a c' path is not significant, there is evidence of complete mediation.

All analyses were conducted in Mplus 6.1 (Muthen & Muthen, 2010). Models utilized missing data estimation techniques such that partially complete data were included in the

analysis under the missing-at-random assumption. The majority of attrition occurred between baseline and posttest; with the greatest attrition observed at the third follow-up assessment. However, attrition was similar in the coping and support conditions (34.7% and 33.3%, respectively; $F_{(1, 246)} = .048$, $p = ns$). Interventions were carried out in group sessions. Research hypotheses were at the level of the individual, however, individuals could not be assumed to be independent because of the study design. Intraclass correlations (ICC) were examined for traumatic stress and avoidant coping to assess the extent of non-independence in the data within groups, as has recently been strongly recommended within the HIV/AIDS intervention literature (Pals, Wiegand, & Murray, 2011). The ICC values were small. In addition, the average number of participants within a group was small; the 247 participants were divided among 26 groups, which minimizes the impact of the group effect. Nevertheless, all models controlled for the hierarchical clustering of individuals within groups to yield accurate tests of inference (Raudenbush & Bryk, 2002).

Results

Sample Characteristics

The sample was comprised of 130 women and 117 men. All men reported having sex with men. Four transgendered participants were categorized according to their self-identification (3 female, 1 male). The sample was ethnically diverse (68% African American, 17% Hispanic, 10% Caucasian), with a mean age of 42.3 years ($SD = 6.8$), a mean education of 12.2 years ($SD = 2.4$), and 92.3% earned $< \$20,000/\text{year}$. On average, participants had been diagnosed with HIV for 10.0 years ($SD = 5.8$) and had an average CD4 cell count of 454.6 cells/mm³ ($SD = 308.7$).

Participants represented a highly distressed and multiply challenged population, with extensive sexual trauma histories. The average age of first abuse was 8.8 years. Most (90%) experienced penetrative vaginal or anal sexual abuse as a child or adolescent; 87% experienced sexual revictimization in adolescence and/or adulthood. Additionally, 40% met diagnostic criteria for posttraumatic stress disorder (PTSD), 66% had been homeless, 43% had been incarcerated, and 49% had traded sex for money or drugs.

Baseline Equivalence

There were no gender differences between conditions at baseline ($\chi^2_{(1)} = .33$, $p = ns$). The conditions did not exhibit significantly different levels of avoidant coping at baseline ($F_{(1, 245)} = .22$, $p = ns$). Further, the conditions did not differ on traumatic stress at baseline ($F_{(1, 245)} = 2.60$, $p = ns$). Note that the IES traumatic stress scores of participants in this study were similar to distressed samples reported in the literature (Injury/Illness: $M = 20.4$ ($SD = 7.9$), Disaster: $M = 20.2$ ($SD = 7.0$), AIDS-related Bereavement: $M = 30.2$ ($SD = 9.8$)) and much higher than IES traumatic stress scores of community samples ($M = 4.6$ ($SD = 3.6$)) (Sundin & Horowitz, 2003; Sikkema et al., 2007).

Shape of Trajectories

For both traumatic stress and avoidant coping, factor loadings of 0 1 2 2 2 were determined to best fit the pattern of change. Chi square difference tests revealed that these models fit significantly better than models with linear or quadratic growth factors. Further, these LGCM models of traumatic stress and avoidant coping measures fit the data well ($\chi^2_{(10)} = 12.2$, $p = ns$, CFI = .99, RMSEA = .03; $\chi^2_{(10)} = 3.46$, $p = ns$, CFI = 1.00, RMSEA = .00, respectively). Table 1 shows the means and standard deviations for avoidant coping and traumatic stress over the five time points by condition.

Overall Intervention Effect

The total effect of the intervention on traumatic stress was estimated by a path from the intervention dummy code to the traumatic stress latent growth factor. This effect was significant ($b = -.20$, $se = .09$, $p < .02$), indicating that participants in the coping intervention had a greater decrease in experiences of traumatic stress over time than did participants in the support intervention.

Mediation Analyses

The full model was estimated and fit the data well ($\chi^2_{(51)} = 137.06$, $p < .001$, CFI = .90, RMSEA = .08; see Figure 2). In the test of the a path, the intervention had a significant effect on the change in avoidant coping ($b = -.22$, $se = .09$, $p < .05$). The b path was estimated as a path from the avoidant coping latent growth factor to the traumatic stress latent growth factor. This path was significant ($b = 1.45$, $se = .39$, $p < .001$). Therefore, support was found for a relation between the change in avoidant coping and the change in traumatic stress over time. Further, the estimate of the indirect effect, the ab path, was significant ($b = -.32$, $se = .16$, $p < .05$). Asymmetric confidence limits, calculated around the unstandardized estimate of the ab path (-2.40), also showed a significant mediated effect (LL = -4.736 , UL = $-.387$). The direct effect of the intervention on the change in traumatic stress in the full model that included the mediated effect, the c' path, was not significant ($b = .04$, $se = .12$, $p = ns$). The fact that the intervention no longer had a significant effect on the change in traumatic stress when avoidant coping was included in the model suggests that avoidant coping completely mediated the effect of the intervention on traumatic stress.

Discussion

The purpose of the present study was to evaluate the efficacy of *LIFT*, a theoretically-based coping intervention tailored to address HIV/AIDS and CSA, in reducing traumatic stress over time and to examine whether reductions in avoidant coping may explain reductions in traumatic stress. *LIFT* was efficacious in reducing traumatic stress and avoidant coping over a 12-month follow-up period, in comparison to an attention matched therapeutic support intervention; the effect of the intervention on traumatic stress was completely mediated by reductions in the use of avoidant coping strategies.

A number of methodological aspects of the study strengthen the findings and resulting conclusions, especially with regard to understanding how the experimental intervention reduced traumatic stress. First, in addition to the randomized design, 12-month follow-up period, and intent-to-treat analysis, the coping intervention was compared to a therapeutic support group intervention that also addressed HIV/AIDS in the context of CSA. This is not only a stringent test of efficacy with regard to the primary outcome of traumatic stress, but it also provided assurance that the significant reductions in avoidant coping demonstrated by those in the experimental condition were due to the focus on the development of coping skills in the experimental intervention and were not related only to the social support provided by a group setting. Second, the reduction in avoidant coping completely mediated the effect of the intervention on the reduction in traumatic stress. Among the limited mediation analyses of efficacious mental health interventions for HIV/AIDS or CSA, few have established the effect of changes in coping on psychological outcomes to this effect. These results support the efficacy and validity of psychological interventions to reduce stress and maladaptive coping among people living with HIV/AIDS.

The study findings advance our understanding of mental health interventions for people living with HIV/AIDS with regard to conceptual underpinnings and clinical implications. *LIFT* is a theoretically-based coping intervention focused on the reduction of maladaptive

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coping strategies for addressing the combined stressors of CSA and HIV, including the psychological and behavioral sequelae. While the *LIFT* intervention is a trauma-focused and trauma-informed intervention, it was not conceptualized as a treatment specifically for posttraumatic stress disorder (PTSD). Childhood sexual abuse results in a broad spectrum of potential behavioral and psychological problems in adulthood, including traumatic stress (that may or may not be severe enough to warrant a PTSD diagnosis), depression, interpersonal difficulties, substance use, and sexual problems. In fact, although 40% of the participants in this study met criteria for PTSD in clinical interviews, half of these reported traumatic events other than childhood abuse as the referent trauma for their PTSD symptoms.

Common issues addressed in *LIFT* included understanding psychological and behavioral sequelae of sexual abuse, intergenerational family dysfunction, poor interpersonal relationships and related communication, shame, violence and substance use. Further, given the focus on people living with HIV infection, *LIFT* has a deliberate focus on current stressors, the impact of trauma on interpersonal relationships, and HIV-related health promotion. A primary component of the intervention approach was the identification of specific current stressors so that tailored coping skills, such as affect regulation and communication skills, could be utilized effectively. By working with daily stressors related to broader areas of distress, participants utilized goal setting and peer feedback to develop coping skills that could be maintained and applied to other stressors they encounter. Practical suggestions with regard to the intervention include the importance of using a clear and concise presentation of the coping model, such that participants develop an understanding of approaches to coping that can serve as the foundation for intervention components that address stress reduction and behavior change. For example, a focus on safety, intimacy, power and self-esteem in relationships was a core concept that likely enhanced intervention effects through the identification and reduction of avoidant coping strategies that had impacted interpersonal relationships, risk and health protective behaviors. Integration of these concepts was enhanced by the use of visual aids, handouts, role plays, homework assignments, and follow-up of between session activities. Given the shame and stigma often experienced by individuals with HIV and a history of CSA, it is also essential for treatment providers to routinely assess whether CSA has occurred and evaluate the need to address sexual abuse and revictimization among HIV-infected individuals. Lastly, group safety and cohesion should be prioritized, including culturally tailored processes that addresses individual differences related to gender, race, ethnicity, and sexual orientation (Masten, Kochman, Hansen, & Sikkema, 2007; Puffer, Kochman, Hansen, & Sikkema, 2011).

Reducing avoidant coping strategies is critically important for people living with HIV/AIDS who have experienced sexual abuse. Avoidant coping has been found to be a predictor of poor health outcomes among individuals with a history of CSA. This has direct implications for people living with HIV, where consistently high adherence to medical treatment is essential to maintain health. Further, the use of avoidant coping strategies has been tied to other health risk behavior such as sexual risk-taking behaviors (Paul, Catania, Pollack, & Stall, 2001; Sikkema, Hansen, Meade, Kochman, & Fox, 2009), substance use (Briere, 1992) and psychological distress (Simoni & Ng, 2000; Steel, Sanna, Hammond, Whipple, & Cross, 2004) in diverse populations of people with CSA. Avoidant coping may represent ways of blunting the painful awareness of abuse experiences. Although avoidant behavior may be a strategy to immediately reduce distress associated with chronic trauma, it may lead to higher levels of symptomatology, lower self-esteem, and greater feelings of guilt and anger (Briere & Elliott, 1994). Thus, *LIFT* was designed to disrupt avoidant patterns and promote health enhancement among people living with HIV. Findings from our mediation analysis confirm our hypothesis that coping-based interventions targeting people living with

HIV/AIDS and CSA histories can successfully reduce traumatic stress, risk for poor health outcomes, and derail the negative mental and physical health outcomes that often result from use of avoiding coping in response to abuse and trauma.

A number of factors enhance the likelihood of translation from research to practice. *LIFT*, shown to be equally effective among women and men, allowed tailoring to issues of gender, ethnicity, and sexual orientation and was intended to meet the needs of a heterogeneous group of adults living with HIV/AIDS. Participants were primarily of low socioeconomic status, racial minorities, living with significant daily stressors, and having experienced multiple traumas in addition to childhood sexual abuse. Regarding CSA histories, almost all had experienced penetrative abuse as a child or adolescent, and revictimization in adolescence or adulthood. Life stressors common to disenfranchised communities, including those with HIV/AIDS, were prevalent (e.g., histories of incarceration, homelessness, and sex trading for money or drugs). The trial was conducted with consideration given to ecological validity in order to enhance external validity and readiness for dissemination of findings. First, inclusion criteria were limited (e.g., history of childhood sexual abuse, yet no minimum level of traumatic symptoms currently experienced) and participants were not excluded based on current substance use or psychiatric history, including personality disorders. Second, the intervention trial was conducted in collaboration with a community health center with the intervention delivered primarily by master's-level clinicians representative of providers in this type of setting. Third, the intervention was manualized and is available for dissemination.

This study is not without limitations. First, we were unable to enroll a sufficient number of heterosexual men to participate in the trial and further efforts should be undertaken to better understand the impact of sexual abuse among this subgroup. Second, with regard to the mediation analyses, both the mediator and the outcome were measured at the same time. We had a strong theoretical hypothesis to support a reduction in avoidant coping strategies preceding a change in traumatic stress; however, more work is needed to support this hypothesized causal relationship. Third, all data were collected from participant self-report, and while *LIFT* may have improved health outcomes, we did not collect biological data such as viral load or objective data on medication adherence among participants to evaluate this effect. Lastly, although our retention rates were similar to other mental health trials for HIV-infected persons (Crepaz et al., 2008), lower attrition rates would be desirable.

In sum, *LIFT* successfully reduced traumatic stress associated with HIV and CSA by reducing the use of avoidant coping strategies among participants. This mediation analysis enhances our understanding of the role of coping and related interventions to improve the mental health of people living with HIV/AIDS. The efficacy of the *LIFT* intervention in reducing HIV transmission risk behavior (Sikkema et al., 2008), substance use (Meade et al., 2010), traumatic stress, and avoidant coping patterns make this a promising intervention for people living with HIV who have experienced CSA. We note three implications from our research on the *LIFT* intervention: First, CSA produces a broad range of behavioral and psychological problems in adults, and while individuals with specific diagnostic conditions such as PTSD, Major Depressive Disorder, or Substance Dependence may need additional, more specialized, treatments for these conditions, a coping enhancement intervention is useful for addressing the broad problems resulting from CSA. Second, the context of HIV infection introduces specific issues that require intervention attention in this population, such as potential HIV transmission risk and the importance of HIV medication adherence for health maintenance. Third, for adults living with HIV and a history of CSA, a focus on current stressors and coping skills improvement are important given the need for ongoing health management and the range of complex stressors faced by this population.

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Figure 1.
Flow of participants through study

Figure 2.

Mediation model depicting avoidant coping as a mediator of the intervention effect on traumatic stress

Note. Standardized estimates with corresponding standard errors are shown.

Table 1

Descriptive statistics for both conditions across 5 time points

Traumatic Stress		
	Coping Mean (SD)	Support Mean (SD)
Baseline	36.0 (18.5)	32.1 (19.4)
Posttest	28.6 (17.4)	29.2 (19.0)
Follow-up 1	26.3 (17.3)	27.4 (18.9)
Follow-up 2	25.9 (17.1)	26.0 (20.5)
Follow-up 3	24.0 (18.1)	24.5 (17.3)
Avoidant Coping		
	Coping Mean (SD)	Support Mean (SD)
Baseline	26.5 (13.0)	25.7 (14.9)
Posttest	22.2 (11.2)	23.4 (12.7)
Follow-up 1	19.1 (11.8)	20.4 (13.1)
Follow-up 2	19.1 (11.1)	20.6 (13.5)
Follow-up 3	18.2 (10.6)	19.9 (12.5)