A Laboratory-Based Study of the Relationship Between Childhood Abuse and Experiential Avoidance Among Inner-City Substance Users: The Role of Emotional Nonacceptance

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Despite the theorized centrality of experiential avoidance in abuse-related psychopathology, empirical examinations of the relationship between childhood abuse and experiential avoidance remain limited. The present study adds to the extant literature on this relationship, providing a laboratory-based investigation of the relationships between childhood sexual, physical, and emotional abuse, experiential avoidance (indexed as unwillingness to persist on 2 psychologically distressing laboratory tasks), and self-reported emotional nonacceptance among a sample of 76 inner-city treatment-seeking substance users. As hypothesized, results provide evidence for heightened experiential avoidance and emotional nonacceptance among individuals with moderate-severe sexual, physical, and emotional abuse (compared to individuals reporting none-low abuse). However, although emotional nonacceptance was associated with increased risk for experiential avoidance, it mediated the relationship between childhood abuse and experiential avoidance only for emotional abuse. As such, results suggest that one mechanism through which emotional abuse in particular leads to experiential avoidance is emotional nonacceptance. Findings suggest the utility of interventions aimed at decreasing experiential avoidance and promoting emotional acceptance among abused individuals.

Childhood abuse (sexual, physical, and emotional) has been found to be associated with a variety of negative long-term outcomes, including dissociation, substance abuse, deliberate self-harm, risky sexual behaviors, eating disturbances, depression, anxiety, and posttraumatic stress disorder (Batten, Follette, & Aban, 2001; Browne & Finkelhor, 1986; Chu & Dill, 1990; Gratz, Conrad, & Roemer, 2002; Irwin, 1994; Lysneky & Ferguson, 1997; O’Neill & Gupta, 1991; Polusny & Follette, 1995; Rowan, Foy, Rodriguez, & Ryan, 1994; Wonderlich, Wilsnack, Wilsnack, & Harris, 1996; Zanarini, Ruser, Frankenburg, Hennen, & Gunderson, 2000). Despite evidence that childhood abuse may increase the risk for these difficulties, however, the relationship between childhood abuse and later dysfunction is not direct, and not everyone who experiences abuse develops long-term difficulties (see, e.g., Merrill, Thomsen, Sinclair, Gold, & Milner, 2001; Rind, Tromovitch, & Bauserman, 1998). Thus, researchers have begun to examine individual difference characteristics that may influence whether, and to what extent, psychological difficulties develop as a result of childhood abuse (e.g., O’Donohue, Fanetti, & Elliott, 1998).

One such individual difference characteristic that may increase the risk for psychological difficulties following experiences of childhood abuse is experiential avoidance (i.e., attempts to avoid unwanted internal experiences; Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). Indeed, researchers have theorized that many of the aforementioned outcomes found to be associated with abuse may best be understood within the framework of experiential avoidance, with behaviors such as dissociation, self-harm, and substance use functioning to alleviate or avoid intolerable distress (Chapman, Gratz, &
Brown, 2006; Cooper, Russell, Skinner, Frone, & Mudar, 1992; Foa & Riggs, 1995; Hayes et al., 1996; Linehan, 1993; Polusny & Follette, 1995; Wagner & Linehan, 1998) and psychological difficulties such as depression, anxiety, and post-traumatic stress disorder emerging, in part, as a result of the paradoxical consequences of such attempts (Marx & Sloan, 2005; Polusny, Rosenthal, Aban, & Follette, 2004; Salters-Pedneault, Tull, & Roemer, 2004; Tull, Gratz, Salters, & Roemer, 2004; Tull & Roemer, 2003; Wegner & Zanakos, 1994).

Despite the theorized centrality of experiential avoidance in the risk for abuse-related psychopathology (Polusny & Follette, 1995; Walser & Hayes, 1998), empirical examinations of the relationship between childhood abuse and experiential avoidance remain relatively limited. Moreover, although preliminary evidence suggests heightened levels of experiential avoidance among adult survivors of childhood sexual abuse (Batten et al., 2001; Marx & Sloan, 2002) and adolescent sexual victimization (Polusny et al., 2004), extant studies in this area share three primary limitations. First, these studies have relied exclusively on self-report measures of experiential avoidance, responses to which may be influenced by an individual’s willingness and/or ability to accurately report on internal experiences. Moreover, individuals with heightened levels of experiential avoidance are likely to have particular difficulty accurately assessing and describing their internal states, as doing so necessitates at least some degree of willingness to approach internal experiences (see Tull, Bornovalova, Patterson, Hopko, & Lejuez, in press). Given these widely noted limitations inherent to self-report measures of experiential avoidance (see, e.g., Plumb, Orsillo, & Luterek, 2004; Salters-Pedneault et al., 2004; Tull et al., in press), a preferred approach involves multimodal assessment including the use of behavioral and/or experimental measures (Salters-Pedneault et al., 2004).

Second, these studies have focused primarily on the role of sexual abuse (to the exclusion of other forms of childhood abuse), despite recent evidence that emotional and physical abuse may be more directly associated with, and/or account for more variance in, abuse-related psychopathology than sexual abuse (Kent, Waller, & Dagnan, 1999; Melchert, 2000; Mulder, Beaurais, Joyce, & Fergusson, 1998; Simeon, Guralnik, Schmeidler, Sirof, & Knutelska, 2001). Thus, there is a need to examine the relationships between various forms of abuse and experiential avoidance. Consistent with this, Krause, Mendelson, and Lynch (2003) found evidence for a relationship between childhood emotional invalidation (including psychological/emotional abuse) and emotional inhibition (including avoidant coping and the inhibition of emotional expression).

Finally, despite its clear clinical implications, research has not yet examined the potential mechanisms underlying the relationship between abuse and experiential avoidance. Indeed, just as childhood abuse does not necessarily lead to long-term difficulties, individuals with a history of abuse do not always evidence heightened tendencies toward experiential avoidance. Thus, it is important to examine potential mediators of this relationship, including the factors that may increase the risk for experiential avoidance among individuals with a history of childhood abuse. One such factor may be emotional nonacceptance. That is, clinical and theoretical literature suggests that the evaluation of emotions as bad or wrong, and subsequent development of secondary emotional responses (e.g., fear or shame), may motivate attempts to avoid emotions (Gratz, Tull, & Wagner, 2005; Greenberg & Safran, 1987; Mennin, Heimberg, Turk, & Fresco, 2005). Specifically, clinical researchers have suggested that individuals who have negative reactions to their own emotions are more likely to engage in experiential avoidance, as the experience of emotions as aversive (as evidenced by the presence of secondary emotional responses) likely prompts the use of experientially avoidant strategies to escape or suppress the perceived aversive state (Mennin, 2004; Turk, Heimberg, Luterek, Mennin, & Fresco, 2005). Given this theorized relationship between emotional nonacceptance and experiential avoidance, as well as theories that experiences of childhood abuse may increase the risk for emotional nonacceptance (Linehan, 1993), emotional nonacceptance may mediate the relationship between childhood abuse and experiential avoidance. Providing support for this mediational model, preliminary evidence suggests that childhood maltreatment (in the form of emotional neglect) is associated with greater emotional nonacceptance (Gratz & Tull, 2003), and emotional nonacceptance is associated with greater self-reported experiential avoidance (Gratz & Roemer, 2004).

The present study expands upon current research in three ways: (a) by assessing experiential avoidance behaviorally, through the use of two laboratory tasks that provide a measure of participants’ willingness to experience emotional distress; (b) by examining the relationship between various specific forms of childhood abuse and experiential avoidance; and (c) by examining the potential mediating role of emotional nonacceptance in the relationship between abuse and experiential avoidance. More-
over, this study extends extant research on the relationship between childhood abuse and experiential avoidance to a particularly relevant underserved population: inner-city substance users. Specifically, given evidence that inner-city substance users have heightened levels of childhood abuse and abuse-related psychopathology (Blankertz, Cnaan, & Freedman, 1993; Bollerud, 1990; Gil-Rivas, Fiorentine, Anglin, & Taylor, 1997; Jasinski, Williams, & Siegel, 2000), as well as findings that a history of childhood abuse among substance users is associated with poorer treatment outcomes (Rosen, Ouimette, Sheikh, Gregg, & Moos, 2002), examination of the relationship between abuse and experiential avoidance in this particular population has great clinical and public health significance. Therefore, this study examined the relationships between childhood sexual, physical, and emotional abuse, experiential avoidance (indexed as unwillingness to persist on two psychologically distressing laboratory tasks), and self-reported emotional nonacceptance among a sample of 76 inner-city treatment-seeking substance users. It was hypothesized that individuals reporting moderate-severe childhood abuse (compared to those reporting none-low abuse) would evidence greater experiential avoidance and report greater emotional nonacceptance. In addition, it was predicted that self-reported emotional nonacceptance would mediate the relationship between childhood abuse and experiential avoidance, such that moderate-severe abuse would be associated with greater emotional nonacceptance, which, in turn, would be associated with less willingness to remain in contact with emotional distress (i.e., greater experiential avoidance).

Method

Participants

Participants were 76 inpatient residents in a drug and alcohol abuse treatment center in Northeast Washington, DC. Treatment at this center involves a mix of strategies adopted from Alcoholics and Narcotics Anonymous, as well as group sessions focused on relapse prevention and functional analysis. The center requires complete abstinence from drugs and alcohol (including any form of pharmacological treatment, such as methadone), with the exception of caffeine and nicotine; regular drug testing is provided, and any substance use is grounds for dismissal. Typical treatment lasts between 30 and 180 days and, aside from scheduled activities (e.g., group retreats, physician visits), residents are not permitted to leave the center grounds during treatment.

Participants ranged in age from 18 to 62, with a mean age of 42.2 (SD=8.2). Sixty-seven percent (n=51) of the participants were male. Eighty percent of participants self-identified as Black/African-American, 11% as White, 1% as Hispanic/Latino, 1% as Native American, and 7% reported another or unspecified racial background. With regard to highest education level achieved, 27.6% had not completed high school or received a GED, 32.9% had completed high school or received a GED, 34.2% had attended at least some college or technical school, and 5.2% had graduated college. The majority of participants were single (72.4%) and unemployed (76.3%).

Measures

Clinical interview. The Structured Clinical Interview for DSM-IV Axis I Disorders (SCID; First, Spitzer, Gibbon, & Williams, 1996) was used to assess for the presence of current major depression (which could potentially influence responses to the laboratory measures), as well as dependence across alcohol, marijuana, heroin, crack/cocaine, and hallucinogens (including PCP). Interviews were conducted by the second author, trained in the administration of the SCID. Twenty percent of the audiotaped interviews were reviewed by a Ph.D.-level clinician (CWL); interrater reliability was 100%.

Self-report measures. The Childhood Trauma Questionnaire-Short Form (CTQ-SF; Bernstein et al., 2003) assesses childhood maltreatment experiences (i.e., “when I was growing up”) using a 5-point scale ranging from 1 (never true) to 5 (very often true). The CTQ-SF contains 28 items assessing five subscales measuring emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect. Findings among a sample of 378 adult substance abusers indicate that the CTQ has adequate internal consistency (α=.84, .81, .93, .88, and .68 for emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect, respectively), as well as good test-retest reliability over a period of greater than 1 month (r=.86, p<.01; see Bernstein & Fink, 1998). Providing support for its construct validity, scores on the CTQ have been found to be significantly correlated with trauma ratings from child welfare records, reports of family members, and clinician ratings (Bernstein, Ahluvalia, Pogge, & Handelsman, 1997; Bernstein et al., 2003).

The subscales assessing sexual, physical, and emotional abuse were used in the present study to group participants according to the extent of their abuse history (none-low vs. moderate-severe). Specifically, this study used established clinical cutoffs...
points (≥13, 10, and 8 for emotional, physical, and sexual abuse, respectively) developed within two large independent samples (including a community sample of 1,225 women and a sample of 378 treatment-seeking substance users; Bernstein & Fink, 1998). These clinical cutoffs were established by comparing scores on the CTQ to independent, interview-based ratings of childhood trauma severity, used as the criterion for computing sensitivity and specificity (in order to both maximize sensitivity and ensure specificity of at least 80%; Bernstein & Fink, 1998). Sample items include: “Someone tried to touch me in a sexual way, or tried to make me touch them,” “People in my family hit me so hard that it left me with bruises or marks,” and “People in my family called me things like ‘stupid,’ ‘lazy,’ or ‘ugly.’” Internal consistency for the abuse subscales within the current sample was good (α = .86, .87, and .96 for emotional, physical, and sexual abuse, respectively).

The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) is a 36-item measure that assesses individuals’ typical levels of emotion dysregulation across six domains: nonacceptance of negative emotions, inability to engage in goal-directed behaviors when experiencing negative emotions, difficulties controlling impulsive behaviors when experiencing negative emotions, limited access to emotion regulation strategies perceived as effective, lack of emotional awareness, and lack of emotional clarity. Participants are asked to indicate how often the items apply to themselves, with responses ranging from 1 (almost never) to 5 (almost always). The subscale assessing nonacceptance of negative emotions was used in the present study. Sample items include: “When I’m upset, I feel ashamed with myself for feeling that way,” “When I’m upset, I feel like I am weak,” and “When I’m upset, I become angry with myself for feeling that way.” This subscale has been found to have high internal consistency (α = .85), adequate test-retest reliability over a period ranging from 4 to 8 weeks (ρ = .69, p < .01), and adequate construct and predictive validity (Gratz & Roemer, 2004), evidencing significant positive associations with self-reported experiential avoidance (Gratz & Roemer, 2004) and two behaviors thought to serve an experientially avoidant function: deliberate self-harm (Gratz & Roemer, 2004) and worry (Salter-Pedneault, Roemer, Tull, Rucker, & Mennin, 2006; for theoretical literature on the experientially avoidant function of these behaviors, see Chapman et al., 2006, and Roemer & Orsillo, 2002). Finally, scores on this subscale have been found to distinguish between participants with and without a history of panic attacks (Tull & Roemer, in press) and GAD (Salter-Pedneault et al., 2006). Items on the nonacceptance subscale were recoded so that higher scores in every case indicated greater nonacceptance, and a sum was calculated. Internal consistency in the current sample was good (α = .90).

A short demographics questionnaire was administered to obtain information on age, gender, race, education level, employment status, and marital status.

Laboratory measures. This study used the Paced Auditory Serial Addition Task-Computerized Version (PASAT-C), a modified computerized version of the Paced Auditory Serial Addition Task (Gronwall, 1977). The PASAT-C is an empirically supported, behavioral measure of the willingness to tolerate emotional distress (Lejuez, Kahler, & Brown, 2003). During this task, numbers were sequentially flashed on a computer screen, and participants were instructed to add the most recently presented number to the previously presented number before the subsequent number appeared on the screen (using the computer mouse to click on the correct answer). As such, this task required participants to ignore each sum they provided, and instead add the next number to the previously presented number (e.g., 4 + 3 [correct response = 7] + 6 [9] + 1 [7], etc.). As the task was designed to limit the role of mathematical skill in persistence, the presented numbers ranged only from 0 to 20, with no sum greater than 20. Participants were informed that each correct answer they provided would increase their score by 1 point, whereas providing an incorrect answer (or failing to provide an answer before the next number was presented) would not affect their total score.

This version of the PASAT-C consisted of four levels, the first three of which had varying latencies between number presentations. Level 1 (low difficulty) began with a 5-second latency, with each correct answer decreasing the latency by .5 second and each incorrect answer or nonanswer increasing the latency by .5 second. The average latency across Level 1 was used as the latency for Level 2 (medium difficulty), and Levels 3 and 4 (high difficulty) utilized a latency that was half the value of the average latency from Level 1. The first level lasted 2 minutes, the second level lasted 2 minutes, and the third level (which served as a prime for the final level) lasted 1 minute. Following a brief 2-minute rest period to complete the dysphoria ratings (see below), the final level began. The final level had the same latency between number presentations as the third level, but it lasted 5 minutes and included an option to terminate the task at any time. Specifically, participants were informed that, once the final level
had begun, they could terminate exposure to the task at any time by clicking a button on the computer screen labeled “Quit Task”; however, the amount of money they would receive at the end of the session would depend upon their performance on the task. Willingness to tolerate emotional distress was indexed as latency in seconds to task termination. Moreover, as a manipulation check to ensure that the task actually induced emotional distress, we examined pre- and post-task scores on a dysphoria scale comprised of four items assessing levels of anxiety, frustration, irritability, and difficulty concentrating (see Brown, Lejuez, Kahler, & Strong, 2002). Each item was rated from 0 to 100, with the average pre- and post-scores used for comparison. The post-assessment occurred following Level 3 (in order to prevent differing durations in the final level from influencing the mood ratings).

In support of its construct validity, the PASAT-C has been shown to induce emotional distress in the form of anxiety, anger, frustration, and irritability (e.g., Brown et al., 2002; Lejuez et al., 2003). Moreover, a modified version of the PASAT-C has been found to be strongly correlated with a self-report measure of experiential avoidance among patients with borderline personality disorder (r = -.76; Gratz, Rosenthal, Tull, Lejuez, & Gunderson, 2006). Providing evidence for its convergent validity, unwillingness to experience emotional distress on the PASAT-C is heightened among both individuals with borderline personality disorder (compared to individuals without a personality disorder; Gratz et al., 2006) and smokers without a sustained quit attempt (compared to smokers with at least one sustained quit attempt; Brown et al., 2002). Finally, providing evidence for its predictive validity, the PASAT-C has been found to predict early treatment dropout among substance users (Daughters et al., 2005).

The second psychological stressor was the Computerized Mirror-Tracing Persistence Task (MTPT-C; Quinn, Brandon, & Copeland, 1996; Strong et al., 2003). For this task, participants were required to trace a red dot along the lines of a star using the computer mouse; however, the mouse was programmed to move the red dot in the reverse direction (i.e., if the participant moved the mouse to the left, the red dot would move to the right, etc.). To further increase the difficulty of this task (and its resultant frustration), moving the red dot outside of the lines of the star or stalling for more than 2 seconds caused a loud buzz to sound and the red dot to return to the starting position. Participants were informed that, although they could end the task at any time by pressing any key on the computer, their performance on the task would influence how much money they received. After receiving the instructions, participants began the task and worked independently until they terminated the task or the 5-minute maximum duration was reached. Participants were not informed of the maximum duration prior to beginning the task. As with the PASAT-C, willingness to experience emotional distress was indexed as latency in seconds to task termination, with greater willingness reflecting lower levels of experiential avoidance. Similar to the PASAT-C, pre- and post-task dysphoria scores were compared to provide a manipulation check; however, unlike the PASAT-C, only one level was used, and therefore the post-task rating could only be provided once the task was terminated or the 5-minute maximum duration was reached.

In support of its construct validity, the MTPT-C has been found to be significantly correlated with the PASAT-C (Daughters et al., 2005). Moreover, a noncomputerized version of the MTPT has been found to increase participants’ frustration, stress, blood pressure, and pulse (Matthews & Stoney, 1988; Tutoo, 1971), as well as to prospectively predict sustained abstinence through a 12-month smoking quit attempt (Brandon et al., 2003). Finally, providing support for its predictive validity, unwillingness to experience emotional distress on the MTPT-C has been found to predict early treatment dropout among substance users (Daughters et al., 2005).

**PROCEDURE**

Following the structured interview, participants completed the self-report questionnaires and laboratory tasks, which were conducted in two separate classrooms at the treatment facility (each staffed by a different experimenter). One classroom was designated for completion of questionnaires in a group format and was equipped with desks adequately spaced to ensure confidentiality. A second room was set up for individual administration of the laboratory-based measures of willingness to experience emotional distress; the experimenter supervising each room was blind to the participants’ responses and/or performance in the other room. While completing the questionnaires (which were ordered randomly across participants), participants were taken to complete the laboratory tasks at randomly selected times, and returned to complete their questionnaires once the tasks were completed. Participants were reimbursed $10 to $20 depending upon their performance on the tasks, with $20 for persisting through both tasks, $15 for persisting through only one task, and $10 for terminating both tasks.
RESULTS

Preliminary analyses. According to the CTQ-SF criteria used in the present study, 26.3% (n=20) of the participants reported a history of moderate-severe childhood sexual abuse (M=19.15; SD=5.57), 32.9% (n=25) reported a history of moderate-severe childhood physical abuse (M=16.28; SD=5.12), and 26.3% (n=20) reported a history of moderate-severe childhood emotional abuse (M=18.50; SD=4.15). Consistent with past findings that sexual, physical, and emotional abuse frequently co-occur (Bernstein et al., 2003; Manly, Kim, Rogosch, & Cicchetti, 2001), there was extensive overlap across types of abuse, with 60% to 80% of participants reporting moderate-severe levels of one form of abuse also reporting moderate-severe levels of the other forms of abuse. Twelve participants (16%) reported moderate-severe levels of all three types of abuse, 9 participants (12%) reported moderate-severe levels of two types of abuse, and 11 participants (15%) reported moderate-severe levels of one type of abuse. According to the SCID interviews, 27.6% (n=21) of participants met criteria for current major depression. Basic drug dependence information is provided in Table 1.

Construct validity of the laboratory tasks was supported by a moderate correlation between the termination latencies of the two tasks (r=.41; p <.01). Given the significant relationship between the two tasks, a composite score was created to provide a single index of willingness to experience emotional distress for subsequent analyses. Specifically, latency to termination scores on the PASAT-C and MTPT-C were averaged to create an overall index of willingness to experience distress (with lower scores reflecting greater experiential avoidance).

Preliminary analyses were conducted to explore the impact of demographic factors (including age, gender, and racial background) and relevant clinical characteristics (including the presence of current major depression and the number of drugs on which participants were dependent) on emotional nonacceptance and experiential avoidance, in order to identify potential covariates for later analyses (see Tabachnick & Fidell, 1996). Neither emotional nonacceptance nor experiential avoidance differed significantly across gender or racial background, nor were they significantly associated with age or number of drugs on which participants were dependent. However, there were significant mean differences in emotional nonacceptance between individuals with and without current major depression, F(1, 74)=5.12, p <.05, such that participants with current major depression reported greater nonacceptance. Therefore, current major depression status (present vs. absent) was included in the hierarchical regression analyses examining the proposed mediational models so as to statistically control for differences in emotional nonacceptance associated with the presence of major depression.

Manipulation check. Analyses indicated that dysphoria scores increased from pre-assessment to post-assessment after the PASAT-C (M=43.1, SD=32.0; p <.001) and MTPT-C (M=46.9, SD=34.0; p <.001). Moreover, average latency from Level 1 on the PASAT-C and the number of errors per second on the MTPT-C (i.e., number of times the participant had to return to the starting position during the task divided by the task time) were not related to persistence on the respective task (ps > .20), suggesting that the results cannot be attributed to skill level on the tasks.

Primary analyses. Results of a series of one-way (none-low abuse vs. moderate-severe abuse) ANOVAs examining between-group differences in experiential avoidance and emotional nonacceptance indicated significantly higher levels of both among individuals with moderate-severe levels of each form of abuse (see Table 2).

A series of hierarchical regression analyses were conducted to test the proposed mediational models. According to Baron and Kenny (1986), support for the mediational models will be provided if: (a) the presence of moderate-severe childhood abuse significantly predicts experiential avoidance, (b) the presence of moderate-severe childhood abuse significantly predicts emotional nonacceptance, (c) emotional nonacceptance significantly predicts

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### Table 1

<table>
<thead>
<tr>
<th>Drug class</th>
<th>Frequency</th>
<th>Percentage</th>
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<tr>
<td>Alcohol</td>
<td>30</td>
<td>39.5</td>
</tr>
<tr>
<td>Marijuana</td>
<td>11</td>
<td>14.5</td>
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<tr>
<td>Heroin</td>
<td>23</td>
<td>30.3</td>
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<td>Crack/cocaine</td>
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<td>Hallucinogens (including PCP)</td>
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<td>3.9</td>
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<table>
<thead>
<tr>
<th>Number of drugs</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>One</td>
<td>37</td>
<td>48.7</td>
</tr>
<tr>
<td>Two</td>
<td>30</td>
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<td>Three</td>
<td>9</td>
<td>11.8</td>
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experiential avoidance, and (d) childhood abuse does not remain a significant predictor of experiential avoidance once nonacceptance is entered into the equation as an independent variable. Providing support for the first component of this model, moderate-severe levels of each type of childhood abuse significantly predicted experiential avoidance when controlling for the presence of current major depression (see Table 3), with a history of moderate-severe sexual abuse accounting for 22% of the variance in experiential avoidance, \(F(2, 73)=10.34, p<.01\), a history of moderate-severe physical abuse accounting for 12% of the variance, \(F(2, 73)=5.10, p<.01\), and a history of moderate-severe emotional abuse accounting for 9% of the variance, \(F(2, 73)=3.63, p<.05\).

Results of analyses examining the relationship between each type of childhood abuse and emotional nonacceptance (when controlling for the presence of current major depression) indicated that moderate-severe levels of both sexual abuse, \(R^2_{\Delta}=.07, F_{\Delta}(1, 73)=6.30, p<.05\), and emotional abuse, \(R^2_{\Delta}=.11, F_{\Delta}(1, 73)=9.55, p<.01\), significantly predicted emotional nonacceptance, above and beyond current major depression. The additional 4% of the variance in nonacceptance accounted for by a history of moderate-severe physical abuse did not reach statistical significance, \(R^2_{\Delta}=.04, F_{\Delta}(1, 73)=3.33, p=.07\).

In regard to the relationship between emotional nonacceptance and experiential avoidance, results of a hierarchical regression analysis indicated that emotional nonacceptance accounted for an additional 12% of the variance in experiential avoidance when controlling for current major depression, \(F_{\Delta}(1, 73)=10.05, \beta=-.36, p<.01\).

Finally, to examine if emotional nonacceptance mediates the relationship between childhood sexual and emotional abuse and experiential avoidance.

### Table 3
Hierarchical regression analyses exploring mediating role of emotional nonacceptance in the relationship between childhood abuse and experiential avoidance

<table>
<thead>
<tr>
<th>Sexual abuse(^a)</th>
<th>Physical abuse(^b)</th>
<th>Emotional abuse(^c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\beta)</td>
<td>(R^2) Change</td>
<td>(\beta)</td>
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<tr>
<td>---------------------</td>
<td>---------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Step 1</td>
<td>Current major depression</td>
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<td></td>
<td>Step 2</td>
<td>Current major depression</td>
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<td>Abuse: moderate-severe</td>
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<td>Step 3</td>
<td>Current major depression</td>
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<tr>
<td></td>
<td></td>
<td>Abuse: moderate-severe</td>
</tr>
</tbody>
</table>

\(\* p<.05; \** p<.01\)

\(a\) \(R^2=.00, \text{Adjusted } R^2=-.01 (p>.10)\) for Step 1; \(R^2=.22, \text{Adjusted } R^2=.20 (p<.01)\) for Step 2; \(R^2=.27, \text{Adjusted } R^2=.24 (p<.05)\) for Step 3.

\(b\) \(R^2=.00, \text{Adjusted } R^2=-.01 (p>.10)\) for Step 1; \(R^2=.12, \text{Adjusted } R^2=.10 (p<.01)\) for Step 2; \(R^2=.20, \text{Adjusted } R^2=.17 (p<.01)\) for Step 3.

\(c\) \(R^2=.00, \text{Adjusted } R^2=-.01 (p>.10)\) for Step 1; \(R^2=.09, \text{Adjusted } R^2=.07 (p<.01)\) for Step 2; \(R^2=.16, \text{Adjusted } R^2=.12 (p<.05)\) for Step 3.
(and/or accounts for additional variance in experiential avoidance above and beyond childhood physical abuse), three hierarchical regression analyses were conducted with experiential avoidance as the dependent variable, current major depression entered in the first step of each equation, one form of childhood abuse (sexual, physical, or emotional) entered in the second step of each equation, and emotional nonacceptance entered in the final step of each equation. Although emotional nonacceptance accounted for an additional 5% of the variance in experiential avoidance when controlling for sexual abuse, $F_{\Delta}(1, 72)=4.99$, $p<.05$, sexual abuse remained a significant predictor of experiential avoidance with nonacceptance in the equation, suggesting that emotional nonacceptance did not mediate the relationship between this form of abuse and experiential avoidance (see Table 3). Moreover, computation of the Goodman (I) equation to determine the significance of the indirect effect of sexual abuse on experiential avoidance (through its effect on emotional nonacceptance) indicated that this indirect effect was not significant ($z=1.75$, $p=.08$). However, emotional nonacceptance was found to mediate the relationship between emotional abuse and experiential avoidance (see Table 3). Providing confirmatory evidence for the mediating role of emotional nonacceptance in this relationship, computation of the Goodman (I) equation indicated that the indirect effect of emotional abuse on experiential avoidance (through its effect on nonacceptance) was significant ($z=1.97$, $p<.05$). Finally, although childhood physical abuse was not significantly associated with emotional nonacceptance (thus precluding its role as a mediator of the relationship between physical abuse and experiential avoidance), emotional nonacceptance did account for an additional 8% of the variance in experiential avoidance above and beyond physical abuse, $F_{\Delta}(1, 72)=7.12$, $p<.01$.

**Discussion**

The present study adds to the literature on the relationship between childhood abuse and experiential avoidance, exploring the relationships between various forms of abuse and experiential avoidance among inner-city substance users (an underserved population with heightened levels of childhood abuse and related psychopathology; see Blankertz et al., 1993; Bollerud, 1990; Gil-Rivas et al., 1997; Jasinski et al., 2000). Results provide preliminary laboratory-based evidence for heightened experiential avoidance (indexed as unwillingness to persist on two psychologically distressing laboratory tasks) among individuals with moderate-severe sexual, physical, and emotional abuse (compared to individuals reporting none-low abuse). These findings are consistent with previous research findings of a relationship between childhood sexual abuse and self-reported experiential avoidance (Batten et al., 2001; Marx & Sloan, 2002; Polusny et al., 2004), and document the potential role of physical and emotional abuse in the risk for experiential avoidance as well. Moreover, results highlight a relationship between emotional nonacceptance (in the form of secondary emotional responses) and experiential avoidance, providing preliminary empirical evidence that the tendency to negatively evaluate one’s emotional responses may increase the likelihood that one will attempt to avoid or escape emotional distress.

Results also provide preliminary evidence for a relationship between childhood abuse and emotional nonacceptance, indicating heightened nonacceptance among individuals with moderate-severe sexual, physical, and emotional abuse (compared to individuals reporting none-low abuse). However, only sexual and emotional abuse accounted for unique variance in emotional nonacceptance above and beyond current major depression, suggesting that the relationship between childhood physical abuse and emotional nonacceptance is not as robust. Moreover, despite hypotheses that emotional nonacceptance would mediate the relationship between each form of childhood abuse and experiential avoidance, support for the proposed mediational model was provided for only emotional abuse, suggesting that the way in which emotional abuse in particular may increase the risk for experiential avoidance is through its relationship with emotional nonacceptance. Given that emotional abuse may take the form of invalidation, shame, or ridicule of an individual’s emotional experiences, this form of abuse may be particularly likely to increase the risk for emotional nonacceptance (through explicit instruction and modeling of this nonacceptance). Conversely, findings that emotional nonacceptance did not mediate the relationship between sexual abuse and experiential avoidance (despite being positively associated with both) suggest that sexual abuse has a unique association with experiential avoidance separate from the fact that sexual abuse is also associated with increased risk for emotional nonacceptance.

These findings have potential clinical implications, suggesting the utility of interventions aimed at decreasing judgmental, nonaccepting responses to emotions in order to decrease emotional avoidance, particularly among individuals with a history of emotional abuse. Decreasing emotional avoidance
is expected to decrease both maladaptive behaviors that function to avoid emotional experiences (e.g., self-harm or substance use; Chapman et al., 2006; Hayes et al., 1996) and the paradoxical increases in distress that often arise as a consequence of rigid emotional avoidance (e.g., Campbell-Sills, Barlow, Brown, & Hofmann, 2006; Feldner, Zvolensky, Stickle, Bonn-Miller, & Leen-Feldner, 2006). As such, these findings provide further empirical support for the recent development of mindfulness-and acceptance-based interventions for trauma-related psychopathology (see, e.g., Follette, Palm, & Rasmussen-Hall, 2004; Orsillo & Batten, 2005). These interventions are considered to be particularly useful for facilitating emotional acceptance, as they actively seek to facilitate a nonjudgmental and nonvaluative stance toward internal experiences—a stance that may enable clients to remain present with their emotions and view these as a natural part of the human experience (Gratz et al., 2005). In contrast, second-wave behavioral (and cognitive-behavioral) therapies do not target nonaccepting responses as directly or explicitly, and may inadvertently reinforce nonacceptance of internal experiences through the application of first-order change strategies to these experiences.

Finally, it warrants mention that the use of a sample of inner-city substance users enabled us to control for the effects of substance abuse on the relationship between childhood abuse and experiential avoidance, both because all participants had a history of substance dependence and because we controlled for the number of drugs on which participants were dependent. Given these controls and the likelihood of heightened experiential avoidance tendencies among substance abusers in general (see Cooper, Russell, & George, 1988; Michels et al., 1999; Simons, Ducette, Kirby, Stahler, & Shipley, 2003), it is interesting and clinically meaningful that this study found evidence for a unique relationship between childhood abuse and the behavioral assessment of experiential avoidance.

Although the present study extends past research in this area, the findings must be evaluated in light of the study's limitations. The primary limitation concerns the measure of childhood abuse used in this study. First, the retrospective, self-report nature of the CTQ provides no way to substantiate the actual occurrence of childhood abuse, and introduces the possibility of retrospective bias—the nature and extent of which are impossible to determine. Moreover, the format and brevity of the CTQ prohibit examination of particular experiences and/or facets of abuse that may be more likely to result in experiential avoidance. That is, the extent to which childhood abuse leads to later difficulties has been found to depend upon the nature of the abuse experience, such as the context in which the abuse occurs (Binder, McNiel, & Goldstone, 1996; Bolger & Patterson, 2001), the age at which it occurs (Bolger & Patterson, 2001; Johnson, Pike, & Chard, 2001), the relationship of the perpetrator to the survivor (Binder et al., 1996; Dubo, Zanarini, Lewis, & Williams, 1997; Tremblay, Herbert, & Piche, 1999), and characteristics of the abuse itself, including severity (Merrill et al., 2001; Rodriguez, Ryan, Rowan, Foy & 1996), force (Binder et al., 1996), duration (Binder et al., 1996; Rodriguez et al., 1996), frequency of occurrence (Jasinski et al., 2000; Kinzl, Traweger, & Biebl, 1993), and resulting injury (Johnson et al., 2001). Although our decision to examine differences between individuals with moderate-severe abuse vs. none-low abuse (rather than using a more simple classification of the presence or absence of any abuse) enabled us to examine the factors associated with more severe abuse (a dimension of abuse found to be associated with greater difficulties; see Rodriguez et al.), our inability to assess for other potentially relevant aspects of abuse limits the specificity of the results and may also limit our ability to find strong relationships. Of course, the fact that this study found significant differences in experiential avoidance even with the use of this brief measure of abuse suggests the robustness of this relationship.

In addition, given the correlational and cross-sectional nature of the data, it is impossible to determine the precise nature of the relationships between the variables of interest; thus, the direction or temporal order of these relationships may differ from that which was predicted. For instance, although theoretical literature suggests that emotional nonacceptance may increase the risk for experiential avoidance, it is also possible that experiential avoidance may increase the risk for emotional nonacceptance in the form of secondary emotional responses (i.e., emotional responses to one’s emotions; e.g., fear or shame), given evidence that the avoidance of stimuli may increase fear of these stimuli (Karekla, Forsyth, & Kelly, 2004). Prospective, longitudinal studies are needed to address these limitations and more fully examine the relationships between childhood abuse, emotional nonacceptance, and experiential avoidance.

Finally, limitations to the generalizability of the results warrant mention. First, this study used a unique sample of inner-city, primarily African-American, substance users. Although our focus on this underserved population is an asset of this study, our findings cannot be assumed to generalize to
other populations and require replication across a more diverse group of abuse survivors. Further, there may be limitations associated with the ecological validity of the PASAT-C and MTPT-C as a method for inducing distress. That is, these tasks may not have had enough personal relevance for participants to capture the full extent of their experiential avoidance and/or to accurately reflect the ways in which they would respond to emotional distress on a daily basis, outside of the laboratory (see Tull et al., in press). Thus, future studies of the relationship between childhood abuse and experiential avoidance may benefit from the development of a trauma-specific stressor task. However, it is important to note that while the distressing tasks used in this study were not trauma-specific, they were successful in evoking avoidant tendencies among participants with moderate-severe abuse (compared to participants with none-low abuse), suggesting that the heightened experiential avoidance found among individuals with childhood abuse may be evident in response to a broad range of distressing stimuli. Moreover, from a translational research perspective, limitations associated with the ecological validity of a task are of lesser concern to the extent that the task provides a reliable and valid method for assessing the basic processes of interest (see Tull et al., in press).

Despite limitations, the present study provides preliminary laboratory-based evidence for a relationship between several forms of childhood abuse and experiential avoidance. Future studies would benefit from a comprehensive, longitudinal design and an independent verification of childhood abuse. Moreover, future research should continue to examine the extent to which childhood abuse is associated with experiential avoidance above and beyond other potentially relevant forms of psychopathology that may occur at elevated rates within this population, such as posttraumatic stress disorder (found to be associated with both childhood abuse and experiential avoidance; see Goldberg & Garno, 2005; Marx & Sloan, 2005; Rodriguez et al., 1996; Tull et al., 2004). Research is also needed to explore the construct validity of this behavioral assessment of experiential avoidance. Although a recent study (Gratz et al., 2006) found evidence of a strong positive relationship between one of the laboratory tasks used in the present study (i.e., the PASAT-C) and a widely used self-report measure of experiential avoidance (i.e., the Acceptance and Action Questionnaire; Hayes et al., 2004), further research on the validity and reliability of these laboratory tasks as a measure of experiential avoidance is needed. In particular, research is needed to examine the external validity of this behavioral assessment, and the extent to which findings within the laboratory generalize to the ways in which individuals cope with emotional distress in their daily lives. Future research also should explore ways to modify or expand upon these tasks to increase their ecological validity. One potentially useful modification may be to assess the willingness to experience emotional distress through the use of more emotionally salient or personally relevant distressing stimuli, such as trauma imagery or emotionally evocative film clips.

In addition, future research should continue to explore the potential mechanisms underlying the relationship between childhood abuse and experiential avoidance, including constructs theoretically related to emotional nonacceptance, such as self-judgment and fear of emotions. Finally, there is a need to develop the clinical implications stemming from this work, including the further development of targeted interventions for abused individuals aimed at decreasing experiential avoidance and promoting emotional acceptance, willingness, and mindfulness (see Follette et al., 2004; Orsillo & Batten, 2005).

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