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The Roles of Cognitive Flexibility and Experiential Avoidance in Explaining Psychological Distress in Survivors of Interpersonal Victimization

Kathleen M. Palm · Victoria M. Follette

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Abstract The long-term negative psychological consequences associated with interpersonal victimization are significant; however a history of interpersonal victimization alone does not necessarily lead to greater long-term psychological distress. The current study examined the relationship between cognitive flexibility, experiential avoidance, and psychological distress among 92 women who reported a history of interpersonal victimization. The findings indicate that both cognitive flexibility and experiential avoidance are significantly related to posttraumatic stress symptomology and depression in this sample. Preliminary evidence is also presented suggesting experiential avoidance maybe a potential mediator between cognitive flexibility and psychological distress in this sample. The current findings suggest that treatments targeting greater emotional acceptance and mindfulness might be useful approaches in working with survivors of interpersonal victimization.

Keywords Experiential avoidance · Cognitive flexibility · Interpersonal victimization

Posttraumatic stress disorder (PTSD) is a severe and often chronic condition following exposure to traumatic events (Breslau et al. 2003; Kessler et al. 1995). In the United States, prevalence rates for PTSD range from 1 to 10% (Baumeister and Harter 2007; Breslau et al. 2003; Helzer et al. 1987; Kessler et al. 1995), however reports of exposure to potentially traumatic events are much higher, ranging from 39.1% in a community sample (Breslau et al. 1991) to as high as 65% in a sample of undergraduate women (Green et al. 2000). Thus, exposure to a traumatic event is a necessary but not sufficient criterion related to the development of PTSD. Although researchers continue to explore risk factors for the development of PTSD symptomology, several risk factors have been consistently identified in the literature, including being a woman (e.g., Breslau 2009; Kessler et al. 1995) and interpersonal victimization (e.g., Kilpatrick et al. 2003; Ullman and Siegel 1994). Studying populations characterized by these risk factors may provide further insight into intermediary mechanisms that influence the development of PTSD symptomology after experiencing a traumatic event. Interpersonal victimization among women, in particular, is a significant risk factor for subsequent PTSD symptomology and is a growing public health concern with relatively high prevalence rates (Elliott et al. 2004; Smith et al. 2002; Sorenson et al. 1987) and significant health consequences (Kilpatrick et al. 2003; Palm and Follette 2008; for reviews, see Briere and Runtz 1993; Polusny and Follette 1995).

Researchers examining the relationship between interpersonal victimization and these long-term consequences have found that experiential avoidance might be an

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K. M. Palm (✉)
Department of Psychology, Clark University,
950 Main Street,
Worcester, MA 01610, USA
e-mail: kpalm@clarku.edu

V. M. Follette
Department of Psychology, University of Nevada,
Reno, NV, USA

important mediating mechanism. Experiential avoidance is an unwillingness to experience private events (e.g., emotions, thoughts, memories) that are evaluated negatively, and engaging in behaviors that function to temporarily reduce such unpleasant private events (Hayes et al. 2006; Hayes et al. 1996). For example, a socially anxious individual may feel nervous at a party, struggle with the thought, "no one here wants to talk to me," and then engage in behaviors that provide immediate relief from those experiences, such as drinking or leaving the party. Polusny and Follette (1995) suggested that women with a history of interpersonal victimization may seek to avoid or escape negative private events, such as distressing thoughts and feelings about their trauma histories, by engaging in such behaviors as dissociation, substance abuse, and self-injury.

Despite the relief experienced following these avoidance behaviors, chronic avoidance coping has been linked to various forms of psychopathology (Chawla and Ostafin 2007; Hayes et al. 1996; Kingston et al. 2010), including PTSD severity among trauma survivors in non-clinical (Marx and Sloan 2005; Morina 2007; Plumb et al. 2004) and clinical samples (Gratz et al. 2007; Plumb et al. 2004). Accumulating research suggests that experiential avoidance is associated with increased psychological distress among women who report histories of child sexual abuse (Batten et al. 2001; Marx and Sloan 2005; Rosenthal et al. 2005) and sexual assault (Merwin et al. 2009; Polusny et al. 2004). In another study, Orcutt et al. (2005) examined the role of experiential avoidance on PTSD severity among 229 male and female undergraduate students reporting exposure to interpersonal trauma. They found that participants reporting greater experiential avoidance endorsed significantly greater PTSD severity.

Interestingly, in their description of the role of experiential avoidance in the development of psychological symptoms, Hayes et al. (1996) also described the reciprocal role between increased experiential avoidance and decreased cognitive flexibility.[1] However, few researchers have examined this relationship between cognitive flexibility, experiential avoidance, and psychological distress. Individuals who are described as exhibiting greater cognitive flexibility approach situations separately and contextually, and tend to be more flexible in the attributions they make for events. For example, how an individual responds to particular cognitions (e.g., rigidly believing the thought, "I am stupid" as a stable and global fact versus observing the thought, "I am stupid" as one of several possible thoughts in a given moment) may influence the degree to which they experience psychological distress. Thus, cognitive flexibility is conceptually similar to the constructs of attributional and cognitive styles. In fact, emerging evidence suggests that flexible cognitive styles seem to be significant predictors of psychological distress (Fresco et al. 2006a, b; Silverman and Peterson 1993).

According to Hayes and colleagues (Hayes 2004; Hayes et al. 1996), as cognitive flexibility decreases, individuals may form more rigid rules about the need to control or avoid negatively evaluated experiences. Hayes et al. (2006) suggested that as individuals increase their adherence to ineffective rules (e.g., all anxiety is bad), they attempt to avoid those uncomfortable private events, thereby increasing their functional importance, narrowing behavioral repertoires, decreasing sensitivity to context, and ultimately increasing psychological distress. From this perspective, a negative feedback loop can develop in which decreased cognitive flexibility leads to greater experiential avoidance, which in turn leads to decreases in cognitive flexibility.

The aims of the current study are to replicate previous findings indicating that experiential avoidance has an influential role in the development of psychological symptoms among individuals with a history of interpersonal victimization, and to extend previous findings by examining the relationship between cognitive flexibility and experiential avoidance in the development of psychological symptoms. In this study, the authors examined self-report assessments of cognitive flexibility, experiential avoidance, and PTSD symptomology among undergraduate women who endorsed a history of interpersonal victimization. Given the above theoretical predictions, it was hypothesized that, among women who have experienced interpersonal victimization, greater cognitive flexibility would be associated with less posttraumatic stress and depressive symptom severity. Further, it was expected that experiential avoidance would mediate the relationship between cognitive flexibility and psychological distress, with greater experiential avoidance being associated with greater distress.

Method

Participants

Compared to other potentially traumatic events, interpersonal victimization is associated with the greatest risk of developing subsequent PTSD symptomology among women (Kessler et al. 1995), whereas combat and witnessing a life-threatening event are the most significant risk factors among men (Kessler et al. 1995). Further, previous research has identified differential rates across genders in reports of interpersonal victimization (Jaycox et al. 2004) and in past

[1] Hayes et al. (2006) discuss this as "psychological flexibility." For the sake of consistency in the current paper, we refer to this concept as "cognitive flexibility." However, it should be noted that the term "psychological flexibility" has been described more broadly, including cognitive flexibility and behavioral flexibility. The reader is referred to Hayes et al. (2006) for a more detailed description of psychological flexibility.

year diagnosis of PTSD (Breslau et al. 1998; Kessler et al. 1995). Given the above findings, only women were recruited for this study. Current participants were *not* compared to those who reported no history of traumatic events since examining PTSD symptomology necessarily includes meeting Criterion A (experiencing a life threatening event).

Participants were included in the current analyses if they endorsed a history of interpersonal victimization. Of the 248 women completing the assessments, 92 (37%) reported a history of interpersonal victimization, with 29 (11.7%) participants reporting a history of rape, 46 (18.5%) sexual molestation, 16 (6.5%) physical assault, 11 (4.4%) physical abuse, 16 (6.5%) being threatened with a weapon or kidnapped, 4 (1.6%) domestic violence, 2 (.8%) sexual harassment, and 1 (.4%) stalking. Finally, 10 (4.0%) participants indicated that one of these events happened to a loved one. Endorsement of these events was not mutually exclusive. These rates are similar to other reports of interpersonal victimization among women on college campuses (Benson et al. 2007; Polusny et al. 2004; Ullman et al. 1999). Although 18 of these women did not identify their interpersonal victimization as the target event for completing the PTSD assessment, a decision was made to keep them in the analyses as the focus of the analyses was identifying current psychological distress and not confirming the existence of a PTSD diagnosis. The average length of time since the victimization experience was 5.42 (SD= 6.13) years, with 48.7% reporting that the event occurred within the past 2 years. The mean age of participants in this sample was 24.5 years (SD=7.99). The majority of the participants were juniors in college (33.7%), Caucasian (73.9%), and not currently married (78.3%).

Measures

Stressful Life Events Checklist Participants indicated whether or not they had ever experienced any of 11 different traumatic events that were identified by the National Comorbidity Study (Kessler et al. 1995). Individuals were included in the current analyses if they endorsed a life event that involved interpersonal victimization (i.e., one of the victimization events described above).

Posttraumatic Stress Disorder Checklist — Civilian (PCL-C; Weathers et al. 1994) The PCL-C is a 17-item self-report assessment of PTSD symptomology that is answered on a 5-point Likert-type scale (1, not at all; 5, extremely). Participants were instructed to indicate the most stressful event that they endorsed on the Stressful Life Events Checklist and to complete the items with respect to that event. PTSD severity scores were calculated by summing responses to the 17 items. The PCL-C is one of the few self-report assessments of PTSD symptoms that directly corresponds with the Diagnostic and Statistical Manual of Mental Disorders — IV (DSM-IV; American Psychological Association 1994). It has good psychometric properties and correlates highly with the Clinician Administered PTSD Scale (CAPS; Blanchard et al. 1996). Several researchers have suggested that scores above 44 are indicative of PTSD (e.g., Blanchard et al. 1996; Ruggiero et al. 2003), however severity scores as low as 35 have been associated with a clinical diagnosis of PTSD (Lang et al. 2003). The mean score in the current sample was 35.42 (SD=13.93) and there was good internal consistency for this measure (Cronbach's alpha=.90).

Acceptance and Action Questionnaire (AAQ; Hayes et al. 2004) The nine-item AAQ is designed to measure psychological acceptance, willingness, and the tendency to engage in experiential avoidance. Each item is rated on a 7-point Likert scale. This measure has been shown to have good validity and reliability in clinical and non-clinical samples (Bond and Bunce 2003; Hayes et al. 2004). Higher scores on the AAQ reflect greater experiential avoidance, while low scores indicate greater acceptance. Cronbach's alpha for the AAQ in this sample was .67.

Beck Depression Inventory-II (BDI-II; Beck et al. 1996) The 21-item BDI assesses the intensity of depressive thoughts and attitudes. Each item is rated on a 4-point Likert scale (0, symptom not present; 3, symptom very intense). Item responses are summed to an overall score ranging from 0 to 63. Higher scores indicate greater severity of depression. The mean score on the BDI-II in the current sample was 13.26 (SD=9.87). The BDI-II has been shown to have good internal consistency in previous research and in the current study (Cronbach's alpha=.90).

Cognitive Flexibility Scale (CFS; Martin and Rubin 1995) The CFS is a 12-item measure that assesses one's awareness that in any given situation there are alternative thoughts and behaviors that are possible, as well as the willingness to consider those alternatives (Martin and Anderson 1998). Each item is rated on a 6-point Likert scale (1, strongly disagree; 6, strongly agree). Item responses are summed to an overall score ranging from 12 to 72. Higher scores on the measure reflected greater cognitive flexibility. This measure has been shown to have good concurrent, construct, and criterion-related validity when used with college samples (Martin and Anderson 1998). Cronbach's alpha for the CFS in this sample was .80.

Procedures

This study was approved by the Institutional Review Board at a mid-sized western university. Participants were recruited

through the psychology department subject pool and undergraduate psychology courses and a local community college. Participants were asked to participate in a study that examined the relationship between coping strategies and stressful life events. They were told that the questionnaires would take approximately 30 min to complete. Participants provided informed consent and completed a questionnaire packet. The assessment packet consisted of the previously described self-report questionnaires that were completed in a standardized (i.e., not random) manner. Upon completion of the study, participants were debriefed, given extra course credit receipts, and provided with a list of local mental health resources.

Data Analytic Plan

The regression strategy recommended by Baron and Kenny (1986) and Holmbeck (1997) was used to explore the mediating role of experiential avoidance in explaining the relationship between cognitive flexibility and psychiatric symptomology. According to Baron and Kenny (1986), four conditions must be met in order to establish a mediational relation: (1) the independent variable and dependent variable must be significantly associated, (2) the mediation variable must be significantly associated with the dependent variable, (3) the proposed mediating variable must be significantly related to the independent variable, and (4) the impact of the independent variable on the dependent variable is less after controlling for the mediating variable. Following this data analytic strategy, the researchers conducted regression analyses for each dependent variable to test whether the four above conditions were met. A procedure developed by Sobel (1982), which has been found to have greater statistical power than the Baron and Kenny approach (MacKinnon et al. 2002), was conducted to provide a more direct test of the indirect effect. This procedure tests the coefficient of the cross products of the independent variable to mediator relation and the mediator to dependent variable relation controlling for the independent variable (Preacher and Hayes 2004, 2008).

Results

Preliminary Analyses

Prior to analyses, variables were examined for accuracy of data entry, missing values, and fit between distributions and the assumptions of multivariate analyses. Data were screened for patterns of missing values. Missing values occurred infrequently and in a random pattern, and were replaced with the series mean score (Tabachnick and Fidell 2000). Data also were examined for assumptions of normality. A square-root transformation was performed on scores for the BDI-II to reduce extreme skewness. Collinearity diagnostics were run with the sequential hierarchical regression analyses, and no evidence of multicollinearity was found. Residual plots were also examined with respect to the fit between their distributions and the assumptions of multivariate analyses. Outliers were checked for accuracy and were retained in the analyses since they did not significantly affect the results.

Descriptive statistics and Pearson correlations for study variables are displayed in Table 1. The mean score for the PCL-C indicated moderate to high levels of PTSD severity, however the BDI-II mean score reflected less than mild depressive symptomology. Results showed moderate correlations between the CFS score and the AAQ, PCL-C, and BDI-II scores. AAQ scores were strongly correlated with PCL-C and BDI-II scores. In sum, preliminary results suggested that cognitive flexibility and experiential avoidance were associated with psychiatric symptomology in this sample. Time since traumatic event and number of stressful life events endorsed on the stressful life events checklist were not significantly correlated with any of the variables of interest.

Mediation Analyses

The authors examined whether cognitive flexibility predicted outcomes independent of experiential avoidance. Two separate hierarchical multiple regression analyses were conducted entering cognitive flexibility in the first step, and AAQ in the second step to predict PCL-C or BDI-II scores. Results showed that CFS scores significantly predicted both PCL-C and BDI-II scores (see Table 2). When AAQ scores were entered into the equation, the CFS was no longer a significant predictor of the PCL-C or the BDI-II.

Next, analyses were conducted to formally examine whether experiential avoidance mediated the relationship

Table 1 Summary statistics among participants reporting history of interpersonal trauma

	1	2	3	*M*	*SD*
1. CFS	–			56.63	7.50
2. AAQ	−.45**	–		34.41	7.30
3. PCL-C	−.30**	.40**	–	35.42	13.93
4. BDI-II	−.40**	.56**	.53**	12.85	8.70

CFS Cognitive Flexibility Scale; *AAQ* Acceptance and Action Questionnaire; *PCL-C* Posttraumatic Stress Disorder Checklist; *BDI-II* Beck Depression Inventory-II

** $p<.01$. * $p<.05$

Table 2 Hierarchical multiple regression analyses of cognitive flexibility and experiential avoidance predicting outcomes

Predictor(s)	Dependent variable	R^2 Δ	β	t	p
PTSD Symptom Severity (PCL-C)					
Step 1					
CFS	$F\ \Delta_{1,90}=8.83$, $p<.05$	.09	−.30	−2.97	.004
Step 2					
CFS	$F\ \Delta_{2,89}=9.63$, $p<.01$	.09	−.15	−1.37	*ns*
AAQ			.33	3.10	.003
Depression (BDI-II)					
Step 1					
CFS	$F\ \Delta_{1,90}=16.62$, $p<.001$	.16	−.40	−4.08	.000
Step 2					
CFS	$F\ \Delta_{2,89}=22.39$, $p<.001$	.18	−.18	−1.85	*ns*
AAQ			.47	4.89	.000

N=92; *CFS* Cognitive Flexibility; *AAQ* Acceptance and Action Questionnaire; *PCL-C* PTSD Checklist-Civilian; *BDI-II* Beck Depression Inventory-II

between cognitive flexibility and psychiatric symptomology. Statistical procedures outlined by Baron and Kenny (1986) were used to examine mediation hypotheses. Experiential avoidance was tested as a mediator of PTSD severity and depression scores. All conditions for mediation were met for predicting PCL-C scores. The CFS was associated with PCL-C scores ($t_{90}=-2.97$, $p<.01$) and AAQ scores ($t_{90}=-4.83$, $p<.001$). Also, the AAQ was associated with PCL-C scores ($t_{90}=4.15$, $p<.001$). When included together in the regression equation, the AAQ predicted PCL-C scores ($t_{89}=3.10$, $p<.01$), but the CFS did not ($t_{89}=-1.39$, $p = ns$). A Sobel test revealed that experiential avoidance fully mediated the relationship between cognitive flexibility and PTSD severity ($z=-2.61$, $p<.01$).

Conditions for mediation were also met for predicting BDI-II scores. Cognitive flexibility was not significantly related to BDI-II scores ($t_{89}=-1.85$, $p = ns$) after the AAQ ($t_{89}=4.89$, $p<.001$) was included in the final regression analysis. A Sobel test revealed that that experiential avoidance fully mediated the relationship between cognitive flexibility and depression ($z=-3.44$, $p<.001$).

Post-hoc Analyses

In order to test whether cognitive flexibility accounts for the relationship between experiential avoidance and psychological distress, two separate hierarchical multiple regression analyses were conducted entering AAQ scores in the first step and the CFS in the second step to predict PCL-C or BDI-II scores. In a model that was significant, $R=.42$, $F\ (2, 89)=9.63$, $p<.001$, the AAQ was a significant predictor of PCL-C scores ($t_{89}=3.10$, $p<.01$), but the CFS was not ($t_{89}=-1.37$, $p = ns$). Similarly, in a model that was significant, $R=.58$, $F\ (2, 89)=22.39$, $p<.001$, the AAQ was a significant predictor of BDI-II scores ($t_{89}=4.89$, $p<.001$), but the CFS was not ($t_{89}=-1.85$, $p = ns$).

Discussion

In the current study, the researchers examined the hypothesis that cognitive flexibility and experiential avoidance are related to psychological distress among women with a self-reported history of interpersonal victimization. Consistent with the hypotheses, cognitive flexibility and experiential avoidance were significantly related to depression and PTSD severity scores. There was also support for experiential avoidance as a potential mediator in the relationship between cognitive flexibility and PTSD severity. Further, experiential avoidance seemed to mediate the relationship between cognitive flexibility and depression. The current findings support and extend previous work examining the role of experiential avoidance and psychological distress in this population. It replicates findings identifying the relationship between experiential avoidance and psychological distress among trauma survivors, in particular survivors of interpersonal victimization (e.g., Marx and Sloan 2005; Merwin et al. 2009; Polusny et al. 2004; Rosenthal et al. 2005). An important contribution of the current study is the extension of previous findings by examining the role of cognitive flexibility in the complex relationships between history of interpersonal victimization, experiential avoidance, and psychological distress. Although experiential avoidance may have explained the relationship between cognitive flexibility and psychological distress among women with a history of interpersonal victimization, these findings suggest that how an individual thinks about their experiences can lead to greater avoidance. Thus, in developing treatment programs for survivors of interpersonal victimization it maybe important to consider how to support greater cognitive flexibility in addition to experiential acceptance.

Although it was anticipated that there maybe a reciprocal relationship between experiential avoidance and cognitive flexibility, this relationship was not found in the current

sample. It was expected that the data would support a negative feedback loop in which decreased cognitive flexibility leads to greater experiential avoidance, which in turn leads to decreases in cognitive flexibility. However, the present findings suggested that one's inability to think flexibly leads to increased psychological distress through increasing experiential avoidance, but greater experiential avoidance did not necessarily lead to less cognitive flexibility. These findings suggest that experiential avoidance maybe the important mechanism that accounts for the relationship between cognitive flexibility and psychopathology in this sample. On the other hand, the retrospective, cross-sectional nature of this study may have limited the capacity to identify a more complex model. Also, although the current findings are suggestive of mediation, true mediation could not be established since all of the variables of interest were assessed at the same time. Future prospective investigations examining the impact of the influence of these variables on psychological distress over time may shed greater light on the exact nature of this relationship.

There are several limitations to this study that merit discussion. First, generalizability of the current findings is limited by the methodology, which was retrospective, cross-sectional, and reliant on self-report measures. Prospective research would provide clearer insight into the temporal relationship of these variables, and may provide insight into how to identify populations at-risk for developing PTSD symptomology. Further, observed relationships between the current variables of interest may have been due to shared method variance, which artificially inflates the degree of association between variables.

There are several characteristics of the current sample that may limit generalizability to other populations. First, the participants were undergraduate women reporting mild symptomology, with a low range of PTSD and depressive symptoms. While it is possible that the relationships between cognitive flexibility, experiential avoidance, and psychological distress may not be observed in more clinically severe populations, the already established line of research supporting the relationship between experiential avoidance and distress in both clinical (Gratz et al. 2007; Plumb et al. 2004) and non-clinical (Marx and Sloan 2005; Morina 2007; Plumb et al. 2004) populations suggests that this current extension of previous models merits further investigation. Second, in the current sample, time since the traumatic event and number of stressful life events were not significantly related to PTSD symptoms. While this finding was surprising, one potential explanation could be that there was limited variability in the length of time since experiencing interpersonal victimization. Indeed, many of the participants (48.7%) indicated that the event occurred within the past 2 years. Finally, the self-report assessment of PTSD symptoms may not have adequately captured the phenomenon of interest in the current sample. Participants did not report on Criterion A-2 (i.e., response involved intense fear, helplessness, and/or horror) and interpersonal victimization was not necessarily the target event for which the PCL-C was completed. Future research might include more thorough assessments of PTSD, such as structured interviews, which might detect differences in severity and can address issues of generalizability.

As stated previously, the cross-sectional nature of this study limited our ability to describe a temporal relationship between variables. We proposed that cognitive flexibility and experiential avoidance would be related to the development of psychopathology among those who have already experienced a traumatic event. However, some research suggests that attributional style and experiential avoidance maybe associated with an increased risk of experiencing a traumatic event. For example, Peterson and colleagues (Peterson et al. 2001) found that pervasive stable and global negative attributions were predictive of "traumatic mishaps" (e.g., accidents, assaults, injuries, etc.) and greater psychological distress. Further, they suggested that such attributions may lead people to escape negative moods by engaging in exciting, but often risky, behaviors. Similarly, researchers have found a link between experiential avoidance and engagement in high-risk behaviors (Batten et al. 2001; Polusny et al. 2004). Future work should examine the roles of cognitive flexibility and experiential avoidance in the engagement of behaviors that increase individuals risk for experiencing potentially traumatic events.

The current findings suggest that treatments directed at building greater flexibility in attributions and greater emotional acceptance maybe beneficial treatment considerations. Acceptance and Commitment Therapy (Hayes et al. 1999; Walser and Westrup 2007) and Dialectical Behavior Therapy (Linehan 1993), two treatments that focus on decreasing avoidance and increasing cognitive flexibility, shown some preliminary utility in treating individuals with PTSD related symptoms (Batten and Hayes 2005; Becker and Zayfert 2001; Orsillo and Batten 2005). Other therapeutic approaches incorporating mindfulness techniques also maybe particularly beneficial for this population. Indeed, Langer and colleagues (Alexander et al. 1989; Langer 1989) have described mindfulness as a form of cognitive flexibility. Further, recent evidence suggests that mindfulness, specifically nonjudgmental acceptance of experiences, is significantly associated with PTSD avoidance symptoms (Thompson and Waltz 2010).

Interpersonal victimization occurs at alarming rates in the United States (Elliott et al. 2004; Smith et al. 2002; Sorenson et al. 1987) and has significant associated morbidity (Briere and Runtz 1993; Howard et al. 2010; Polusny and Follette 1995; Roy-Byrne et al. 2004). However, many women are resilient to negative health consequences

that have been associated with a history of interpersonal victimization. Identifying factors that lead to greater distress in this population can inform future prevention and treatment programs. Future research should continue to examine how cognitive flexibility and experiential avoidance are associated with clinical outcomes.

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