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BRIEF REPORT

Emotion Regulation Strategies Predict PTSS During the COVID-19 Pandemic in an American Indian Population

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Abstract

Background Poor emotion regulation is associated with post-traumatic stress symptoms (PTSS). However, limited prospective research prevents any directional conclusions. No known studies have assessed emotion regulation with PTSS in American Indians, a high-risk population for poor mental health outcomes. The present prospective study explored whether emotion regulation strategies (cognitive reappraisal, expressive suppression) predicted later PTSS related to the COVID-19 global pandemic in a solely American Indian sample.

Methods American Indian participants (N = 210; Mean (*SD*) age = 54.85(13.08) years, 58.7% female) completed the Emotion Regulation Questionnaire (ERQ) during Phase 1 (a few weeks before pandemic declaration) and the Impact of Event Scale-Revised (IES-R) with respect to the COVID-19 pandemic during Phase 2 (7–8 weeks after pandemic declaration). Bivariate correlations and hierarchical linear regression analyses were utilized.

Results ERQ reappraisal was negatively associated with IES-R total scores, such that higher reappraisal predicted lower PTSS. In contrast, ERQ suppression was positively associated with IES-R total scores, such that higher suppression predicted higher PTSS.

Conclusions Greater suppression and lower reappraisal predicts PTSS in response to the COVID-19 pandemic in an entirely American Indian sample, providing critical information for future interventions in a population at high-risk for mental health disparities.

Keywords Emotional regulation · Posttraumatic stress · Coronavirus · COVID-19 · American indians · Prospective studies

Introduction

Psychological stress is a risk factor for poor mental and physical health outcomes [1]. In the American Indian (AI) community, exposure to traumatic life events and other factors of psychological stress are disproportionately greater compared with the overall US population [2]. High levels of exposure to psychological stress across the lifespan [3] likely contribute to the drastically increased rates of physical health disparities (e.g., heart disease, diabetes) [4, 5], as well as mental health disparities (i.e., suicide rates, mood disorders, substance abuse, and posttraumatic stress disorder [PTSD]) [6–8]. However, traumatic and stressful life events can impact individuals differently and more research is needed to identify possible risk factors that precipitate individual differences in psychopathology in the AI population [9].

Stressful events often induce a rise in negative emotions and how individuals regulate and respond to negative emotions can determine subsequent psychological and physiological changes [10]. Difficulties with emotion regulation in adulthood are highly associated with psychopathology, such as greater rates of anxiety and mood disorders [11]. In particular, a large portion of cross-sectional literature has established a robust relationship between emotion regulation difficulties and PTSD [12–14]. However, the majority of the previous work has examined these relationships in primarily White samples [15]. That

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said, a cross-sectional study in an entirely African American sample reported that emotion dysregulation was significantly related to trauma exposure and probable PTSD [16]. Limited prospective and longitudinal research has found emotion regulation to be predictive of later psychopathology, such as anxiety [17]. One prospective study demonstrated that difficulties in emotion regulation predicted later posttraumatic stress symptoms (PTSS) following a mass school shooting and emotion dysregulation after the incident also hindered recovery from symptoms [18].

While research has identified a wide range of emotion regulation strategies [19], two of the most well-researched strategies are cognitive reappraisal and expressive suppression [20]. Experimental studies demonstrate that reappraisal leads to decreased negative emotions and increased positive emotions, whereas suppression leads to decreased positive, but not negative, emotions [20]. Research has found that greater use of suppression and lower use of reappraisal is related to greater PTSS [12, 21–23]. However, perceived benefits or consequences of emotion regulation strategies vary depending on context and cultural expectations [10, 20, 24, 25].

The outbreak of the novel coronavirus COVID-19 presented a unique opportunity to examine how emotion regulation strategies prospectively relate to reported distress while adjusting to the ongoing pandemic. COVID-19 was declared a global pandemic on March 11, 2020 [26], and a US national emergency on March 17, 2020 [27]. COVID-19 has increased anxiety, depression, and stress in health care workers and general population [28, 29]. Recent evidence suggests racial and ethnic minorities are disproportionately affected by COVID-19 due to existing health disparities [30]. This evidence includes AI communities; however, more research is needed to understand how AI populations are being affected by the pandemic and if any individual differences within members of this community predict higher levels of distress.

This study is unique in that it (1) extends prior cross-sectional research by using a prospective study design to examine how habitual emotion regulation strategies (reappraisal and suppression) relate to later reported PTSS during the COVID-19 pandemic, and (2) utilizes an entirely AI sample. Based on prior emotion regulation research, it was hypothesized that AI participants who engage in greater use of suppression as an emotion regulation strategy will be more likely to report greater PTSS in response to the pandemic, while those who engage in greater use of reappraisal as a strategy will be more likely to report fewer PTSS.

Method

Participants and Procedures

Participants (N = 210; Mean (SD) [range] age = 54.85 (13.08) [30–99] years, 58.7% female; 100% AI, 8.5% lived on the reservation) were drawn from a larger cross-sectional study of 300 AI adults. This sample was recruited by Qualtrics using multiple managed research panels. Out of the 300 participants from the previous cross-sectional study, we had a sample of 210 interested AI adults who formed an online panel for longitudinal research. There were no statistically significant differences in age, income, or emotion regulation between those who chose to participate in this study and those who did not. Participants resided in 46 different states. Eligibility included self-identifying as AI and being over the age of 18. Surveys at Phase 1 included demographics, anxiety and depression symptomology, alcohol use, and emotion regulation strategies. Surveys at Phase 2 included anxiety and depression symptomology and COVID-19-related distress. Participants received $10 Amazon gift cards for their completion of each phase of the study. The study was approved by the university's institutional review board, all participation was voluntary, participants provided informed consent, and participants had the right to withdraw at any point. Longitudinal data were stored on a password-protected computer.

Measures

Emotion Regulation

Emotion regulation strategies were measured using the Emotion Regulation Questionnaire (ERQ) [20]. The ERQ consists of 10 items separated into two subscales: six items for Cognitive Reappraisal and four items for Expressive Suppression. Participants responded on a seven-point Likert scale (1 = "strongly disagree" to 7 = "strongly agree"). Example items include "I control my emotions by changing the way I think about the situation I'm in" (i.e., reappraisal) and "When I am feeling negative emotions, I make sure not to express them" (i.e., suppression). Higher subscale scores indicate a greater use of that emotion regulation strategy. In the current sample, internal consistency was high for both reappraisal (Cronbach's α = 0.98) and suppression (Cronbach's α = 0.94) subscales.

COVID-19-Related Posttraumatic Stress Symptoms

The Impact of Event Scale-Revised (IES-R) [31] is used to measure subjective PTSS in reference to a specific, traumatic event (i.e., the COVID-19 pandemic). The IES-R consists of 22 items, with each item representing a potential difficulty that may arise after experiencing a stressful event. Participants were asked to rate how much they were distressed by each difficulty during the past 7 days with respect to the ongoing COVID-19 pandemic. Responses were given on a five-point Likert scale (0 = "not at all"

to 4 = "extremely"), with a total score ranging from 0 to 88 (summing all items). In the current sample, the IES-R total score had excellent internal consistency (Cronbach's α = 0.96).

Covariates

Demographic covariates were determined a priori, including age, sex, income, and reservation status. Variables known to be risk factors for the development of PTSS as well as associated with emotion regulation were also controlled, including depression, anxiety [32–34], and alcohol use [35, 36]. The 14-item Hospital Anxiety and Depression Scale (HADS) [37] was used to measure symptoms of anxiety and depression at both Phase 1 and Phase 2. Internal consistency was good in the current sample (Cronbach's α for anxiety Phase 1 = 0.88, anxiety Phase 2 = 0.89; depression Phase 1 = 0.86, depression Phase 2 = 0.88). Test-retest reliability for the anxiety and depression subscales was adequate between Phase 1 and Phase 2 (0.87 and 0.85, respectively). Alcohol use at Phase 1 was assessed using a 10-item screening instrument, the Alcohol Use Disorders Identification Test (AUDIT; Cronbach's α for the AUDIT = 0.85).

Statistical Analyses

Bivariate correlations were used to examine relationships between the main variables of interest. A series of hierarchical linear regressions were used to assess the separate associations between ERQ reappraisal and ERQ suppression scores at Phase 1 with COVID-19 related PTSS at Phase 2, while also adjusting for age, sex, income, reservation status, alcohol use, anxiety, and depression. In these models, covariates were entered into Step 1 and ERQ reappraisal or ERQ suppression was separately entered into Step 2. Results were reported as statistically significant if p values were ≤ 0.05 and SPSS version 27 (IBM Corp, USA) was used for analyses.

Results

Bivariate correlations demonstrated a statistically significant negative association between ERQ reappraisal with IES-R total and a statistically significant positive association between ERQ suppression with IES-R total. Refer to Supplementary Table S1 for full correlation matrix and Table S2 for change in anxiety and depression scores from Phase 1 to Phase 2.

Hierarchical linear regression analyses adjusted for covariates in Step 1 (age, sex, income, reservation status, alcohol use, anxiety, and depression), while ERQ reappraisal or suppression were separately entered into Step 2. The covariates explained 31.2% of the variance in PTSS, $F(9, 197) = 11.37$, $p < 0.001$. The addition of ERQ reappraisal in Step 2 significantly explained an additional 3.2% of the variance in PTSS, $F(10, 196) = 11.83$, $p < 0.001$, such that higher reappraisal predicted lower reported PTSS. The separate inclusion of ERQ suppression in Step 2 significantly explained an additional 2.7% of the variance in PTSS, $F(10, 196) = 11.57$, $p < 0.001$, such that higher suppression predicted higher reported PTSS. Table 1 displays all coefficients and related regression statistics.

Discussion

Using a prospective design, the current study examined whether emotion regulation strategies predicted PTSS in response to COVID-19 in an AI sample. Individuals who reported greater use of reappraisal as an emotion regulation strategy prior to the pandemic subsequently reported less PTSS in response to the pandemic. In contrast, those who reported greater use of suppression as a strategy reported *greater* PTSS in response to the pandemic. These associations were independent of age, sex, income, reservation status, alcohol use, anxiety, and depression.

The present study supports previous literature demonstrating different emotion regulation strategies lead to different consequential outcomes [10], with greater use of suppression and lower use of reappraisal related to greater PTSS [12, 21–23]. Reappraisal occurs early in emotional processing and allows for complete alteration of one's emotional trajectory before the emotional response has been generated [20]. Alternatively, suppression occurs later and reduces the behavioral expression of an emotion while leaving the experience of the emotion unaltered, creating a discrepancy between internal experience and external expression [20]. As a result, suppression fails to mitigate the experience of negative emotions. Future research should aim to extend these finding by directly examining the consequential outcomes of suppression in order to identify what aspects of suppression pose the greatest risk for development of PTSS.

The current study supports previous cross-sectional findings indicating a relationship between poor emotion regulation and PTSS [12, 14, 16, 23] and prospective findings of poor emotion regulation predicting later PTSS directly following a traumatic incident [18]. However, the present study extends previous findings by examining specific emotion regulation strategies (i.e., suppression, reappraisal), rather than global emotion regulation abilities

Table 1 Regression models for ERQ reappraisal and ERQ suppression, separately predicting posttraumatic stress symptoms (IES-R), $N = 210$

	Posttraumatic stress symptoms (PTSS)					
Model	*B*	*SE*	*β*	*t*	*p*	95% CI
Step 1						
Age	− 0.11	0.10	− 0.07	− 1.10	.271	− 0.30, 0.08
Sex	0.89	2.47	0.02	0.36	.719	− 3.97, 5.75
Income	− 0.38	0.73	− 0.03	− 0.52	.603	− 1.81, 1.06
Reservation status	3.71	4.15	0.05	0.90	.372	− 4.47, 11.89
AUDIT Alcohol Use	− 0.07	0.22	− 0.02	− 0.32	.751	− 0.51, 0.37
HADS Anxiety Phase 1	1.67	0.72	0.43	2.31	.022	0.25, 3.10
HADS Depression Phase 1	− 0.74	0.80	− 0.17	− 0.92	.358	− 2.32, 0.84
HADS Anxiety Phase 2	0.28	0.72	0.08	0.39	.699	− 1.14, 1.69
HADS Depression Phase 2	0.87	0.79	0.22	1.10	.274	− 0.69, 2.42
Step 2						
Model 1: ERQ Reappraisal	− 2.53*	0.77	− 0.19	− 3.30	.001	− 4.05, − 1.02
Model 2: ERQ Suppression	2.61*	0.86	0.18	3.03	.003	0.91, 4.31

ERQ reappraisal and ERQ suppression were separately entered into Step 2, resulting in two separate models

(i.e., emotional clarity, acceptance). While both approaches assist in understanding emotion regulation, this study was able to identify a strategy (i.e., suppression) that may be a risk factor for ineffective coping with stress and trauma, providing a direction for future intervention research.

This research is not without limitations. First, while the current study consists of a prospective design, analyses are still correlational, and outcomes could be influenced by a third variable [38]. That said, adjustment was made for possible confounders (i.e., age, sex, income, reservation status, alcohol use, anxiety, and depression). Second, the IES-R is not a diagnostic instrument for PTSD, and thus, no hard clinical conclusions may be drawn beyond self-reported distress. Lastly, this was an entirely AI sample and future researchers should be careful when considering the generalizability of results, as the outcomes may differ across racial and ethnic groups. Replication of this study using other populations is encouraged for comparison purposes.

In conclusion, this is the first prospective study using an AI sample to examine whether emotion regulation strategies predict later PTSS surrounding the onset of a traumatic event (i.e., global pandemic), with reappraisal related to less reported PTSS and suppression related to greater PTSS. The present findings extend the current literature by examining the predictive nature of emotion regulation in a population at high risk for mental health disparities, thus providing critical information for possible future interventions.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/s12529-021-09964-2.

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Declarations

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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