CHILDHOOD TRAUMA EXPOSURE, AGE AND SELF-COMPASSION AS PREDICTORS OF LATER-LIFE SYMPTOMS OF DEPRESSION AND ANXIETY IN AN AMERICAN INDIAN SAMPLE

by

Jade Michael Larsen

A thesis submitted in partial fulfillment
of the requirements for the degree

of

Master of Science

in

Psychological Science

MONTANA STATE UNIVERSITY
Bozeman, Montana

May 2023

DEDICATION

I dedicate this to the next seven generations to come and beyond. May every small step toward progress pave the way for a future that is anchored in love, abundance and integrity.

ACKNOWLEDGEMENTS

I would like to acknowledge my advisor, Dr. Neha John-Henderson, for her support and guidance and for being and incredible role model. Similarly, I'd like to acknowledge my thesis committee, Dr. Monica Skewes, Dr. Michelle Meade and Dr. Benjamin Oosterhoff for their time and insight. Thank you to Dr. Peter Helm for guiding the path on interpreting three-way interactions. Finally, I would like to acknowledge my mom and dad for their love and support and for always advising me to kick ass.

TABLE OF CONTENTS

LIST OF TABLES

Table Page

LIST OF FIGURES

ABSTRACT

Past research has established a relationship between childhood trauma and later-life anxiety and depression symptoms in American Indian samples. However, less is known about protective factors that may reduce the strength of this relationship. The purpose of the present study was to assess self-compassion as a protective factor with an emphasis on age as additional potential moderator. Seven hundred and twenty-nine self-identifying American Indian participants completed self-report measures pertaining to this question online via Qualtrics. The hypotheses were such that self-compassion would be protective against later-life anxiety and depression symptoms at all age points (Hypothesis 1), that the interaction between self-compassion and childhood trauma exposure would be statistically significant for those higher in trauma but not lower (Hypothesis 2) and that there would be a three-way interaction among self-compassion, age and childhood trauma exposure, such that age would moderate the interaction between childhood trauma exposure and self-compassion in predicting symptoms of anxiety and depression (Hypothesis 3). Regression analyses found support for Hypothesis 1, indicating that self-compassion is protective against anxiety and depression symptoms in this sample. Support for Hypothesis 2 was not found, as the interaction between self-compassion and childhood trauma exposure did not significantly predict anxiety or depression symptoms. Hypothesis 3 was supported in that the three-way interaction significantly predicted both later-life anxiety and depression symptoms, such that older participants who reported high levels of self-compassion tended to have the lowest symptoms. These findings indicate that self-compassion may have age dependent effects in moderating the relationship between childhood trauma exposure and later-life symptoms of anxiety and depression in American Indian samples.

INTRODUCTION

Colonization, Intergenerational Trauma and Health Disparities

As a result of colonization, Indigenous people across North America suffered massive losses of life, land and culture. This was largely due to the rampant spreading of disease and forced relocations and was later exacerbated by the boarding school system. In many ways, the damages faced by American Indians (AIs) have been compared to the Holocaust; however, the period of colonization lasted far longer, spanning well over 400 years (Brave Heart & DeBryun, 1998; Whitbeck et al., 2004). Additionally, forced relocations, mass casualties and acculturation ensured that Native peoples were unable to return to a sense of normalcy following the period of colonization.

The boarding school era (1869-1960s) witnessed AI children being forcibly removed from their homes and placed into institutions aimed at sanitizing children of their Native culture. They were beaten for utilizing native languages and many endured physical, emotional and/or sexual abuse or death (Bombay & Anisman, 2014; Brave Heart & DeBruyn, 1998). Attachment Theory, the joint work of Bowlby and Ainsworth, outlines an evolutionarily driven process by which infants bond with caregivers for survival. The quality of these bonds lay the foundation for how one will perceive and function in relationships later in life (Bretherton, 1992). Rather than forming warm and secure attachments with caregivers, many AI adults who survived boarding schools had foundations built on abuse and neglect. As this resulted in generations of AI parents who did not obtain the framework for nurturing care, many passed down the abuse and neglect they experienced to their children (Brave Heart, 1999; Zephier et al., 2020). This transmission of trauma across generations is known as intergenerational trauma.

As a result of colonization and intergenerational trauma, AIs face significant hardship and health disparities. In a survey of 112 AI women living in New York City, Evans-Campbell et al. (2006) found that over 65% reported past experiences of interpersonal violence, including childhood physical abuse (28%), rape (48%) and domestic violence (40%). Additionally, 40% reported multiple victimization experiences. The authors found an association between interpersonal violence and depression. In a study of two-spirit individuals living in urban environments, Evans-Campbell et al. (2012) found that those who had attended a boarding school were significantly more likely to have attempted suicide and reported higher levels of alcohol and illicit drug use than non-attendees. They also found that those raised by an individual who had attended a boarding school were significantly more likely to experience suicidal thoughts, have symptoms of post-traumatic stress disorder (PTSD) and/or have a general anxiety disorder.

Gone et al. (2012) found similar trends in another AI sample, stating that AIs encounter "alarmingly high rates" of mental disorders, including but not limited to PTSD and suicidal behaviors. The Centers for Disease Control and Prevention (2014) reported that suicide rates for AIs are almost 50% higher than non-Hispanic Whites. It has also been found that AI students report higher scores on the Anxiety Sensitivity Index (ASI) than Caucasian counterparts (Zvolensky et al., 2001).

Across other minority groups, Mersky et al. (2013) found that higher levels of adverse childhood experiences (ACEs) associated with poor health outcomes, including lower self-rated health and life satisfaction, depression, anxiety and substance use. In a 2020 meta-analysis, LeMoult et al. found that individuals who were exposed to early life stress were more likely to reach diagnostic criteria for major depressive disorder in childhood or adolescence by a factor of 2.5. Specifically in AI populations, it has been found that childhood sexual abuse associated with later life depression (Easton et al., 2019) and that childhood neglect and household dysfunction (two parameters of ACES) associated with depressive symptoms in older adults (Roh et al., 2015). Unfortunately, the child abuse and neglect rate for AI communities is the highest in the nation at 14.2 cases per 1000 children (Joe et al., 2019).

Resilience Models, Protective Factors and Self-Compassion

Although research on AI health disparities has largely utilized deficit models, recent years have seen a push for strength and resilience-based models. Denham (2008) argues that a distinction can be made between historical trauma and the historical trauma response, in that though historical trauma is real and valid, one's response to it can be characterized by suffering, resistance or resilience. Resilience-based models in AI communities are developed by identifying both resilience and protective factors that moderate the relationship between trauma and mental and physical health disparities.

It was found that family resilience, how a family adapts to challenges and supports the wellness of the individual as well as the family unit (Masten & Monn, 2015), was negatively associated with depression and anxiety symptoms (McKinley et al., 2020). John-Henderson et al. (2020) found that belongingness to tribal community interacted with ACEs to predict concentrations of interleukin-6 and C-reactive protein, two indicators of immune system inflammation. Specifically, it was found that those who experienced high levels of childhood trauma and reported high levels of connectedness to their community had significantly lower levels of inflammation compared to those who had similarly high levels of childhood trauma but low levels of connectedness. It has also been found in AI samples that the negative effects of discrimination are buffered by engaging in traditional practices (Whitbeck et al., 2002) and that social support negatively associates with depressive symptoms (Roh et al., 2015). These findings add to a body of literature outlining the protective nature of social connectedness and cultural identity for AIs (Bravo et al., 2016; Denham, 2008; Gone, 2013; Kleiman & Riskind, 2012).

Another psychological factor that may be protective, especially in the context of trauma, is self-compassion. Compassion can be defined as involving "sensitivity to the experience of suffering, coupled with a deep desire to alleviate that suffering," (Goetz, 2010). Neff (2003) expands this definition to define self-compassion as, "compassion directed inward, relating to ourselves as the object of care and concern when faced with the experience of suffering." The Self-Compassion Scale, pioneered by Neff (2003) (and the Self-Compassion Scale Short-Form (Raes et al., 2010)), is broken down into six subscales (three reverse scored): self-kindness (extending kindness to oneself during difficult times), self-judgement (being self-critical during difficult times), common humanity (seeing one's experiences as part of the collective human experience), isolation (feeling alone in the experiencing of life events), mindfulness (observing painful thoughts with mindful awareness) and over-identification (over-identifying with painful thoughts). As such, self-compassion is operationalized as extending oneself care and understanding and mitigating feelings of loneliness and self-judgement.

It has been posited that self-compassion reduces rumination by bolstering self-kindness and helping one to acknowledge that imperfection is part of the human condition, in turn reducing depression and anxiety symptoms (Neff, 2003; Raes, 2010). In a meta-analysis, MacBeth and Gumley (2012) concluded that higher levels of self-compassion are associated with decreased mental symptoms pertaining to depression, anxiety and distress. Beshai et al. (2018) found that self-compassion uniquely accounted for variance in emotional flexibility, which is the ability to respond in an emotionally rational way and recover appropriately. They found that depression symptoms correlated negatively with emotional flexibility. Additionally, in a meta-analysis containing 35 articles, it was found that higher levels of self-compassion associated with decreased PTSD symptoms (Winders et al., 2020). This last finding encourages the perspective that self-compassion may be a particularly salient protective factor for those who have experienced trauma.

A couple of studies have identified self-compassion as protective factor specifically in AI populations. Dolezal et al. (2021) reported that the positive aspects measured by the Self-Compassion Scale, which include mindfulness, common humanity and self-kindness, associated with less suicide risk in an AI sample. In a sample of AIs living close to or on a reservation, Pyke-Pierce (2022) found a significant negative relationship between depression and self-compassion.

Stress Sensitization

According to the stress sensitization model, over time individuals exposed to stress become sensitized, increasing their sensitivity to future stressful events (Stroud et al., 2018). Though this increased sensitivity predisposes individuals to develop mood disorders (Bale, 2006), John-Henderson et al. (2020) found that AI adults who reported high levels of childhood trauma benefitted more physiologically (having lower levels of inflammation markers) from community connectedness compared to AI adults who reported lower levels of trauma. It is possible that the sensitization caused by childhood trauma is responsive to both stressful and protective stimuli. As such, the current study is designed to assess whether the relationship between self-compassion and later-life symptoms of anxiety and depression is particularly salient for those with higher levels of childhood trauma in an AI sample.

Recency Effects

Age acts as a measure of the temporal distance between childhood trauma exposure and later-life anxiety and depression symptoms. It is possible that age may moderate the moderating effect of self-compassion on childhood trauma in predicting adult symptoms of depression and anxiety. The moderation of age may be more pronounced for younger AI adults compared to older, given that the impacts of childhood trauma exposure may increase with shorter temporal distance from the trauma itself. In line with the discussion of stress sensitization above, when one is more sensitive to stress, they may also be more sensitive to protective factors.

Alternatively, it is possible that self-compassion may be more a salient protective factor for older adults. In a study of adults ranging from 18-95 years-old, Homan (2016) found that self-compassion was positively correlated with age. Additionally, Webster and Gould (2007) found that older adults were more likely to reminisce on positive memories than younger adults and that they were also less likely to revive bitter memories. The authors posited that this could be due to greater emotional regulation in older age. As such, it is possible that age-related increases in self-compassion and decreases in reminiscing on negative memories could result in an interaction between self-compassion, age and childhood trauma that predicts the lowest levels of anxiety and depression symptoms for older people.

Current Study

This study uses a national sample and an online questionnaire format to assesses self-compassion as a protective factor against later-life anxiety and depression symptoms in the context of childhood trauma in an American Indian sample. Additionally, it is designed to assess whether age further moderates this relationship. Hypotheses are listed in the next section. A series of linear regression and simple slopes analyses are used to understand these relationships.

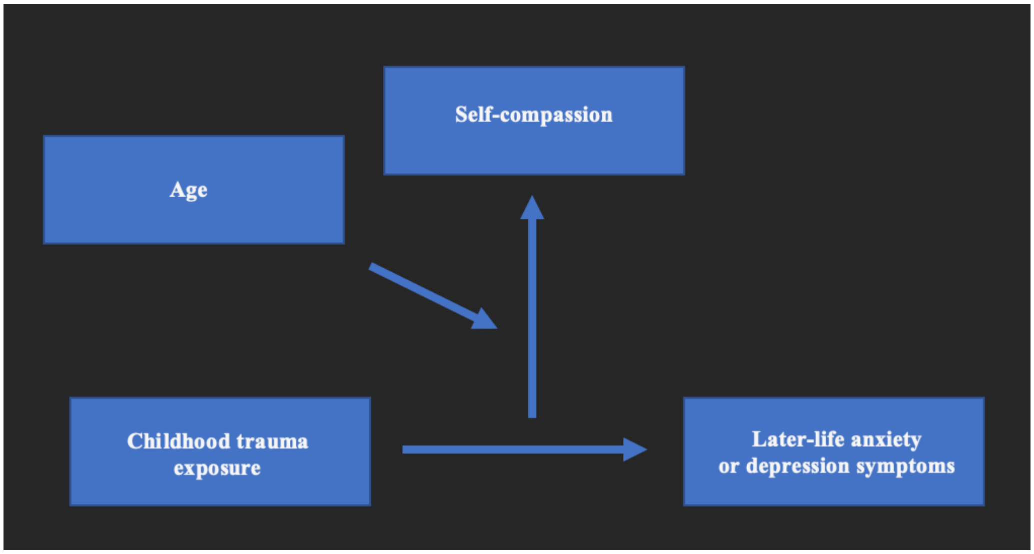
Hypotheses

Hypothesis 1. Self-compassion will be negatively related to later-life anxiety and depression symptoms at all age points.

Hypothesis 2. In line with the stress sensitization model, it is hypothesized that the interaction between self-compassion and childhood trauma in predicting later life symptoms of anxiety and depression will be statistically significant for those higher in trauma (one standard deviation above the mean) but not for those lower in trauma (one standard deviation below the mean).

Hypothesis 3. It is hypothesized that there will be a three-way interaction between self-compassion, age and childhood trauma exposure, such that age will moderate the interaction between childhood trauma exposure and self-compassion in predicting symptoms of later-life anxiety and depression. See Figure 1 one the next page. This is exploratory, so an expected direction of results is not established in this hypothesis.

Figure 1. Moderated Moderation Diagram



METHOD

This study was approved by the Montana State University International Review Board.

Participants

All participants were recruited via Qualtrics, which utilized targeted recruiting through managed research panels. Participants self-reported age, gender, income, tribal identity and indicated whether they lived on a reservation. A total of 729 self-identifying American Indian participants participated in this study. The mean age was 36.88 (*SD*=15.08 , range: 18-95), 63.2% were male (*n*=463), 15% reported living on a reservation (*n*=110) and mean income was $33,178.20 (*SD*=16,328.33 , range: 0-91,000).

Procedure

Participants provided consent prior to completing a series of questionnaires via Qualtrics. After Qualtrics collected and screened data, deidentified data was sent to the principal investigator in an Excel file and transferred to SPSS.

Measures

Self-compassion

Self-compassion was measured using the Self-Compassion Scale Short-Form (SCS-SF) (Raes et al., 2011). This 12-item scale assesses six subscales pertaining to self-compassion, including self-kindness, self-judgment (reverse scored), common humanity, isolation (reverse scored), mindfulness and over-identification (reverse scored). Items include, “I try to be understanding and patient towards those aspects of my personality I don’t like,” (self-kindness), "I'm disapproving and judgmental about my own flaws and inadequacies," (self-judgement), "I try to see my failings as part of the human condition," (common humanity), "When I fail at something that's important to me, I tend to feel alone in my failure," (isolation), "When something upsets me I try to keep my emotions in balance," (mindfulness) and "When I'm feeling down I tend to obsess and fixate on everything that's wrong," (over-identification). Questions are answered on a likert scale ranging from 1 (almost never) to 5 (almost always). Subscale scores and total score are all additive.

Depression and Anxiety

Depression and anxiety symptoms were measured with the Hospital Anxiety Depression Scale (HADS) (Zigmond & Snaith, 1983). This is a 14-item scale that has seven items pertaining to depression and seven pertaining to anxiety. An example of a statement pertaining to anxiety is, "I feel tense or wound up," and a statement pertaining to depression is, "I feel as if I am slowed down." A likert scale ranging from 0-3 is used to measure responses and scores for depression and anxiety are added separately. A total of 21 points exist for both depression and anxiety. The HADS has been shown to reliably measure anxiety and depression symptoms in diverse populations and can be used to measure risk for more serious mental health outcomes (Bjelland et al., 2002; Karamustafalıoğlu et al., 2010).

Childhood Trauma

Childhood trauma was measured with the Childhood Trauma Exposure Scale (CTES) (Pennebaker & Susman, 1982). This 25 item scale measures both exposure to and perceived impact of childhood trauma prior to age 17. The questions ask about death of a family member or very close friend, major upheaval between parents, traumatic sexual experience, violence, extreme illness or injury and other major upheavals. Participants are asked to report the age at which the trauma occurred, how much they confided in others and the perceived impact, measured on a likert scale from 0 (no exposure) to 7 (extremely traumatic). Only the data pertaining to childhood trauma exposure will be used for data analysis.

RESULTS

Descriptive Statistics

There was no missing data. All predictor variables were checked for normality using histograms and by analyzing skewness and kurtosis. Descriptive statistics for study variables are reported below in Table 1.

Table 1. Descriptive Statistics

	M	*SD*	*Min*	*Max*
Age	36.88	15.08	18.00	95.00
Income	33178.20	16328.33	.00	91000.00
SCS-SF Total Score	3.06	.59	1.00	5.00
CTE Exposure Total Score	1.92	1.89	0.00	6.00
HADS Anxiety Score	9.59	5.32	0.00	21.00
HADS Depression Score	7.10	4.30	0.00	20.00

Pearson bivariate correlations between predictor variables, covariates and dependent variables are shown in Table 2 on the next page. Cronbach's alpha was utilized to assess the internal validity of the chosen scales. For the SCS-SF, α=.65. This is relatively low according to the George and Mallery (2003) guidelines and will be discussed further in the limitations. For the HADS, α=.78 for the depression subscale and α=.86 for the anxiety subscale.

Table 2. Correlations

Variables	1	2	3	4	5	6	7
1. Age	-						
2. Sex	.01	-					
3. Income	.08*	.03	-				
4. SCS-SF Total Score	.16**	-.13**	-.03	-			
5. CTE Total Score	.03	.08*	.10**	-.27**	-		
6. HADS Anxiety Score	-.21**	.12**	.03	-.53**	.44**	-	
7. HADS Depression Score	-.09*	.15**	.03	-.53**	.30**	.64**	-

* Correlation is significant at the 0.05 level (2-tailed)
** Correlation is significant at the 0.01 level (2-tailed)
Male was coded as a 1 and female as a 2

Regression Analyses

Hypothesis 1 was tested by conducting linear regression models of the effect of self-compassion on symptoms of later-life anxiety and depression while controlling for sex, age and income. Lower self-compassion predicted higher levels of both anxiety symptoms (β=-2.69, R^2*change*=0.24, $t(718)$=-15.92, p<.001) and depression symptoms (β=-2.23, R^2*change*=0.26, $t(718)$=-16.30, p<.001). These findings support Hypothesis 1.

To test Hypothesis 2, moderated multiple regression analyses were conducted by adding sex, age and income as covariates into block 1, z scores for self-compassion and childhood trauma exposure into block 2, the interaction term between self-compassion and childhood trauma exposure into block 3 and either depression or anxiety symptoms as the dependent variable. The interaction between self-compassion and childhood trauma exposure was not found to be significant in predicting anxiety (β=0.28, R^2*change*=0.002, $t(715)$=1.72, p=.09) or depression symptoms (β=0.24, R^2*change*=0.003, $t(715)$=1.72, p=.09). As such, the interaction was not probed any farther to test the stress sensitization hypothesis.

For Hypothesis 3, linear regression was utilized to test whether age moderates the moderating effect of self-compassion on childhood trauma in predicting later-life anxiety and depression symptoms. Sex and income were entered into block 1 as covariates, z scores for SCS-SF total score, CTE total score and age were entered into block 2, two way interaction terms (zSCS-SFtot*zage , zSCS-SFtot*zCTEtot, zCTEtot*zage) were entered into block 3 and the three way interaction term (zSCS-SFtot*zCTEtot*zage) was entered into block 4. Two separate regressions were conducted, one with the HADs anxiety score as the dependent variable and one with the HADs depression score.

Results displayed a significant three-way interaction between age, childhood trauma exposure and self-compassion in predicting later-life anxiety symptoms (β=-.66, $R^2 change$=.01, $t(712)$=-3.91, p<.001) (See Table 3 for full model). To further probe the interactions, simple slopes analyses were conducted using PROCESS by Andrew Hayes model 3 (see Figure 2 and Figure 3). In these analyses, “high” refers to one standard deviation above the mean and “low” represents one standard deviation below the mean. Results indicated that for those individuals who reported low age + low self-compassion, there was a significant effect of trauma exposure in predicting anxiety symptoms, such that those who reported higher levels of trauma reported significantly higher levels of anxiety symptoms (effect=.44, $t(712)$=2.56, p=.01). Similarly, the same pattern was found for individuals who reported high age + low self-compassion (effect=1.17, $t(712)$=6.55, p=<.001), low age + high self-compassion (effect=1.50, $t(712)$=8.07, p<.001) and high age + high self-compassion (effect=.84, $t(712)$=5.12, p<.001). The significance of these slopes is indicated by asterisks above the lines on Figure 2. Asterisks between lines present on Figure 2 indicate that mean levels of anxiety symptoms are significantly different for those of high versus low age for those who reported high childhood trauma exposure + high self-compassion (effect=-.12, *t*(712)=-5.0, *p*<.001), low childhood trauma exposure + high self-compassion (effect=-.04, *t*(712)=-2.31, *p*=.02), low childhood trauma exposure + low self-compassion (effect=-.09, *t*(712)=-3.81, *p*<.001) but not high childhood trauma exposure + low self-compassion (effect=.00, *t*(712)=-.02 *p*=.99). Low levels of self-compassion did not demonstrate an age-dependent protective effect for those high in childhood trauma exposure.

Figure 2. Three-Way Interaction Predicting Anxiety Symptoms

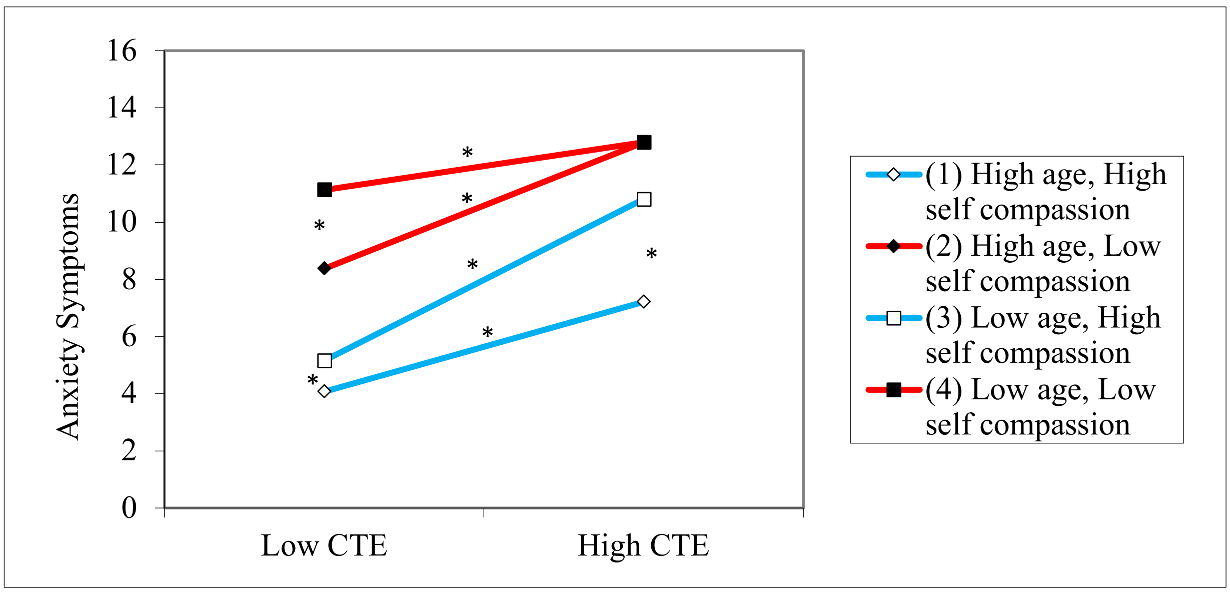


Table 3: Three-Way Interaction Predicting Anxiety Symptoms

Mo-del	Variable	Unstand. *ß*	Coeff. Std. Error	Stand. *ß*	*t*	Sig.
1	Sex	1.36	0.41	0.12	3.34	<.001
	Income	0.00	0.00	0.03	0.80	0.43
2	Sex	0.48	0.32	0.04	1.48	0.14
	Income	0.00	0.00	0.00	0.03	0.98
	Age	-0.83	0.16	-0.16	-5.32	<.001
	SCS-SF Total Score	-2.24	0.16	-0.42	-13.70	<.001
	CTE Total Score	1.78	0.16	0.33	11.04	<.001
3	Sex	0.50	0.32	0.05	1.56	0.12
	Income	0.00	0.00	0.00	0.05	0.96
	Age	-0.80	0.16	-0.15	-4.88	<.001
	SCS-SF Total Score	-2.22	0.17	-0.42	-13.28	<.001
	CTE Total Score	1.80	0.16	0.34	11.15	<.001
	AgexSCS-SF	-0.08	0.15	-0.02	-0.57	.57
	AgexCTE	-0.04	0.17	-0.01	-0.21	0.83
	SCS-SFxCTE	0.27	0.16	0.05	1.68	0.09
4	Sex	0.43	0.32	0.04	1.34	0.18
	Income	0.00	.000	0.00	0.12	0.90
	Age	-0.93	0.17	-0.17	-5.64	<.001
	SCS-SF Total Score	-2.24	0.17	-0.42	-13.49	<.001
	CTE Total Score	1.86	0.16	0.35	11.59	<.001
	AgexSCS-SF	-0.24	0.15	-0.05	-1.58	0.12
	AgexCTE	0.03	0.17	0.01	0.19	0.85
	SCS-SFxCTE	0.34	0.16	0.06	2.10	0.04
	AgexCTExSCS-SF	-0.66	0.17	-0.13	-3.91	<.001

Similarly, the three-way interaction between childhood trauma exposure, age and self-compassion was statistically significant in predicting later-life depression symptoms (β=-.41, $R^2 change$=.01, $t(712)$=-2.84, p=.01) (See Table 4 for full model). PROCESS model 3 indicated that for those who reported high age + low self-compassion, there was a significant effect of trauma exposure on depression symptoms, such that higher levels of trauma associated with higher levels of depression symptoms (effect=0.51, $t(712)$=3.31, p=.001). The same pattern was observed for individuals that reported low age + high self-compassion (effect=0.73, $t(712)$=4.54,

$p<.001$) and high age + high self-compassion (effect=0.37, $t(712)=2.58$, $p=.01$). However, for those who reported low age + low self-compassion, there was no significant effect of trauma exposure on depression symptoms (effect=0.00, $t(712)=.01$, $p=.99$). Again, asterisks above lines in Figure 3 represent significant slopes. The asterisk between lines on Figure 3 indicates that mean levels of depression symptoms are significantly different for those of high and low age for those who reported high childhood trauma + high self-compassion (effect=-.04, $t(712)=-2.10$, $p=.04$). This was not the case for the other three comparisons: low childhood trauma + high self-compassion (effect=0.00, $t(712)=0.18$, $p=.89$), low childhood trauma + low self-compassion (effect=-0.03, $t(712)=-1.60$, $p=.11$) and high childhood trauma + low self-compassion (effect=0.03, $t(712)=1.58$ $p=.12$). Results indicate that self-compassion and age significantly moderate the relationship between childhood trauma exposure and depression symptoms in all groups other than the group with younger participants who reported low self-compassion. Also, mean level of depression symptoms was only significantly related to age in the group that reported high childhood trauma + high self-compassion. This suggests that self-compassion may only have age-dependent effects on protecting from later-life symptoms of depression in samples with higher self-compassion scores who also report higher levels of childhood trauma.

Figure 3: Three-Way Interaction Predicting Depression Symptoms

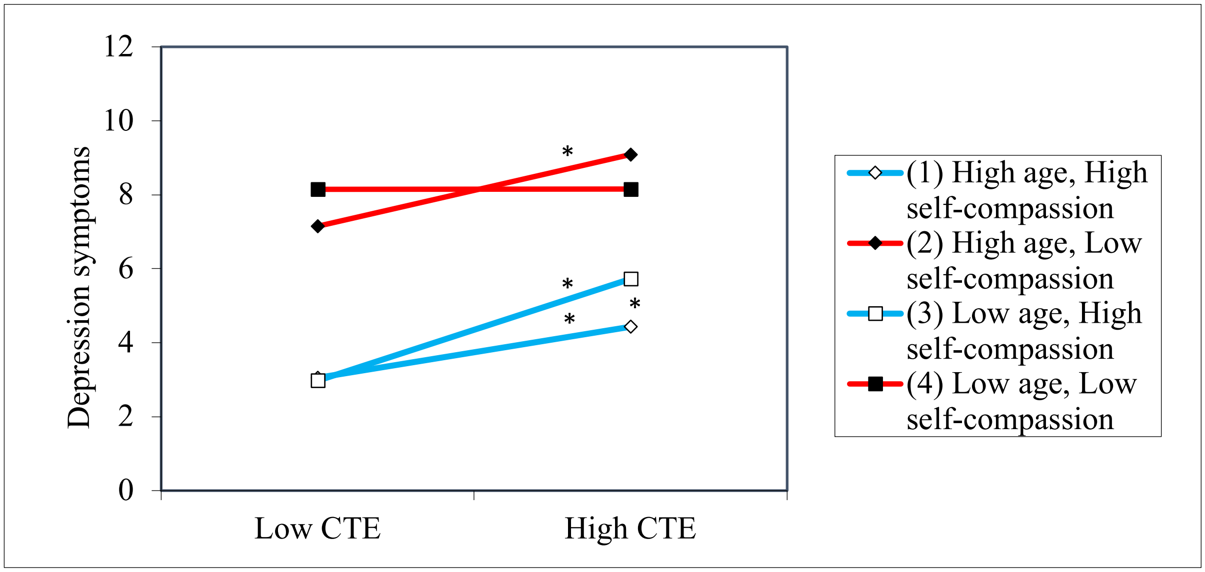


Table 4: Three-Way Interaction Predicting Depression Symptoms

Model	Variable	Unstand. ß	Coeff. Std. Error	Stand. ß	*t*	Sig.
1	Sex	1.43	0.33	0.16	4.30	<.001
	Income	0.00	0.00	0.03	0.74	0.46
2	Sex	0.76	0.28	0.09	2.74	0.01
	Income	0.00	0.00	0.00	0.14	0.89
	Age	-0.12	0.14	-0.03	-0.80	0.42
	SCS-SF Total Score	-2.05	0.14	-0.48	-14.57	<.001
	CTE Total Score	0.70	0.14	0.16	5.04	<.001
3	Sex	0.80	0.28	0.09	2.74	0.01
	Income	0.00	0.00	0.00	0.14	0.89
	Age	-0.11	0.14	-0.03	-0.80	0.42
	SCS-SF Total Score	-2.05	0.14	-0.48	-14.57	<.001
	CTE Total Score	0.70	0.14	0.16	5.04	<.001
	Sex	0.76	0.28	0.09	2.74	0.01
	Income	0.00	0.00	0.04	0.14	0.89
	Age	-0.11	0.14	-0.03	-0.80	0.42
4	Sex	0.74	0.28	0.08	2.68	0.01
	Income	0.00	0.00	0.01	0.18	0.86
	Age	-0.16	0.14	-0.04	-1.15	0.25
	SCS-SF Total Score	-2.05	0.14	-0.48	-14.25	<.001
	CTE Total Score	0.76	0.14	0.18	5.46	<.001
	AgexSCS-SF	-0.14	0.13	-0.04	-1.10	0.27
	AgexCTE	0.07	0.15	0.01	0.46	0.64
	SCS-SFxCTE	0.27	0.14	0.06	1.95	0.05
	AgexCTExSCS-SF	-0.41	0.15	-0.10	-2.84	0.01

DISCUSSION

The findings presented here expand knowledge of the protective nature of self-compassion, especially as it pertains to mental health in a sample of AI adults living across the United States. Confirming Hypothesis 1, regression analyses indicated a main effect of self-compassion on symptoms of depression and anxiety, such that those higher in self-compassion reported less symptoms.

Based on the stress sensitization model, it was hypothesized (Hypothesis 2) that the interaction between self-compassion and childhood trauma exposure would only be significant in predicting anxiety and depression symptoms for those higher in trauma exposure. The first step to testing this hypothesis was to examine whether the two-way interaction between self-compassion and childhood trauma exposure significantly predicted symptoms of depression and anxiety. Linear regression analyses indicated that this interaction was not statistically significant. Based on these results, the interaction was not further probed.

Linear regression analyses used to test whether age moderated the moderation of self-compassion on childhood trauma exposure in predicting later-life symptoms of anxiety and depression provided support for Hypothesis 3. In terms of anxiety, most notably, the lowest anxiety scores were found for those who reported high age + high self-compassion, followed by those who reported low age + high self-compassion. These findings demonstrate that self-compassion was protective for both age groups. Though higher levels of self-compassion were found to be a more salient protective factor for older participants scoring higher in self-compassion + higher in childhood trauma exposure, as compared to younger participants who also reported high self-compassion + high trauma, there was no statistically significant effect of age on anxiety symptoms for those who reported high childhood trauma exposure + low self-compassion. In other words, there was a significant effect of age in predicting symptoms of anxiety for those that reported high trauma + high self-compassion, but not for those who reported high trauma + low self-compassion. This illuminates that age may be less important in predicting later-life anxiety symptoms in cases of high childhood trauma exposure + low self-compassion.

In relation to later-life depression symptoms, results were more mixed. Similar to the results predicting anxiety, those that reported high age + high self-compassion reported the lowest depression symptoms in the context of high trauma. Although there was no statistically significant effect of age on depression symptoms for those that reported low childhood trauma exposure + high in self-compassion, a significant effect of age emerged for those who reported high childhood trauma exposure + high self-compassion. This indicates that there may be a certain threshold of trauma exposure that must be reached for higher levels of self-compassion to show protective effects against later-life depression symptoms in terms of age. Surprisingly, no significant difference was found for mean levels of depression symptoms for low versus high trauma for those who reported low age + low self-compassion. In other words, for younger AIs in this sample who reported low levels of self-compassion, childhood trauma exposure was not a significant predictor of depression symptoms. It is also possible that similar levels of trauma were reported for high and low childhood trauma exposure in this case, resulting in an insufficient difference to see the impacts of age and self-compassion. Future analyses can be conducted to answer this question.

Overall, the regression analyses used to assess the exploratory hypothesis (Hypothesis 3) indicated that those who reported higher age + higher self-compassion reported the lowest levels of anxiety in the context of high and low childhood trauma exposure and the lowest levels of depression symptoms in the context of high childhood trauma exposure. The results demonstrate that age and self-compassion moderate the effects of childhood trauma on later-life symptoms of anxiety and depression such that greater age and greater levels of self-compassion predict lower symptoms. Implications are discussed in the next section.

In conclusion, the findings reported here support Hypothesis 1 and Hypothesis 3. As noted previously, Hypothesis 2 was not tested since the two-way interaction between self-compassion and childhood trauma exposure was not significant in predicting later-life symptoms of anxiety and depression.

Implications

These findings are important because they help to build a nuanced understanding of protective factors in a population that experiences disproportionately high levels of childhood trauma. As it was found that those who reported higher levels self-compassion reported the lowest anxiety and depression symptoms (Hypothesis 1), it may be advantageous for clinicians to utilize self-compassion centered approaches with patients to reduce symptoms of anxiety and depression in general. Given that self-compassion was found to be protective against later-life symptoms of anxiety and depression in the context of high childhood trauma exposure across age groups, self-compassion interventions may be effective for populations that have experienced childhood trauma regardless of age. However, these interventions may be the most effective for older populations, as older participants that reported high self-compassion displayed the lowest anxiety and depression symptoms.

Limitations and Future Directions

This research has several notable limitations. First, the Cronbach's alpha for the SCS-SF was α=.65, which is relatively low. Future research should utilize confirmatory factor analysis to determine if this scale is a good measure of self-compassion in AI samples. It is possible that this scale needs to be adapted for AI communities or that an entirely new scale needs to be created. Future research could utilize a community-based participatory model, which is an approach where researchers involve community members in the design and execution of research projects and data is used constructively at the community level (Hacker, 2013), to gain a greater perspective of what self-compassion means to AI communities. Also, the SCS-SF measures general self-compassion, not self-compassion specific to trauma. It is possible that self-compassion functions differently when in the context of trauma.

Second, following the social determinants of health literature, it is well established that one's environment (physical, social and emotional) impacts both physical and mental health (Marmot, 1945). As such, it is possible that the relationships among variables in this study could look different for AIs living on and off reservations. Only 15% of participants in this study reported reservation residency, which was not enough to assess differences. Future research should seek to determine if the relationships among childhood trauma exposure, age, self-compassion and depression and anxiety symptoms change depending on whether someone lives on a reservation.

Lastly, this study utilized a cross-sectional design. As such, all findings are correlational in nature and cannot serve to establish any sort of causality. Longitudinal research must be conducted to investigate whether the interaction between self-compassion and age causes lower levels of anxiety and depression symptoms in the context of trauma. In addition, longitudinal research would track temporal changes in these parameters, providing more information on the stability of these constructs. Future research could utilize a longitudinal ecological momentary assessment design to track real-time changes in these constructs across time.

Despite these limitations, the current study takes an important initial step in understanding the nuances of how childhood trauma exposure, self-compassion and age interact to predict later-life symptoms of anxiety and depression in an AI sample. The results indicate that self-compassion is indeed a protective factor against later-life symptoms of anxiety and depression and that its effects are further moderated by age in the context of childhood trauma exposure. These findings can be used to inform future research as well as interventions that may help to alleviate the intensity of anxiety and depression symptoms caused by childhood trauma exposure in AI communities.

REFERENCES CITED

Bale, T. L. (2006). Stress sensitivity and the development of affective disorders. *Hormones and behavior*, *50*(4), 529-533.

Beshai, Prentice, J. L., & Huang, V. (2018). Building Blocks of Emotional Flexibility: Trait Mindfulness and Self-Compassion Are Associated with Positive and Negative Mood Shifts. Mindfulness, 9(3), 939–948. https://doi.org/10.1007/s12671-017-0833-8

Bjelland, Dahl, A. A., Haug, T. T., & Neckelmann, D. (2002). The validity of the Hospital Anxiety and Depression Scale: An updated literature review. Journal of Psychosomatic Research, 52(2), 69–77. https://doi.org/10.1016/S0022-3999(01)00296-3

Bombay, Matheson, K., & Anisman, H. (2014). The intergenerational effects of Indian Residential Schools: Implications for the concept of historical trauma. Transcultural Psychiatry, 51(3), 320–338. https://doi.org/10.1177/1363461513503380

Brave Heart, & DeBruyn, L. (1998). The American Indian holocaust: Healing historical unresolved grief. American Indian and Alaska Native Mental Health Research, 8(2), 60–78. https://doi.org/10.5820/aian.0802.1998.60

Brave Heart. (1999). Oyate Ptayela: Rebuilding the Lakota Nation Through Addressing Historical Trauma Among Lakota Parents. Journal of Human Behavior in the Social Environment, 2(1-2), 109–126. https://doi.org/10.1300/J137v02n01_08

Bravo, Kelley, M. L., & Hollis, B. F. (2016). SOCIAL SUPPORT, DEPRESSIVE SYMPTOMS, AND HAZARDOUS ALCOHOL USE AMONG NAVY MEMBERS: AN EXAMINATION OF SOCIAL SUPPORT AS A PROTECTIVE FACTOR ACROSS DEPLOYMENT. Journal of Social and Clinical Psychology, 35(8), 693–704. https://doi.org/10.1521/jscp.2016.35.8.693

Bretherton. (1992). The Origins of Attachment Theory: John Bowlby and Mary Ainsworth. Developmental Psychology, 28(5), 759–775. https://doi.org/10.1037/0012-1649.28.5.759

Carstensen, Isaacowitz, D. M., & Charles, S. T. (1999). Taking Time Seriously: A Theory of Socioemotional Selectivity. The American Psychologist, 54(3), 165–181. https://doi.org/10.1037/0003-066X.54.3.165

Centers for Disease Control and Prevention. (2014). American Indian and Alaska Native death rates nearly 50 percent greater than those of non-Hispanic Whites. Retrieved from http://www.cdc.gov/media/ releases/2014/p0422-natamerican-deathrate.html

Davis. (1973). Separation, Anxiety and Anger (Volume Two of Attachment and Loss). By John Bowlby. London: The Hogarth Press and The Institute of Psychoanalysis. 1973. Pp.

xviii+430. Index 13 pp. Price £4.50. British Journal of Psychiatry, 123(576), 600–601. https://doi.org/10.1192/bjp.123.5.600-a

Denham. (2008). Rethinking Historical Trauma: Narratives of Resilience. Transcultural Psychiatry, 45(3), 391–414. https://doi.org/10.1177/1363461508094673

Dolezal, Winterowd, C., & Farra, A. (2021). THE RELATIONSHIP OF SELF-COMPASSION AND SUICIDE RISK FACTORS IN AMERICAN INDIAN/ALASKA NATIVE PEOPLE. American Indian and Alaska Native Mental Health Research, 28(1), 103–124. https://doi.org/10.5820/aian.2801.2021.103

Easton, Roh, S., Kong, J., & Lee, Y.-S. (2019). Childhood Sexual Abuse and Depression among American Indians in Adulthood. Health & Social Work, 44(2), 94–102. https://doi.org/10.1093/hsw/hlz005

Evans-Campbell, Walters, K. L., Pearson, C. R., & Campbell, C. D. (2012). Indian Boarding School Experience, Substance Use, and Mental Health among Urban Two-Spirit American Indian/Alaska Natives. The American Journal of Drug and Alcohol Abuse, 38(5), 421–427. https://doi.org/10.3109/00952990.2012.701358

Evans-Campbell, T., Lindhorst, T., Huang, B., & Walters, K. L. (2006). Interpersonal violence in the lives of urban American Indian and Alaska Native women: Implications for health, mental health, and help-seeking. *American journal of public health*, *96*(8), 1416-1422.

George, D., & Mallery, M. (2003). Using SPSS for Windows step by step: a simple guide and reference.

Gray, & Rose, W. J. (2012). Cultural Adaptation for Therapy With American Indians and Alaska Natives. Journal of Multicultural Counseling and Development, 40(2), 82–92. https://doi.org/10.1002/j.2161-1912.2012.00008.x

Gone. (2013). Redressing First Nations historical trauma: Theorizing mechanisms for indigenous culture as mental health treatment. Transcultural Psychiatry, 50(5), 683–706. https://doi.org/10.1177/1363461513487669

Gone, & Trimble, J. E. (2012). American Indian and Alaska Native Mental Health: Diverse Perspectives on Enduring Disparities. Annual Review of Clinical Psychology, 8(1), 131–160. https://doi.org/10.1146/annurev-clinpsy-032511-143127

Hacker, K. (2013). *Community-based participatory research*. Sage publications.

Homan. (2016). Self-Compassion and Psychological Well-Being in Older Adults. Journal of Adult Development, 23(2), 111–119. https://doi.org/10.1007/s10804-016-9227-8

Hwang, S., Kim, G., Yang, J. W., & Yang, E. (2016). The moderating effects of age on the relationships of self-compassion, self-esteem, and mental health. *Japanese Psychological Research*, *58*(2), 194-205.

Karamustafalıoğlu, Özcelik, B., Bakım, B., Ceylan, Y. C., Yavuz, B. G., Güven, T., & Gönenli, S. (2010). A promising tool that can predict suicide: the hospital anxiety and depression scale. Düşünen Adam (Bakırköy Ruh Ve Sinir Hastalıkları Hastanesi), 151–157. https://doi.org/10.5350/DAJPN2010230302t

Kleiman, & Riskind, J. H. (2012). Utilized Social Support and Self-Esteem Mediate the Relationship Between Perceived Social Support and Suicide Ideation: A Test of Multiple Mediator Model. Crisis : the Journal of Crisis Intervention and Suicide Prevention, 34(1), 42–49. https://doi.org/10.1027/0227-5910/a000159

Joe, McElwain, C., Woodard, K., & Bell, S. (2019). A Call for Culturally-Relevant Interventions to Address Child Abuse and Neglect in American Indian Communities. Journal of Racial and Ethnic Health Disparities, 6(3), 447–456. https://doi.org/10.1007/s40615-018-0531-9

John-Henderson, Oosterhoff, B., Kampf, T. D., Hall, B., Johnson, L. R., Laframboise, M. E., Malatare, M., Salois, E., Carter, J. R., & Adams, A. K. (2022). Historical Loss: Implications for Health of American Indians in the Blackfeet Community. Annals of Behavioral Medicine, 56(2), 193–204. https://doi.org/10.1093/abm/kaab032

John-Henderson, N. A., Henderson-Matthews, B., Ollinger, S. R., Racine, J., Gordon, M. R., Higgins, A. A., ... & Rynda-Apple, A. (2020). Adverse childhood experiences and immune system inflammation in adults residing on the blackfeet reservation: the moderating role of sense of belonging to the community. *Annals of Behavioral Medicine*, *54*(2), 87-93.

Lai, Morgan, C. D., Vetter, J., & Andriole, G. L. (2016). Impact of childhood and recent traumatic events on the clinical presentation of overactive bladder: Childhood and Recent Trauma in OAB. Neurourology and Urodynamics, 35(8), 1017–1023. https://doi.org/10.1002/nau.22872

LeMoult, Humphreys, K. L., Tracy, A., Hoffmeister, J.-A., Ip, E., & Gotlib, I. H. (2020). Meta-analysis: Exposure to Early Life Stress and Risk for Depression in Childhood and Adolescence. Journal of the American Academy of Child and Adolescent Psychiatry, 59(7), 842–855. https://doi.org/10.1016/j.jaac.2019.10.011

MacBeth, & Gumley, A. (2012). Exploring compassion: A meta-analysis of the association between self-compassion and psychopathology. Clinical Psychology Review, 32(6), 545–552. https://doi.org/10.1016/j.cpr.2012.06.003

Marmot, & Wilkinson, R. G. (1999). *Social determinants of health*. Oxford University Press.

Masten, & Monn, A. R. (2015). Child and Family Resilience: A Call for Integrated Science, Practice, and Professional Training. Family Relations, 64(1), 5–21. https://doi.org/10.1111/fare.12103

McKinley, Boel-Studt, S., Renner, L. M., & Figley, C. R. (2021). Risk and Protective Factors for Symptoms of Depression and Anxiety Among American Indians: Understanding the Roles of Resilience and Trauma. Psychological Trauma, 13(1), 16–25. https://doi.org/10.1037/tra0000950

Mersky, Topitzes, J., & Reynolds, A. . (2013). Impacts of adverse childhood experiences on health, mental health, and substance use in early adulthood: A cohort study of an urban, minority sample in the U.S. Child Abuse & Neglect, 37(11), 917–925. https://doi.org/10.1016/j.chiabu.2013.07.011

Neff. (2003). The Development and Validation of a Scale to Measure Self-Compassion. Self and Identity, 2(3), 223–250. https://doi.org/10.1080/15298860390209035

Pennebaker, & Susman, J. R. (1988). Disclosure of traumas and psychosomatic processes. Social Science & Medicine (1982), 26(3), 327–332. https://doi.org/10.1016/0277-9536(88)90397-8

Pyke-Pierce, K. K. A. (2022). *The Role of Acculturation on the Relationship Between Self-Compassion and Depression Within Native Americans*. University of Montana.

Raes. (2010). Rumination and worry as mediators of the relationship between self-compassion and depression and anxiety. Personality and Individual Differences, 48(6), 757–761. https://doi.org/10.1016/j.paid.2010.01.023

Roh, Burnette, C. E., Lee, K. H., Lee, Y.-S., Easton, S. D., & Lawler, M. J. (2015). Risk and protective factors for depressive symptoms among American Indian older adults: Adverse childhood experiences and social support. Aging & Mental Health, 19(4), 371–380. https://doi.org/10.1080/13607863.2014.938603

Skewes, & Blume, A. W. (2019). Understanding the Link Between Racial Trauma and Substance Use Among American Indians. The American Psychologist, 74(1), 88–100. https://doi.org/10.1037/amp0000331

Stroud, C. B., Harkness, K. L., & Hayden, E. P. (2020). The stress sensitization model. *The Oxford handbook of stress and mental health*, 348-370.

Webster, & Gould, O. (2007). Reminiscence and Vivid Personal Memories across Adulthood. International Journal of Aging & Human Development, 64(2), 149–170. https://doi.org/10.2190/Q8V4-X5H0-6457-5442

Whitbeck, McMorris, B., Hoyt, D., Stubben, J., & LaFromboise, T. (2002). Perceived Discrimination, Traditional Practices, and Depressive Symptoms among American Indians in the Upper Midwest. Journal of Health and Social Behavior, 43(4), 400–418. https://doi.org/10.2307/3090234

Whitbeck, Adams, G. W., Hoyt, D. R., & Chen, X. (2004). Conceptualizing and Measuring Historical Trauma Among American Indian People. American Journal of Community Psychology, 33(3-4), 119–130. https://doi.org/10.1023/B:AJCP.0000027000.77357.31

Winders, S. J., Murphy, O., Looney, K., & O'Reilly, G. (2020). Self-compassion, trauma, and posttraumatic stress disorder: A systematic review. *Clinical Psychology & Psychotherapy*, *27*(3), 300-329.

Zephier Olson, & Dombrowski, K. (2020). A Systematic Review of Indian Boarding Schools and Attachment in the Context of Substance Use Studies of Native Americans. Journal of Racial and Ethnic Health Disparities, 7(1), 62–71. https://doi.org/10.1007/s40615-019-00634-4

Zigmond, & Snaith, R. P. (1983). The Hospital Anxiety and Depression Scale. Acta Psychiatrica Scandinavica, 67(6), 361–370. https://doi.org/10.1111/j.1600-0447.1983.tb09716.x

Zvolensky, McNeil, D. W., Porter, C. A., & Stewart, S. H. (2001). Assessment of anxiety sensitivity in young American Indians and Alaska Natives. Behaviour Research and Therapy, 39(4), 477–493. https://doi.org/10.1016/S0005-7967(00)00010-3