

INDIVIDUAL, FAMILY, AND COMMUNITY IMPACTS OF THE FEDERAL INDIAN  
BOARDING SCHOOL ERA ON AN URBAN AMERICAN INDIAN AND ALASKA NATIVE  
POPULATION

Rachel Elizabeth Wilbur

A dissertation submitted to the faculty at the University of North Carolina at Chapel Hill in  
partial fulfillment of the requirements for the degree of Doctor of Philosophy in the Department  
of Anthropology.

Chapel Hill  
2022

Approved by:

Amanda L. Thompson

Mark V. Sorensen

Paul W. Leslie

Alexandra F. Lightfoot

Zaneta M. Thayer

© 2022  
Rachel Elizabeth Wilbur  
ALL RIGHTS RESERVED

## **ABSTRACT**

Rachel Elizabeth Wilbur: Individual, Family, and Community Impacts of the Federal Indian Boarding School Era on an Urban American Indian and Alaska Native Population  
(Under the direction of Amanda L. Thompson)

In the U.S., American Indian and Alaska Native (AIAN) populations suffer disproportionately from poor mental and physical health. The structural factors which contribute to these disparities are well documented and are rooted in 500 years of continual settler colonial actions and policies. This study seeks to understand the role of the federal American Indian boarding school era on contemporary physical health within an urban AIAN population. I use historical trauma theory to explore how having a family history of boarding school attendance impacts the health of AIAN people today at the individual, family, and community levels. Data from the Honor Study, an inter-tribal survey of 444 urban two-spirit individuals was used to answer the following research questions: 1) How does a personal or family history of boarding school attendance impact physical health? 2) What are the early-life and later-life factors that influence the relationship between a family or caregiver history of boarding school attendance and respondent struggles with parenting? And 3) How does engagement in traditional cultural activities impact the relationship between boarding school attendance and physical health? Results indicate that, at the individual level, all survey participants had some level of exposure to boarding schools, and that the type and magnitude of exposure to the institutions appears to differentially impact both self-reported and measured physical health. For families, both early and later-life factors appear to mediate the relationship between family exposure to boarding schools and parenting struggles, and that participants appear to maintain strong networks of

social support and to exhibit high levels of self-esteem, contributing to confidence in their ability to parent the next generation. For communities, a family history of boarding school attendance was associated with greater engagement in cultural activities, and greater engagement in cultural activities was associated with better self-reported physical health.

Ransom Note

*We demand a world with many worlds in it  
A world of the anthill  
A world of women harvesting jacote  
A world where the stave churches crumbled  
Long ago from lack of use  
A world where Majdel's looms are still  
threaded  
A world of your mouth  
A world of our word  
A world where it is kept  
A world of flutes at dusk  
A world of The Lovers  
and The Tower  
A world of the three lines on your chin  
A world were the stone point cuts them in  
A world of person without  
a single "it"  
A world of the tree fungus trade  
A world of listening to comets  
A world of the Passenger Pigeon  
A world of glaciers accruing ice inch by inch  
A world of the oak savannah  
A world where you read my future from my  
coffee ground tipped upside down each  
mourning  
A world of the dirge singers and how we pay  
them for their service carrying sacks of  
wheat like grief  
A world were you and I can live together  
in your house un-razed, on the hillside at the  
fish camp, in the circle of our tents, the  
central house with all the food and children  
where the men do not sleep  
A world of our dead fed  
bear grease and cacao and a little blood  
from your palm cut open and water from the  
holy well  
A world of our babies fed  
from whatever breast*

*is closest to the mouth  
A world  
We demand  
a world*

*-Veera Sulaiman, 2022*

## ACKNOWLEDGEMENTS

This work would not have been possible without the mentorship, encouragement, and support of my committee members, Dr. Mark Sorensen, Dr. Paul Leslie, Dr. Alexandra Lightfoot, Dr. Zaneta Thayer, and especially my advisor, Dr. Amanda Thompson. It also benefited greatly from the statistical assistance of Dr. Eugenia Conde-Dudding. My colleagues and friends in the UNC anthropology department – (soon to be Dr.) Jacob Griffin, Dr. Hannah Jahnke, and Dr. Steph Berger - made the process of learning, researching, and writing, even during a pandemic, a joy. Members of the First Nations Graduate Circle and the American Indian Center helped me to find a home away from home, particularly Dr. Meredith McCoy, Dr. Danielle Gartner, Qua Lynch Adkins, and Randi Byrd. Research and writing could not have occurred without the friendship of Milla Prince. And, of course, I owe everything to my family: my parents, grandparents, great grandparents, and other ancestors who inspire the work that I do; to my son, August, who kept my feet on the ground, and my husband, Brendan Flynn, who deserves a dissertation himself through enabling time for me to work, and talking through walking every step of this dissertation with me.

Doing this work requires walking in two worlds, and cannot be done alone. This poem, by one of my closest friends, Veera Sulaiman, is the perfect expression of the necessity of complex friendship while we navigate the world.

## PREFACE

### Note on Terminology

Throughout this document I will use a number of different terms to refer to the First Peoples of what is currently called the Americas. The focus of this work is on American Indians and Alaska Natives in the United States (U.S.), and the term “American Indian and Alaska Native” is the official terminology utilized by the U.S. federal government through the Office of Management and Budget. As a term it encompasses people Indigenous to the continental United States and Alaska. It differs from “Native American”, a term which is inclusive of the Indigenous peoples of the continental U.S., Alaska, and the Hawaii and American Samoa. I also use “Indigenous” to refer broadly to the original peoples of the U.S. and Canada, who share a similar history around boarding and residential schools, and occasionally “Native” when I’m writing more casually. When applicable, mostly when referring to historical texts, I’ll occasionally use the term “Indian”. On the occasions when I am discussing research conducted by or with Indigenous peoples from Canada, I will use the term “First Nations”. It is important to acknowledge, however, that all peoples Indigenous to the Americas belong to culturally, historically, geopolitically, and linguistically unique tribes and communities. Whenever possible, I use the tribal name that people call themselves.

When speaking about the land and geography I will use Euro-American terminology (United States, Canada, state names, etc.) when speaking from a Western perspective. When speaking from an Indigenous perspective I will use “Turtle Island”, which is a common pan-Indigenous name for North America. It derives from common creation stories which situate



North America on the back of a large turtle. It is a collective term which encompasses the Earth and all living things as relatives. Occasionally I will use the term “Indian Country”. Originally a colonial term to describe land and territory beyond the bounds of Euro-American settlement, it has been retaken by Indigenous peoples and now serves as “a general description of Native places and spaces in the United States”<sup>1</sup> and is a term of strength and pride.

The survey from which this work is derived was collected among urban, two-spirit individuals. Two-spirit is a self-descriptor for lesbian, gay, and bisexual AIAN people which recognizes sexuality within the context of culture, and its interrelation with identity, gender, community, and spirituality.<sup>2</sup>

## TABLE OF CONTENTS

LIST OF TABLES .....	xiv
LIST OF FIGURES .....	xv
LIST OF ABBREVIATIONS.....	xvii
CHAPTER 1: INTRODUCTION TO THE STUDY.....	1
CHAPTER 2: A VERY BRIEF HISTORY OF FEDERAL INDIAN POLICY .....	4
2.1 Trade and Intercourse (1790-1830) .....	5
2.2 Removal and Reservation (1829-1886) .....	6
2.3 Assimilation and Allotment (1887-1932).....	7
2.4 Reorganization (1932-1945).....	8
2.5 Termination and Relocation (1946-1960).....	9
2.6 Self-Determination (1961-1985).....	10
2.7 A Brief Introduction to the Federal Indian Boarding School Era.....	11
CHAPTER 3: HISTORICAL TRAUMA, AN INTRODUCTION .....	13
3.1 Background and History .....	13
3.2 Contemporary Theory and Uses .....	16
3.3 Challenges to Historical Trauma Theory .....	25
3.4 How I'm Using It.....	28
CHAPTER 4: ADDITIONAL THEORIES AND STRESS-RESPONSE PATHWAYS .....	31
4.1 Life Course Theory .....	31
4.2 Developmental Origins of Health and Disease.....	33

4.3 Stress-Response Pathways and Health.....	34
4.4 Interdisciplinary Integration of Theory.....	37
<b>CHAPTER 5: THE INDIVIDUAL LEVEL: PHYSICAL HEALTH AND A FAMILY HISTORY OF AMERICAN INDIAN BOARDING SCHOOL EXPOSURE.....</b>	<b>39</b>
5.1 Background.....	39
5.2 Methods.....	41
5.2.1 Participants .....	42
5.2.2 Measures .....	42
5.2.3 Analysis .....	44
5.3 Results.....	48
5.3.1 Individual-Exposure .....	48
5.3.2 Any Family Exposure.....	48
5.3.3 Magnitude of Familial Exposure .....	49
5.3.4 Specific Generational Exposure .....	49
5.3.5 Additional Analysis .....	50
5.3.6 Additional Context on Caregiver and Study Participant Experience at Boarding School .....	50
5.4 Discussion.....	54
5.5 Limitations .....	59
5.6 Conclusion .....	60
<b>CHAPTER 6: THE FAMILY LEVEL: PARENTING STRUGGLE AS A SOCIAL PATHWAY FOR THE TRANSMISSION OF THE HISTORICAL TRAUMA RESPONSE: EARLY AND LATER-LIFE FACTORS .....</b>	<b>61</b>
6.1 Background.....	61
6.2 Methods.....	69
6.2.1 Participants .....	70

6.2.2 Measures .....	70
6.2.3 Analysis .....	73
6.3 Results .....	74
6.3.1 Total Model .....	77
6.3.2 Early-Life Variables Alone and in Combination .....	77
6.3.3 Later-Life Variables Alone .....	78
6.3.4 Early-Life and Later-Life Variables Combined .....	78
6.3.5 Results Summary: .....	85
6.4 Discussion .....	87
6.5 Limitations .....	91
6.6 Conclusion .....	91
CHAPTER 7: THE COMMUNITY LEVEL: ENGAGEMENT IN TRADITIONAL CULTURAL ACTIVITIES AS A STRATEGY FOR MITIGATING THE ENDURING PHYSICAL HEALTH IMPACTS OF HISTORICAL TRAUMA EVENTS .....	93
7.1 Background .....	93
7.2 Methods .....	95
7.2.1 Participants .....	96
7.2.2 Measures .....	96
7.2.3 Analysis .....	98
7.3 Results .....	98
7.4 Discussion .....	101
7.5 Limitations .....	103
7.6 Conclusion .....	103
CHAPTER 8: CONCLUSION .....	105
APPENDIX A: CHAPTER 5 APPENDIX MATERIALS .....	111

MOS-Physical Health Summary Score Questions <sup>211</sup> .....	111
28 Relationship Combinations Included in Chapter 5 Analysis .....	113
APPENDIX B: CHAPTER 6 APPENDIX MATERIALS .....	114
18 Hypotheses applicable to the research study question for Chapter 6 analysis.....	114
Bernstein et al. (2003) Childhood Trauma Questionnaire <sup>278</sup> .....	117
33 Microaggressions Questions .....	121
10-Question Rosenberg Self-Esteem Scale <sup>279</sup> .....	127
MOS Social Support Scale. <sup>280</sup> .....	128
Unique Parenting Struggle Variable .....	130
Results Table Including Hypotheses and Covariates.....	131
REFERENCES .....	143

## LIST OF TABLES

Table 5.1: Sample demographics of study participants, including each level of exposure. ....	47
Table 5.2: Only the generation combinations corresponding to participant responses are included in the table.....	52
Table 6.1: Goodness-of-fit measures for study-specific endogenous variables. ....	73
Table 6.2: Sample demographics of all participants, those who had boarding school exposure most recently for one or more parents, exposure most recently for one or more grandparents, or exposure most recently for a caregiver.....	74
Table 6.3: Details of the 48 total models run and the combinations of mediating variables included in each. ....	75
Table 6.4: Model fit results for all models tested. ....	76
Table 7.1: Sample demographics.....	98
Table 7.2: Goodness of fit statistics.....	99

## LIST OF FIGURES

Figure 3.1: Sotero’s conceptual model of Historical Trauma. <sup>110</sup> .....	19
Figure 3.2: Mohatt et al.’s Narrative Model of how Historical Trauma Impacts Health. <sup>84</sup> .....	22
Figure 3.3: Kirmayer et al.’s model of the transgenerational transmission of historical trauma. <sup>102</sup> .....	24
Figure 3.4: Conching and Thayer’s model of 2 cumulative pathways through which historical trauma and contemporary health may be influenced by epigenetic modifications. <sup>37</sup> .....	25
Figure 4.1: Visual representation of the HPA axis <sup>166</sup> .....	36
Figure 5.1: Results from additional analysis on caregiver boarding school exposure and study participant experience at boarding school.....	50
Figure 5.2 Self-rated and measured health with different types of single-generation of exposure to boarding schools.....	52
Figure 5.3 Measured health with different types of single-generation of exposure to boarding schools. ....	52
Figure 5.4: Self-reported health score percentages by magnitude of exposure. ....	53
Figure 5.5: Measured health score percentages by magnitude of exposure. ....	53
Figure 6.1: Initial Research Model. Four intergenerational exposures were analyzed. ....	68
Figure 6.2: Path coefficient results for models 5-8.....	79
Figure 6.3: Path coefficient results for models 9-12.....	80
Figure 6.4: Path coefficient results for models 13-16.....	80
Figure 6.5: Path coefficient results for models 17-20.....	81
Figure 6.6: Path coefficient results for models 25-28.....	81
Figure 6.7: Path coefficient results for models 29-32.....	82
Figure 6.8: Path coefficient results for models 33-36.....	82
Figure 6.9: Path coefficient results for models 37-40.....	83

Figure 6.10: Path coefficient results for models 41-44.....	84
Figure 6.11: Path coefficient results for models 45-48.....	84
Figure 7.1: Coefficients for statistically significant model in which engagement in traditional activities mediates the relationship between caregiver exposure to AIAN boarding schools and objectively-measured physical health. ....	99
Figure 7.2: Coefficients for statistically significant model in which engagement in traditional activities mediates the relationship between parent exposure to AIAN boarding schools and self-rated physical health. ....	99
Figure 7.3: Coefficients for statistically significant model in which engagement in traditional activities mediates the relationship between grandparent exposure to AIAN boarding schools and self-rated physical health. ....	100
Figure 7.4: Coefficients for statistically significant model in which engagement in traditional activities mediates the relationship between caregiver exposure to AIAN boarding schools and self-rated physical health. ....	100



## LIST OF ABBREVIATIONS

ACE	Adverse Childhood Event
ACTH	Adrenocorticotrophic Hormone
AI	American Indian
AIAN	American Indian and Alaska Native
AIC	Akaike Information Criterion
AIE	Epigenetic Alterations Across Multiple Generations
BIC	Bayesian Information Criterion
CDIB	Certificate Degree of Indian Blood
CFI	Comparative Fit Index
CRF	Corticotropin-Releasing Factor
CTQ	Childhood Trauma Questionnaire
DE	Direct Epigenetic Alterations
DOHaD	Developmental Origins of Health and Disease
GOF	Goodness-of-Fit
HPA	Hypothalamic-Pituitary-Adrenocortical Axis
LCT	Life Course Theory
PTSD	Post-Traumatic Stress Disorder
RMSEA	Root Mean Square Error of Approximation
RRR	Relative Risk Ratio
SAM	Sympathetic-Adrenal-Medullar Axis
SEM	Structural Equation Model

TLI	Tucker-Lewis Index
U.S.	United States
WIE	Indirect, Within the Womb Epigenetic Alterations

## **CHAPTER 1: INTRODUCTION TO THE STUDY**

In the United States, American Indian and Alaska Native (AIAN) populations suffer disproportionately from poor mental and physical health, including epidemics of youth suicide, and chronic diseases like diabetes and cardiovascular disease.<sup>3,4</sup> The structural factors which contribute to these disparities are well documented, and include high rates of poverty, limited opportunity for economic mobility, and reduced access to healthcare, among others.<sup>5</sup> Each of these factors has its roots in 500 years of continual settler colonial actions and policies which explicitly sought the elimination of the land's original inhabitants.<sup>6-8</sup> While these policies have failed, evidenced by the continued presence of AIAN people and the ongoing resurgence of traditional practices and culture, federal policies resulted in untold historical trauma events. These events have been implicated as contributing to the health disparities seen in Indian Country today.

This study seeks to understand the role of the federal American Indian boarding school era – a historical trauma event which impacted an untold number of AIAN people between the 1880s and 1930s – on contemporary physical health within an urban AIAN population. I use historical trauma theory to explore how having a family history of boarding school attendance might impact the health of AIAN people today at the individual (Chapter 5), family (Chapter 6), and community (Chapter 7) levels.<sup>9</sup> Data from the Honor Study, an inter-tribal survey of 447 urban two-spirit individuals was used to answer the following research questions: 1) How does a personal or family history of boarding school attendance impact physical health? 2) What are the early-life and later-life factors that influence the relationship between a family or caregiver

history of boarding school attendance and respondent struggles with parenting? And 3) How does engagement in traditional cultural activities impact the relationship between American Indian boarding school attendance and physical health?

This research may be particularly salient as, today, over 70% of AIAN people in the U.S. live in urban settings,<sup>3</sup> while the majority of health research continues to be conducted on reservations.<sup>10</sup> In addition to experiencing significant health disparities when compared to other populations in the U.S., AIAN are underrepresented in health research;<sup>11</sup> a discrepancy that becomes even more pronounced when differentiating between research conducted with urban and reservation-based populations. This research, therefore, has the potential to address health questions of particular importance to urban AIAN people, a population underrepresented in health research.

This work is heavily interdisciplinary and benefits from the intellectual contributions of scholars in the fields of anthropology,<sup>12-15</sup> public health,<sup>16-19</sup> social work,<sup>20-22</sup> psychology,<sup>23-25</sup> sociology,<sup>26,27</sup> and American Indian studies.<sup>28-30</sup> Previous research looking at the impact of historical trauma experiences on AIAN health in the present have focused, with a few notable exceptions,<sup>19,31,32</sup> on mental health.<sup>16,20,21,33-35</sup> The intergenerational impacts of boarding school attendance, a specific historical trauma event, on AIAN people today and which is the focus of this work has similarly primarily dealt with hypothesized mental health outcomes,<sup>21,36</sup> although Conching & Thayer<sup>37</sup> and Running Bear et al.<sup>19,32</sup> are notable exceptions. Using theories from sociology, anthropology, and human biology, this work acknowledges the link between mental and physical health, and seeks to understand how exposure to AIAN boarding schools in previous generations may impact the contemporary health of AIAN people, families, and communities. It is my hope that further contextualizing and elucidating pathways through which

the historical trauma response is transmitted as well as pathways through which healing may occur will contribute to the evidence base supporting Indigenous-led interventions aimed at improving health and well-being in Indian Country.

## **CHAPTER 2: A VERY BRIEF HISTORY OF FEDERAL INDIAN POLICY**

It is impossible to understand the contemporary AIAN experience outside of the context of settler-colonialism. A complete review of settler-colonial motivations, policy, and history is outside the constraints of this document, and these topics have been covered in depth elsewhere.<sup>38,39</sup> I believe that it is important, however, to provide a very brief introduction to American Indian policy in the U.S., in order to fully understand the impact of those policies on the health of Indigenous peoples today.<sup>27</sup> As with most of the topics contained in this dissertation, it must first be acknowledged that each tribal nation and community has had unique historical and contemporary experiences with colonialism, and that those experiences shape health and wellbeing. This review provides only a sweeping summary of policies, events, and practices which occurred since European contact and does so from the perspective of the U.S. federal government.

U.S. federal policy towards AIAN is commonly split into six distinct phases: Trade and Intercourse (1790-1830), Removal and Reservations (1829-1886), Assimilation and Allotment (1887-1932), Reorganization (1932-1945), Termination and Relocation (1946-1960), and Self-Determination (1961-1985). Each of these periods represents a significant shift in federal policy towards Indigenous peoples, and notable historical trauma events are associated with each. Federal policy towards Indigenous Peoples in the Americas are settler-colonial policies. Settler colonialism is an ongoing structure of domination<sup>38</sup> that continues to impact the daily lives of all Americans, Indigenous and otherwise, which differs from colonialism in that its aim is land-based, and centers on the acquisition of land in order to enable permanent settlement by

colonists.<sup>40</sup> Each of the six phases of U.S. federal Indian policy is directly associated with reducing the rights and access to land for Indigenous peoples, in order to further enable encroachment by settlers. These phases do not represent an exhaustive list of policies, practices, and events impacting American Indians between the 1700s and the present, and the dates for each period may be debated. For example, the so-called “Indian Wars” waged by the federal government against individual tribes, nations, and bands extended from 1609-1924, overlapping many of the more discrete time periods detailed below.

### **2.1 Trade and Intercourse (1790-1830)**

Since contact, European settlers acted in accordance with the international law of the Doctrine of Discovery, which justified settler property rights over newly discovered lands and the Indigenous people who lived there. The ethnocentric law enabled the legal, according to European courts, colonization and settlement of new territories based on presumed superiority over non-European cultures, religions, and people.<sup>41</sup> In 1823 the U.S. government used the doctrine to set the standard for federal dealings with American Indians, stating in *Johnson v. M’Intosh*, “the United States [and] its civilized inhabitants now hold this country... they maintain, as all others have maintained, that discovery gave an exclusive right to extinguish the Indian title of occupancy, either by purchase or by conquest”.<sup>42</sup> The Doctrine of Discovery remains international law to this day.

Following the founding of the United States in 1776, Congress sought to officially regulate the trade between American Indians and colonists, which had until that point been conducted outside of the constraints of regulatory authority. In 1790 Congress passed the American Indian Trade and Intercourse Act, which prevented the sale of Indian land without the knowledge and permission of the federal government, with significant fines for those found to be conducting unregulated business.<sup>43</sup> Despite the facade of concern for Indigenous land rights, the

motivation for passing the act was national security and the assuagement of hostilities by American Indians who found themselves dispossessed of traditional territories through unscrupulous dealings.<sup>44</sup> The act set the stage for future policies aimed at the “civilization” of the land’s original inhabitants.

## **2.2 Removal and Reservation (1829-1886)**

The Removal Period is defined by the forced removal of Eastern tribes to lands west of the Mississippi and was codified into law by the 1830 Indian Removal Act. Largely motivated by the ever-growing need for land to grow cotton, and supported by governmental concerns about the increasing political strength of the Cherokee Nation in Georgia and Alabama, the act disregarded hundreds of treaties signed between the federal government and sovereign Native nations, and led to the displacement of more than 46,000 American Indians from their homes and lands between 1830 and 1840,<sup>6,45</sup> including the Cherokee Trail of Tears.<sup>46</sup>

Starting in the 1850s, following the commencement of the Civil War and as a key component of President Grant’s peace policy, American Indians west of the Mississippi began to be consolidated onto fixed reservations. Under the guise of providing a safe haven for Indians, Indigenous peoples were either removed outright from their traditional lands or restricted to small holdings. Such segregation further opened territory for settler expansion, while stymying the ability of Indigenous populations to engage in their traditional life ways.<sup>7</sup> Reservation holdings most frequently represented land poor in resources, and challenged Indigenous peoples’ ability to practice traditional means of hunting, fishing, agriculture, and gathering in unfamiliar environments. Removal to reservations also separated Indigenous people from culturally significant and ceremonial sites.<sup>6</sup> As a means of addressing food shortages resulting from relocation, the federal government began providing commodity foods to reservations. “Comod” foods, as they came to be known, were high in starch and fat, but provided little in the way of



nutritional content.<sup>47,48</sup> Nevertheless, reliance on food rations provided the U.S. government with additional leverage over reservation-based tribal communities. Throughout the removal and reservation periods, federal Indian policy aimed to foster Indigenous dependence on the federal government, while maintaining clear separation between Indigenous and settler populations.<sup>46</sup>

### **2.3 Assimilation and Allotment (1887-1932)**

The explicit intention of the assimilation era was to alter the traditions, cultures, and practices of American Indians in order to more closely align, and eventually assimilate, AIAN into productive members of the dominant Euro-American culture. Methods of assimilation included pressures to adopt European agricultural practices over traditional Indigenous agricultural, hunting, and gathering activities. These practices were particularly detrimental for tribal Nations who were historically nomadic, and served to further reduce traditional land claims and increase reliance on the federal government. Other methods of assimilation included the kidnapping and forced removal of American Indian, and later Alaska Native, children to boarding schools, in which they were forced to abandon their culture, traditions, and language and were indoctrinated into Christianity. During this period, Indigenous religious practices were outlawed and Christian missionary presence on reservations was increased. Although in practice earlier, the concept of blood quantum became heavily utilized at this period, as a strategy by the federal government of legally defining Indians out of existence, thereby eliminating their treaty responsibilities and opening up reservation lands for settlement.<sup>49</sup>

By the late 1880s, the reservations established during the removal and reservation period were no longer isolated but were encircled by western expansion, leading to increasing clashes between Indigenous populations and settlers. In order to further federal goals of Indian assimilation, allotment policies were enacted in 1887. Allotment redefined reservation lands as belonging to individuals, instead of sovereign nations. Through allotment, colloquially referred

to as the “Dawes Act”, each head of household residing on a reservation who was enrolled in the tribe and included on tribal rolls was allotted 160 acres, while unmarried adults received 80 acres. These lands could then be inherited or sold in keeping with western models of capitalism and paternalism, resulting over time in the slow absorption of reservation lands by settlers.<sup>46</sup> Appropriate utilization of allotted land through productive agricultural means was promised to be a pathway to U.S. citizenship for American Indian individuals, providing motivation for the disavowal of Indigenous ways of being and living and support for assimilation. Finally, allotment did not ensure that family members were allotted lands adjacent to one another, resulting in fracturing of family groups and the further interruption of community cohesion.<sup>50</sup> Overall, the assimilation and allotment period is recognized as contributing to deep impoverishment and ethnocide.<sup>51</sup>

## **2.4 Reorganization (1932-1945)**

In 1928 *The Problem of Indian Administration*, a report commissioned by the Institute for Government Research - later the Brookings Institution – and authored by Lewis Meriam,<sup>52</sup> was published, detailing the abysmal state of conditions and wellbeing for Indians in the U.S. Popularly known as “The Meriam Report”, the publication served as part of the onus for the passing of the 1934 Indian Reorganization Act (IRA), consecutively with President Roosevelt’s New Deal policies. The IRA was advertised as promoting tribal self-government through the recognition of sovereignty and encouraging tribes to adopt formal constitutions.<sup>50</sup> It also ended the practice of allotment, established loans for tribal development, and enacted priority-hire practices in the Bureau of Indian Affairs (BIA). The enduring legacy of the IRA is debated, with some scholars believing that its passage represented genuine positive intent towards strengthening self-governance and improving economic conditions on reservations,<sup>50</sup> while many in Indian Country castigate the act as another attempt at assimilation, this time through the

manipulation of tribal government through the hierarchical intrusion of Western approaches to governance over self-determination.<sup>51</sup>

## **2.5 Termination and Relocation (1946-1960)**

The termination period represented a divestment of responsibility towards tribes by the federal government, regardless of the prior recognition of treaty obligations.<sup>53</sup> In 1947, the current Commissioner of Indian Affairs, William Zimmerman Jr., proposed to the Senate Committee on Civil Service that the federal government may reduce the cost of services provided to tribal nations by limiting the tribes eligible for such services. Eligibility could be determined by degree of acculturation, the state of tribal economics, tribal buy-in, and the ability of individual states to adopt responsibilities previously administered by the federal government.<sup>6</sup> Thus, the assimilative policies of the previous decades worked to contribute to the dissolution of tribal nations, from the perspective of the U.S. government, and in 1948 the Commission on Organization of the Executive Branch of the Government's task force on Indian affairs re-asserted the government's longstanding position that "assimilation must be the dominant goal of public policy".<sup>6(p344)</sup> In addition to the loss of education, health, and economic resources protected under treaty rights, terminated tribes also lost protections for tribal lands, again paving the way for settler encroachment. The Klamath, an Oregon tribe, for example, occupied a reservation heavy with rich timber resources, and were included on the first lists for termination.<sup>6</sup> Official termination policy was passed by Congress in 1953 and between 1954 and 1966 more than 100 tribes in California, Florida, New York, Texas, Wisconsin, Oregon, Utah, Oklahoma, South Carolina, and Nebraska lost federal recognition. Termination slowed by 1968 but was not formally abolished until 1988. While many tribes have been able to regain federal recognition through painstaking and expensive legal efforts, some continue to exist with only state recognition, or as unrecognized tribes.

Consecutive to termination, the federal government initiated active policies focused on the relocation of American Indians away from reservations and into urban centers. Motivated by a desire to increase economic outcomes, urban areas represented greater opportunities for education, training, and employment, and coincided with the government's desire to divest from responsibilities in Indian Country.<sup>6,54</sup> The earliest policies functioned through programs which placed members of certain tribal nations with off-reservation employment opportunities, while later programs provided financial assistance for resettlement.<sup>55</sup> Simultaneously, an ambitious marketing campaign inspired American Indians without formal assistance to leave the reservations and try their luck in the cities of America. While financial and educational opportunities were more plentiful in cities, the BIA failed to predict the challenges of acculturation for a population previously kept largely segregated, and racism emerged as a significant barrier to accessing housing and other community resources for recent emigrants. Additionally, as people with strong ties to community and kinship networks, the reality of urban life in which American Indians represented only a tiny fraction of the population led many to experience significant isolation.<sup>6</sup> Today, AIAN people make up a significant proportion of the unhoused population in many urban centers.<sup>56</sup>

## **2.6 Self-Determination (1961-1985)**

Self-determination was a movement initiated by AIAN in the 1960s which sought the restoration of strong and independent tribal communities and self-government, cultural revitalization, and control of tribally-based education, policies, and programs. Congress provided support for the movement in 1975 with the passing of the Indian Self-Determination and Education Assistance Act, which enabled greater autonomy for tribes and enabled tribal-based responsibility for programs and services provided contractually through the Secretary of the Interior.<sup>57</sup> The act allowed individual tribal nations the ability to organize and oversee programs

and policies within their communities, including the tailoring of programs to their specific needs. At the same time, this period saw the rise of the American Indian Movement, a grassroots organization centered on urban areas whose initial aim was to address issues of racism, police violence, and brutality against American Indians and who quickly expanded to include support of treaty rights, efforts aimed at addressing high rates of unemployment, and education and cultural revitalization.<sup>53</sup> In 1978 the Indian Child Welfare Act was passed, ending the rampant removal and placement of Native children with non-Native families.<sup>58</sup> At the time, up to 35% of AI children had been removed from their families and placed for adoption with non-Indigenous parents. Overall, the self-determination period is credited with resulting in improved well-being for American Indians,<sup>59</sup> including increased respect for tribes as sovereign nations whose interactions with Federal, State, and local governments are government-to-government interactions.

## **2.7 A Brief Introduction to the Federal Indian Boarding School Era**

The focus of this research is on a specific era of federal policy which focused on the assimilation and indoctrination of AIAN children. The federal boarding school era spanned the Removal and Reservation, Assimilation and Allotment, and Reorganization periods of U.S. Federal Indian policy, and was influenced by each.

In the 1870s, as a continuation of their efforts at assimilation and eradication, the U.S. federal government began systematically removing AIAN children from their homes, families, and communities and placing them in government-run Indian boarding schools.<sup>60</sup> The intention of the institutions was ostensibly to provide education and skills to enable AIAN youth to succeed in the broader U.S. society, however, education was typically limited to only a portion of the day, while the majority of time was dedicated to performing menial labor, often for nearby settler families. Most schools followed a militaristic model, in which discipline was strict.

Children were forbidden from speaking their language, wearing traditional clothing or hairstyles, or practicing their religion.<sup>61</sup> Schools were typically located far from tribal lands and children from many different tribal communities were placed collectively in schools, making it hard for families to visit and further isolating children.<sup>62</sup> Most schools provided vastly insufficient meals, over-crowded living quarters, and little to no healthcare, resulting in significant morbidity and mortality.<sup>60,63</sup> The schools remained federal policy until the 1930s, when the government slowly began to divest. American Indian boarding schools exist into the present, but they are fundamentally different from those of the federal period, and are not the focus of this research.<sup>64</sup> Contemporary schools are often tribally run and encourage AIAN students to thrive through the incorporation of culture and traditional educational models alongside Western educational methods.<sup>65-67</sup>

Over the course of the federal Indian boarding school era, generations of families were impacted and the boarding schools are widely regarded to have been devastating for Native nations, communities, families, and children. In 1969 the Kennedy Report called the Indian boarding schools a “national tragedy”.<sup>68</sup> Previous research has identified the institutions as interrupting traditional parenting techniques and familial roles,<sup>69</sup> leading to intergenerational abuse<sup>70</sup> and loss of Indigenous language.<sup>71</sup> It also contributed to systemic poverty,<sup>72</sup> and a plethora of mental and physical health problems.<sup>16,19-22,25,32,36,73,74</sup> While people on Turtle Island have experienced many historical trauma events over the 500 years since European occupation, boarding school attendance is one of the most often referenced.

## CHAPTER 3: HISTORICAL TRAUMA, AN INTRODUCTION

### 3.1 Background and History

In the 1960s psychologists began recording an emergent phenomenon centered on victims of the Holocaust and their children. Immediately following the devastation of World War II, some Jewish survivors began to be diagnosed with “survivor’s syndrome”, a broad collection of symptoms including anxiety and depression as well as challenges in engaging in and maintaining interpersonal relationships,<sup>75,76</sup> and even premature mortality.<sup>77</sup> Survivors of the Holocaust were also found, in subsequent studies, to recover more slowly from later traumatic experiences.<sup>78</sup> While the majority of survivors did not exhibit such symptoms, the phenomenon occurred frequently enough that it became an area of intense study.<sup>79</sup> Longitudinal research into the long-term impacts of surviving significant traumatic events was initiated, and over time, researchers began to record similar symptomology in some of the children of Holocaust survivors.<sup>80,81</sup> This “secondary”, or “vicarious” trauma manifested as post-traumatic stress disorder (PTSD)-like symptoms, and introduced the idea of the intergenerational transition of trauma experiences.<sup>82,83</sup> The collective idea of an intergenerational survivor syndrome came to be called “historical trauma” and to be defined as “a complex and collective trauma experienced over time and across generations by a group of people who share an identity, affiliation, or circumstance”.<sup>84(p128)</sup> The majority of these early studies occurred in the field of psychology and were conducted in a lab setting. Over time, the idea of survivor syndrome and the vicarious transmission of trauma across generations came to be applied to other populations, including combat veterans,<sup>78</sup> Japanese survivors of U.S. internment camps,<sup>85</sup> refugees of other wars,<sup>86–88</sup>

survivors of Apartheid,<sup>89</sup> and descendants of enslaved peoples in the Americas.<sup>90</sup> Historical trauma differs from intergenerational trauma in that a defining element of historical trauma is the presence of a shared group trauma. Intergenerational trauma's experience of trauma across generations is not necessarily a shared trauma.<sup>84</sup>

A number of pathways have been theorized for the transmission of historical trauma responses from one generation to the next in survivors of the Holocaust and other populations, which generally falling into two categories: social and biological. Psychological and social mechanisms include interrupted parenting resulting in disorganized mother-infant attachment<sup>80,91</sup> or unresolved mourning or grief resulting in challenges to relationship formation,<sup>80</sup> as well as “conspiracies of silence” in which experiences of a parent or ancestor are not discussed, leaving children to imagine experiences, resulting in stress.<sup>79</sup> Biologically, maternal stress has been found to have far-reaching and diverse impacts on the health of offspring,<sup>92-94</sup> and both the experiences of mothers and fathers have been shown to impact the health of offspring through epigenetic inheritance.<sup>95,96</sup> Epigenetics refers to heritable alterations of cellular states which occur without affecting the DNA sequence,<sup>97</sup> and it can occur directly (within the lifespan of an individual) (DE), or indirectly within the womb (WIE) or across multiple generations (AIE).<sup>98,99</sup> It is likely that the exact means of transmission is unique for each family or community and experience of trauma, and that in many cases, both social and biological mechanisms act in tandem to result in recorded health outcomes.

In the mid 1990s, social work scholars began applying the concept of historical trauma to AIAN health and wellbeing.<sup>16,100</sup> Driven by the work of Maria Yellow Horse Brave Heart, Bonnie Duran, Eduardo Duran, and Lemyra DeBruyn, the concept of historical trauma was elaborated on to include “the collective experience of violence perpetrated against Indigenous



Peoples in the process of colonizing the Americas resulting in an unresolved humanitarian crisis for Native communities”.<sup>101(p412)</sup> In one of the earliest publications applying the concept of historical trauma to Indigenous populations, Duran and Duran<sup>24</sup> identify six distinct periods of trauma in the shared AIAN experience of colonization: First Contact, Invasion War Period, Subjugation and Reservation Period, Boarding School Period, Forced Relocation, and the Termination Period.

The historical trauma experience for AIAN is distinguished from other population’s experiences of historical trauma by its roots in colonialism, in that there is no post-colonial period for Indigenous peoples of Turtle Island.<sup>102</sup> There is no land to return to, and American Indians have not been welcomed to other countries as refugees of an acknowledged genocide.<sup>22,103</sup> AIAN live daily surrounded by the physical manifestations of the trauma events experienced by their ancestors,<sup>22</sup> from the continuation of the reservation system and the use of blood quantum and Certificate Degree of Indian Blood (CDIB) cards to the regular desecration of sacred sites. Thus, AIAN history since the period of contact has been overwhelmingly one of sustained cultural disruption and explicit destruction.<sup>22,26</sup> Some research suggests that historical trauma events of the past compound contemporary traumas - such as those caused by the racism and structural inequality still prevalent in the U.S. - and that individuals with family histories of trauma may be more susceptible to trauma within their own lives.<sup>104-106</sup>

Historical trauma in the Indigenous context is perceived as occurring on 2 levels: interpersonal and societal, with implications for individuals, families, and communities,<sup>9</sup> and to stem from both direct events such as massacres and indirect events, like the destruction of the buffalo.<sup>22</sup> Hypothesized transmission pathways include biological mechanisms such as epigenetic inheritance<sup>37</sup> and intergenerationally compounded allostatic load,<sup>12</sup> as well as through

psychosocial means such as the direct exposure of children vicariously experiencing events through the stories of others,<sup>33,107</sup> and indirectly through poor parental mental health or parenting style.<sup>9</sup>

Within Indian Country, the concept of historical trauma has been widely embraced by programs aiming to address health inequality as shifting the narrative away from personal blame and individual health behaviors and towards a continual legacy of oppressive governmental policies.<sup>34,108</sup> The integration of historical trauma-informed approaches to Indigenous led health interventions are frequently included in decolonizing research and practice.

### **3.2 Contemporary Theory and Uses**

Historical trauma as a construct has struck a chord in Indian Country because it helps make meaning of the continuing impacts of the past on the present while re-directing blame away from individuals for perceived behavioral pathologies and instead towards the enduring effects of settler colonialism and structural inequality.<sup>109</sup> Defining requirements of historical trauma as a theory are:<sup>20,110</sup>

- 1) the presence or experience of a trauma
- 2) which is shared by a group of people
- 3) the effects of which span generations as members of the impacted group manifest symptoms of trauma despite not being present themselves for the original traumatic event. Within the theory, these symptoms are referred to as the historical trauma response.

Historical trauma theory borrows three frameworks from social epidemiology:<sup>110</sup>

- 1) Psychosocial Theory, which links disease to stress, both physiological and psychological, occurring in the social environment and which both creates susceptibility to a disease and acts directly as a pathogenic mechanism affecting the body's systems.<sup>111</sup>

2) Political Economy of Health, which incorporates political, economic, and structural contributors to health and disease,<sup>112,113</sup> and

3) Ecosocial Theory, which acknowledges the multifaceted and interdependent impact of proximate, distal and life course factors as root causes of disease and articulates how social inequality becomes embodied.<sup>22,114</sup>

The theory of historical trauma has continued to be tuned and adapted over time, and there have been a number of instrumental additions and clarifications to the theory over the thirty years since it first emerged. Historical unresolved grief, as it was first called by Brave Heart and DeBruyn suggested that social ills like ongoing racism and oppression were products of chronic trauma and unresolved grief stemming from colonialism and resulting in the patterns of poor mental health witnessed in many tribal communities.<sup>100</sup> Mechanisms for the continued impact of past traumas across generations were theorized to be unresolved grief<sup>115</sup> and changing parenting behavior,<sup>116</sup> while it was suggested that healing could occur through the support of a collective identity among survivors of specific historical traumas and through engagement in traditional cultural activities.<sup>117</sup>

In the early 2000s, scholars utilizing historical trauma as a framework for understanding the role of historical factors in contemporary health began to note that historical trauma as a theory made intuitive sense, particularly as an explanatory model for members of communities impacted by past traumas, but that empirical evidence in support of the theory was largely lacking. To address this concern, in 2006 Michelle Sotero<sup>110</sup> developed a conceptual model to understand the physiological, psychological, and social pathways linking historical trauma events to contemporary disease prevalence and health disparities, known as historical trauma responses (Figure 3.1). Foundational to the model is the idea that historical trauma stems from the

subjugation of one population by another, dominant, population and that the subjugation includes overwhelming physical and psychological violence followed by segregation or displacement and economic deprivation, and finally cultural dispossession.<sup>118</sup> These elements trace cleanly onto the settler-colonial history of the Americas. Following the completion of the stages of subjugation, racism, discrimination, and resulting social and economic disadvantage remain.<sup>110</sup>

Within the model, the first generation are people who directly experience the traumas of subjugation, as well as resulting mental and physical health outcomes. The second and subsequent generations are those affected vicariously by the original trauma(s). Pathways through which trauma is hypothesized to be transmitted from generation one to subsequent generations include parenting, gene function or expression, mental illness, maternal mental and physical health, physiological adaptations, maladaptive behaviors, and the embedding of trauma into the population's collective social memory.<sup>110</sup> Thus, present-day health disparities may be argued to result from the accumulation of both disease and social distress across prior generations.

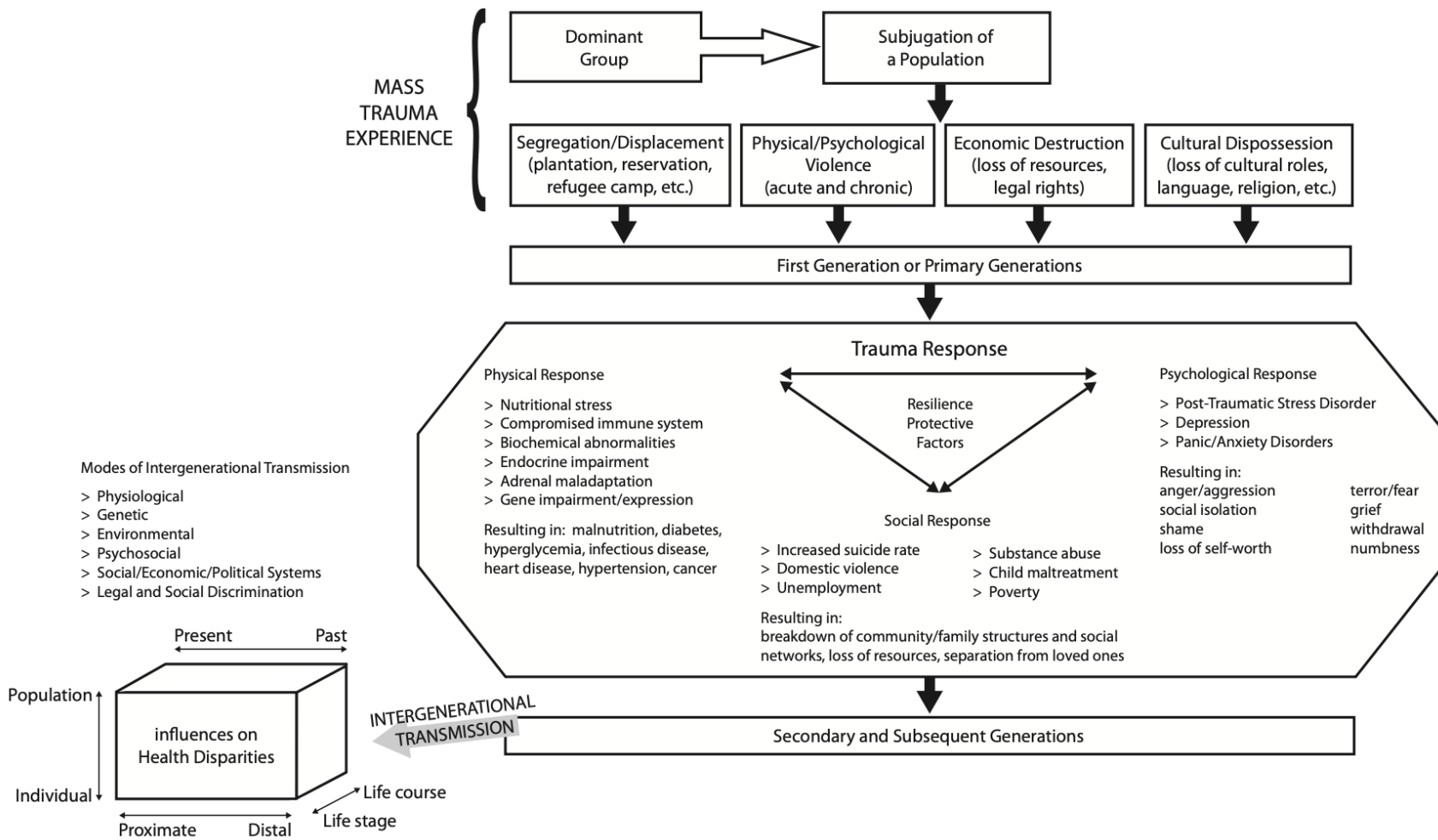


Figure 3.1: Sotero's conceptual model of Historical Trauma.<sup>110</sup>

Around the same time, Les Whitbeck and others at the University of Nebraska sought to address some of the empirical shortcomings of the historical trauma theory. Specifically, Whitbeck et al.<sup>26</sup> were motivated to develop tools that would help to 1) understand the different contributions of proximal and distal causes to health outcomes associated with the historical trauma response, 2) better understand the mechanisms through which trauma symptoms may be transmitted across generations, 3) measure the prevalence of historical trauma and grief, and 4) more clearly define the symptomology. Through the use of focus groups with Elders -- the knowledge carriers of Indigenous communities -- the team identified the kinds of losses that were associated with historical trauma, including loss of language, losses due to boarding schools, loss of traditional family and community ties, loss of land and broken treaty promises, and despair regarding the prevalence of substance use in AIAN communities. These findings were used to develop two scales, which have come to be widely used in studies of historical trauma in Indian Country: The Historical Loss Scale, which identifies types of losses and how frequently survey respondents think about them, and the Historical Loss Associated Symptoms Scale, which quantifies symptoms associated with historical losses.<sup>26</sup> The study found that there was a high prevalence of thoughts regarding losses associated with historical trauma within the original study population, and that thoughts about historical losses were associated with symptoms of emotional distress.<sup>26</sup> These findings have been supported and replicated in subsequent studies with different AIAN populations.<sup>33,119</sup>

Since the publication of Sotero's influential model, others have been developed which elaborate on specific levels and pathways of historical trauma transmission, including Evans-Campbell's multilevel framework which focuses on outcomes and details the different social levels at which historical trauma may cause impact,<sup>9</sup> the addition by Mohatt et al. of narrative as

a theoretical component,<sup>84</sup> Kirmayer et al.'s model which focuses on structural and individual reminders of past traumas,<sup>102</sup> and that of a biological pathway focused on epigenetic modification published by Conching and Thayer in 2019.<sup>37</sup>

In 2008 Teresa Evans-Campbell developed the Multilevel Framework of historical trauma for exploring impacts on individuals, families, and communities.<sup>9</sup> The framework was predicated on the assertion that, although historical trauma and the historical trauma response, shared many similarities with established trauma literature and PTSD, there were in fact important differences including the temporal scope of each. Specifically, PTSD was developed to understand the impacts of negative or traumatic experiences in the lifetime of an individual, while a key component of historical trauma is the impact of negative or traumatic experiences across generations. As such, PTSD does not include the potential for compounding of traumas across generations, and remains focused on the individual who directly experienced the initial trauma. Evans-Campbell noted that the impacts of historical trauma may extend beyond even the individual level in multiple generations, and instead have an impact within each generation on the individual, family, and community levels, and that each of these levels clearly impact one another.<sup>9</sup>

Shortly after, in 2014, Nathaniel Mohatt and colleagues argued that the concept of historical trauma incorporates repeated injustices and traumas which are linked through time by public narratives which make meaning of contemporary experiences through the context of experiences in the past.<sup>84</sup> This is important because experiences of trauma cannot be excised from the context in which they occur, and it therefore cannot be assumed that individual's responses to trauma are the same today as they were at any given period in history.<sup>84,120</sup>

Including narrative in models of historical trauma is important to understanding how historical traumas impacts health. Specifically:

Memories of past traumatic events are constructed within social and cultural contexts, which often determine what is remembered and how it is interpreted... trauma narratives represent an interplay between personal stories and culture and, therefore, are cultural constructions of trauma. Cultural narratives of trauma may be especially relevant to health, perhaps more so than the actual occurrence of an event, because they frame the psychosocial, political-economic, and social-ecological context within which that event is experienced.<sup>84(p130)</sup>

Mohatt et al.'s historical trauma narrative model (Figure 3.2) illustrates how community narratives of historical traumas frame contemporary reminders of past events and help to develop collective memory and identity.<sup>84</sup> Therefore, an individual's engagement in community and with community narratives may dictate the degree to which they are impacted by historical traumas, either negatively through reminders of historical loss or positively through stories of strength and resilience.<sup>26,84</sup> The narrative model of historical trauma demonstrates that historical trauma narratives can be simultaneously a contributor to wounding and resilience.

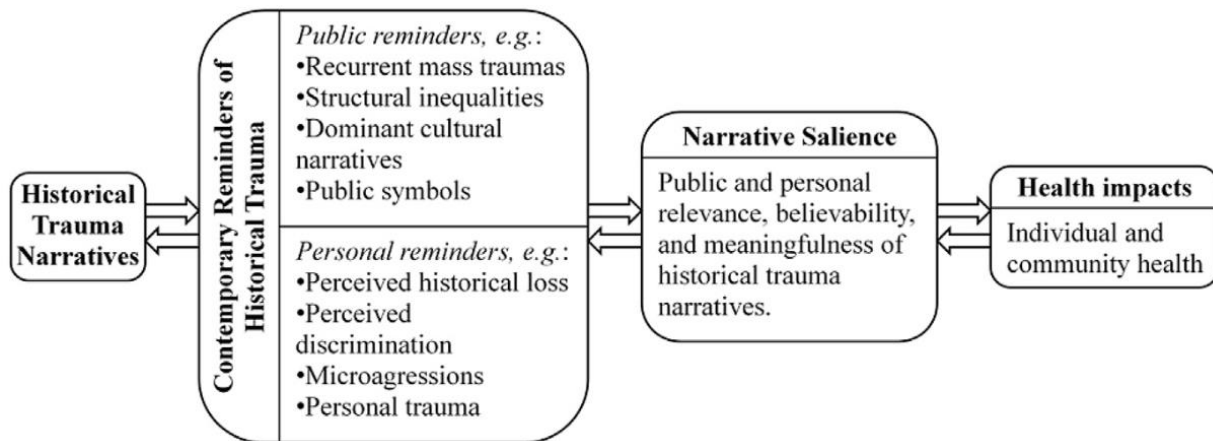


Figure 3.2: Mohatt et al.'s Narrative Model of how Historical Trauma Impacts Health.<sup>84</sup>

In 2014, as part of a special issue of *Transcultural Psychiatry* focused on historical trauma, Lawrence Kirmayer, Joseph Gone, and Joshua Moses debuted a model demonstrating hypothetical pathways for the transmission of trauma and loss across generations and at multiple



levels (Figure 3.3).<sup>102</sup> Building off of Evans-Campbell's 2008 Multilevel Framework and incorporating pathways of intergenerational transmission,<sup>9</sup> Kirmayer et al. demonstrate how the historical trauma response might be transmitted across second and subsequent generations interpersonally through a change in parenting, familially through loss or exposure to stressors which cause rifts in social structure, at the community level through the disturbance of social networks and support which affect health, and for Nations through cultural disruption and systemic interruption of family and community.<sup>102</sup> The model further elaborates on the different social and biological mechanisms through which health disparities in the present generation are hypothesized to stem from historical and ongoing oppression. The authors stress that it is imperative to look at social impact when considering the effect of historical trauma in the present as causes and outcomes at each level are interrelated and "privileging one level of explanation will not only lead to an incomplete picture but may also impede understanding of the processes at other levels".<sup>102(p310)</sup>

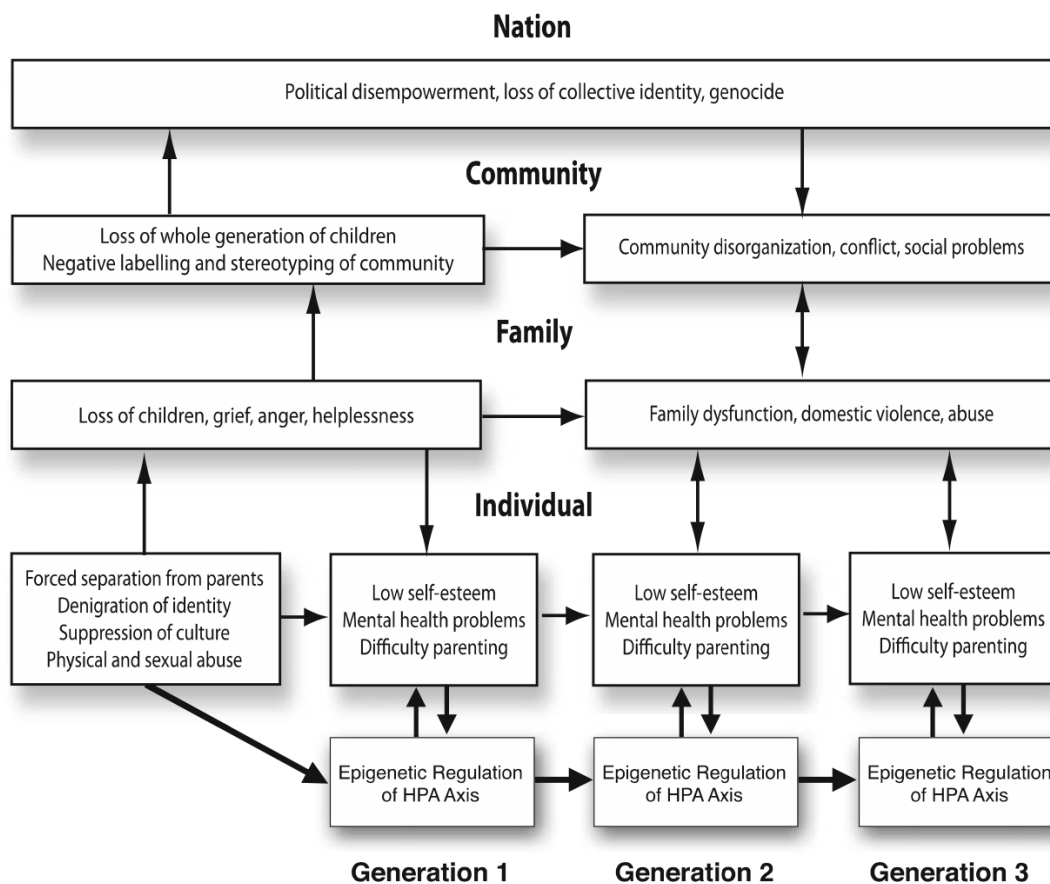


Figure 3.3: Kirmayer et al.’s model of the transgenerational transmission of historical trauma.<sup>102</sup>

Andie Conching and Zaneta Thayer’s 2019 model (Figure 3.4) dovetails with Kirmayer et al.<sup>102</sup> by demonstrating specifically how epigenetic modification resulting from personal (pathway 1) and historical (pathway 2) trauma may influence contemporary mental and physical health.<sup>37</sup> The novel model provided a potential means for the biological transmission of the historical trauma response as theorized in Sotero’s Conceptual Model of Historical Trauma,<sup>110</sup> and complemented models like Mohatt et al.’s Narrative Model of Historical Trauma,<sup>84</sup> which focused on social pathways. The first model, pathway 1, illustrates how direct exposure to trauma for an individual can result in changes to that person’s epigenome (DE), or changes “on the genes”.<sup>97,121</sup> Individuals with a history of intergenerational trauma have been found to be more susceptible to experiences of trauma in their own lives.<sup>117</sup> The second model, pathway 2,

demonstrates how epigenetic effects resulting from stress in a parent’s generation can affect the health and wellbeing of descendants (WIE or AIE). Pathway 2 succinctly depicts the interrelationship between social and epigenetic factors in potentially mediating the relationship between exposure to historical trauma events in a past generation and mental and physical health outcomes in later generations.<sup>37</sup>

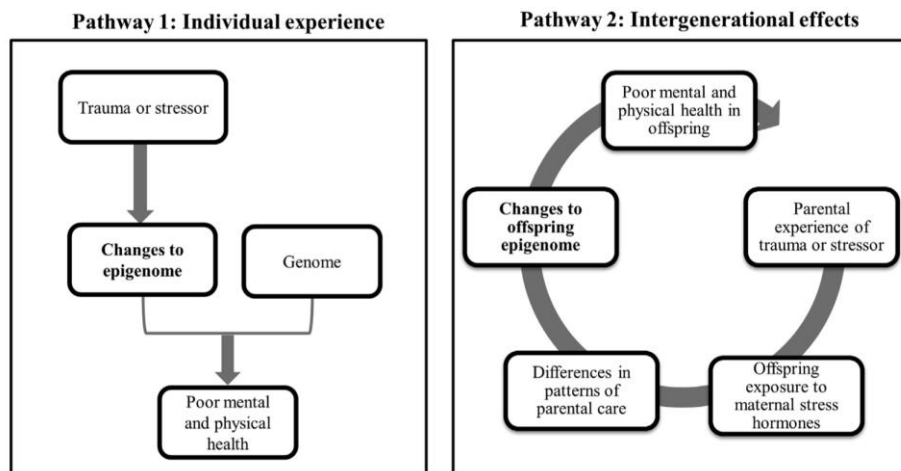


Figure 3.4: Conching and Thayer’s model of 2 cumulative pathways through which historical trauma and contemporary health may be influenced by epigenetic modifications.<sup>37</sup>

Collectively these models and tools demonstrate the complexity of linking traumatic events which occurred in past generations with the mental and physical health status of people in the present. They also provide avenues for understanding how social and biological factors may work together to contribute to health outcomes in later generations. However, the challenges of applying a single theory to the diversity of Native America have led to a number of concerns and considerations, detailed in the next section.

### 3.3 Challenges to Historical Trauma Theory

Some scholars have noted disparities and inconsistencies in the use of historical trauma as a construct, and have called for caution in its application. Specifically, it is noted that the term historical trauma is often used interchangeably with related, but slightly different terms, such as

soul wound, collective unresolved grief, collective trauma, intergenerational and transgenerational trauma, multigenerational trauma, and post-traumatic stress.<sup>22,122</sup> The term historical trauma is also broadly used, often without clear delineation, to encompass four different processes: 1) as contributing to the origin of disease, 2) as a specific form of trauma syndrome, 3) as a pathway or mechanism through which trauma is transmitted across generations, and 4) as a distal stressor which interacts with contemporary stressors.<sup>22,33,123</sup> These issues are compounded as historical trauma theory has been enthusiastically adopted across diverse health disciplines, with each incorporating their own unique models, theories, and methods in combination with historical trauma theory to understand and address health disparities in Indian Country.<sup>102,109</sup>

Challenges exist, as well, in the measurement of historical trauma. Given the great diversity of AIAN experiences over the five hundred years since European settlement began, there are significant challenges to applying the concept of historical traumas broadly, something Joseph Gone calls “traumatic complexity”.<sup>120</sup> For example, is it methodologically sound to compare the direct traumas of warfare and slaughter over a short period of time to the indirect but sustained loss of the buffalo, important both culturally and nutritionally for many Plains Tribes, and whose loss arguably had the same impact on population size as more direct aggressions? How does the trauma of language lost due to boarding school attendance compare to the trauma of forced removal of children from their families and communities? Instead of differentiating between different trauma events, much of the historical trauma literature conflates past histories, presenting Indigenous history in the Americas since contact as a uniform transhistorical and cultural phenomenon.<sup>102</sup> The argument is not that each of these experiences was not traumatic and has not had sustained impacts on descendants, but that it might not be

possible or advisable to conflate them into a single construct.<sup>120</sup> Additionally, how should what Gone refers to as “temporal regency”<sup>120</sup> be included in studies of historical trauma regarding the length of time between the original occurrence of a trauma event and present-day studies of health disparities?<sup>33</sup> There is also disagreement regarding the historical trauma response; symptoms commonly included in the historical trauma response represent a majority of common mental health symptoms,<sup>102</sup> and their measurement has often been theoretical and qualitative and unstandardized across studies, leading to challenges in interpretation and comparability.<sup>33</sup>

Finally, there is disagreement over the extent to which historical trauma can be considered to be a causative, rather than an explanatory model or cultural narrative.<sup>26,120,124,125</sup> Staunch proponents of historical trauma as a causative model perceive it as enabling the drawing of direct associations between traumatic experiences in past generations with health outcomes in the present day,<sup>16,73,100,115–117</sup> while those who perceive it as an explanatory model believe that the theory illuminates relationships between past oppressions and current dysfunction, but that in addition to historical traumas, causation may also be contributed to structural inequality and individual contemporary traumas.<sup>26,33,109,120,124</sup>

Importantly, it has been noted that not all descendants of trauma survivors display classic symptoms of the historical trauma response.<sup>120</sup> This raises two questions: 1) Must historical trauma responses be negative?<sup>123</sup> and 2) How important are the individual experiences of descendants in mediating the relationship between historical traumas experienced by past generations and contemporary health inequality?<sup>120</sup> In response to the first question, it has been suggested that a pathological response should not be a requirement for recognition of history’s impact on the present,<sup>123</sup> and that a deficits-based focus on the impacts of historical trauma is a continuation of colonialist narratives of Indigenous inferiority and erasure.<sup>125</sup> Employing a

broader definition of the historical trauma response to include resistance and resilience may be both more accurate and more likely to result in positive change. In regards to the second question, Gone<sup>120</sup> and Denham<sup>123</sup> echo elements of Mohatt et al.'s arguments<sup>84</sup> about the relevance of narrative, highlighting the importance of context in perceptions of trauma both for oneself, and for one's ancestors. They note that experiences we may perceive as highly traumatic today may not have been perceived in the same way during other periods in history and therefore may not stimulate the trauma transmission mechanisms theorized to lead to historical trauma responses in descendants. Similarly, while a familial or community history of historical trauma may compound contemporary experiences of trauma for some, that relationship may be contextually dependent on other factors integral to the life history of a descendant.<sup>120</sup> Collectively, these points call into question the often-assumed deterministic nature of historical trauma approaches.

### **3.4 How I'm Using It**

AIAN historical trauma theory provides a means of critically examining the role of history on health and wellbeing in the present. The theory has evolved since its conception due to the thoughtful investment of scholars from diverse disciplines and personal backgrounds, many of them motivated by individual, family, and community experiences with colonization. Due to the expanding and increasingly complicated nature of the construct, it is necessary to explicitly define how I am perceiving and using historical trauma theory in this work.

First, I strongly believe that biological and social mechanisms collectively contribute to the health status of individuals, and that these mechanisms interact continuously with structural forces which define the life chances and opportunities of people through generations, with impacts for individuals, families, and communities. This work, therefore, draws primarily from Evans-Campbell's multilevel framework of historical trauma for exploring impacts on

individuals, families, and communities,<sup>9</sup> and Kirmayer et al.'s model of the transgenerational transmission of historical trauma (Figure 3.3).<sup>102</sup> Further, in keeping with Mohatt et al.,<sup>84</sup> I believe that how we talk about history, including which stories are prioritized and contextualized by families and communities, impacts not only how we react to contemporary stressors but also how individuals identify and serves as motivation and a model for resilience. There is also very likely an epigenetic component to the role of historical trauma events on contemporary mental and physical health,<sup>37</sup> however, the present dataset limits this work to sociocultural pathways.

Due to the overwhelming constellation of factors which impact health and wellbeing across populations and time, I perceive historical trauma theory to be explanatory rather than causative. I believe that it provides a strong foundation for understanding how historical events shift the opportunities, health, and actions of people and illuminates ways through which those shifts might impact the opportunities, health, and actions of people in the future. Similarly, I acknowledge that it is impossible to know the reactions to traumas exhibited by peoples in the past, and am hesitant to place my own perceptions on their experiences.<sup>23,120</sup> Instead, this work looks at the well-recorded interruption of ways of life, including family and kinship connections and culture, that occurred due to the boarding schools. It is the enduring impact of those interruptions, rather than the direct transmission of mental or physical health status, that this work is engaged in exploring.

I agree with Denham that the historical trauma response should be inclusive of not only negative health outcomes, but also positive or neutral outcomes.<sup>123</sup> Placing requirements on other people's responses to their ancestral traumas truncates the complex and vibrant contemporary reality of living people and limits the potential for historical trauma research to contribute to evidence-based health promotion programs and interventions. I acknowledge Gone and other's

concerns regarding traumatic complexity and temporal recency.<sup>120</sup> This work focuses on a very specific historical trauma event, which impacted people and communities across Indian Country in accordance with sweeping federal policy regarding Indian education. While it must be acknowledged that each federal Indian boarding school was unique, as were the children who attended them and the communities from which they were taken, qualitative findings<sup>28,60,61,63,126</sup> as well as reports from the day<sup>52</sup> point to similarities of experience which allow comparison across schools and time. Of course, research conducted on the impacts of a single school at a specific period of time would provide another level of review.



## **CHAPTER 4: ADDITIONAL THEORIES AND STRESS-RESPONSE PATHWAYS**

Historical trauma is one of many theories that social scientists apply to understanding the ways that structural forces and experiences – in both the past and the present – impact the wellbeing of populations. While historical trauma theory focuses specifically on the impact of traumatic experiences on health and wellbeing across generations, other theories explore how both positive or negative impactful experiences alter health trajectories individually or between specific generations. At the individual level, life course theory (LCT) examines the role of impactful experiences at key points in an individual’s life and how such experiences may relate to health.<sup>127</sup> Intergenerationally, studies using the Developmental Origins of Health and Disease (DOHaD) have shown that stressors both in utero and during the first period of a child’s life has long-term implications for both mental and physical health throughout life.<sup>128</sup> At the biological level, all three of these theories include stress as a potential causative pathway between event and health outcome.

### **4.1 Life Course Theory**

Initially developed in Sociology, LCT provided a framework through which to relate social pathways to history and developmental trajectories.<sup>127</sup> LCT has five basic principles: 1) life-span development, which states that human development and aging are a continuous process, 2) agency, which posits that individuals make choices that structure their lives within the bounds of structural forces like history and social circumstance, 3) time and place, which says that each individual’s life course is shaped by the temporal and geographic periods in which they exist, 4) timing, which states that the consequences of important life transitions differ depending on when

they occur in a person's life, and 5) linked lives, which details the importance of socio-historical influences on shared relationships.<sup>129</sup> Integral to the theory and to this work is the concept of “transitions”, or key periods in life during which important social changes occur, such as leaving school, marrying, or having a child.<sup>130</sup> Within the theory, historical and structural forces are also believed to shape the environment into which children are born and raised, impacting their capacity to alter their own environment and that of their children as adults.<sup>127</sup> LCT has been adopted and applied widely within other disciplines. Instead of focusing primarily on the social environment, in public health, the theory has been adapted to relate both the social and physical early life environment with health in adulthood. In public health's conception of LCT, the three main processes through which early life environment may impact later life health are critical periods such as childhood and adolescence during which role and status transitions occur, cumulative disadvantage, and social mobility throughout life which may contribute to or ameliorate disadvantage.<sup>130</sup> In epidemiology, life course research has focused on the long-term biological, behavioral, and psychosocial processes that link physical or social exposures in childhood and adolescence to disease risk and health in adulthood.<sup>131</sup> Integral to life course epidemiology is the concept of accumulation, in which exposure to a sequence of associated risks increases the likelihood of poor health as the life course progresses.<sup>132</sup> While largely still focused on a single generation, studies using life course epidemiology have found associations between birthweight and cardiovascular disease later in life.<sup>133</sup> Others have found that adult disease may occur due to changes in DNA-methylation and RNA expression patterns stemming from early environmental exposures.<sup>134</sup> Intergenerationally, studies using LCT have demonstrated that paternal and maternal cardiovascular mortality is associated with low offspring birthweight.<sup>135</sup>

LCT complements historical trauma theory, and within the context of AIAN health has been used to inform public health strategies to address existing health disparities,<sup>136</sup> as a structuring mechanism for the construct of historical loss (discussed in detail above),<sup>26,119</sup> and in tandem with historical loss theory to understand how responses to the same experiences of trauma may differ between individuals.<sup>69</sup>

#### **4.2 Developmental Origins of Health and Disease**

The Developmental Origins of Health and Disease (DOHaD) looks at how conditions during key developmental periods, both in utero and during early childhood, impact the risk of developing non-communicable diseases later in life.<sup>137</sup> It is related to the concept of developmental plasticity and the predictive adaptive response (PAR), in which cues in early life influence phenotype to be adapted to the likely environmental conditions later in life.<sup>138,139</sup> When there is a mismatch between early and later-life environmental pressures, disease may occur.<sup>140</sup> Originally termed the “fetal origins hypothesis”<sup>141</sup> or “fetal programming”,<sup>94,142</sup> the focus grew from research following the Dutch Hunger Winter, during which it was noted that individuals who were in-utero during the famine (1944-1945) were significantly more likely to develop hypertension as adults,<sup>143</sup> and from the British Birth Cohort Study, which found an association between low birth weight and later death from ischemic heart disease.<sup>144</sup> DOHaD is primarily incorporated into studies of the impacts of prenatal and early life nutrition and stress.

Nutritionally, DOHaD studies often include the nutritional status of both mothers and offspring, and a number of successful longitudinal studies have demonstrated that poor nutritional status in early life has serious implications for both mental and physical health later in life. Exposure to nutritional deficiencies prenatally have been associated with elevated rates of schizophrenia<sup>145</sup> and lower cognition in adulthood,<sup>146-148</sup> as well as greater risk of developing type-II diabetes,<sup>149,150</sup> and cardiometabolic diseases.<sup>151</sup> In the early life, often colloquially

referred to as the “first 1000 days”,<sup>128(p953)</sup> children born small for gestational age appear to be at elevated risk for obesity in adulthood<sup>152–157</sup> and associated metabolic disorders.<sup>158</sup>

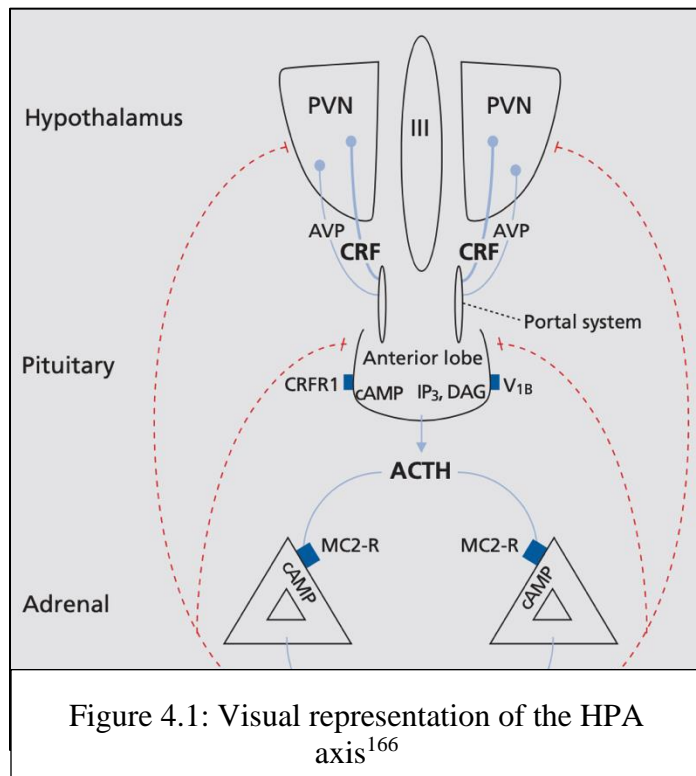
It is not uncommon for studies on the health impacts of stress and discrimination to use a DOHaD framework. Such studies have found an association between maternal discrimination, racism, and systemic oppression and low birthweight babies.<sup>92,159</sup> DOHaD research on the health impacts of discrimination are particularly salient for studies on existing health disparities among Indigenous populations and have reported shorter gestation and low birthweight among the children of Indigenous Māori women<sup>160</sup> and Indigenous Australian women.<sup>161</sup> Studies of First Nations youth in Canada have similarly found associations between inequity in utero and in early childhood and chronic disease later in life.<sup>162</sup>

Numerous pathways for these relationships have been explored, including suboptimal maternal HPA axis activity (both hyper and hypo),<sup>151,163,164</sup> various epigenetic mechanisms,<sup>165,166</sup> postnatal catch-up for children born at a low birth weight,<sup>167</sup> and more recently, the microbiome.<sup>168,169</sup> While the majority of DOHaD work has focused on biological mechanisms through which prenatal and early childhood environment might impact health in adulthood, there has been a shift recently to include socioeconomic impacts as well, including structural factors which constrain optimal access to resources for mothers and children.<sup>147,148</sup>

### **4.3 Stress-Response Pathways and Health**

While historical trauma theory, LCT, and DOHaD provide theoretical pathways through which trauma, stress, and disparity may impact mental and physical health, there is also a large body of research into the physiological mechanisms through which poor health may result from chronic stress. While it is likely that disparities in health for AIAN people results from combined sociopolitical, historical, and biological factors, the biological response to stress is the same for each.

Homeostasis is the equilibrium that all living organisms seek to achieve, and stress is any real or perceived threat to that homeostasis.<sup>170-172</sup> Organisms react to threats to homeostasis through the stress response, comprised of the endocrine, nervous, and immune systems.<sup>173,174</sup> Activation of these systems results in improved awareness and cognition and dulls the pain response, while increasing cardiovascular tone, respiratory rate, and metabolism, all of which allow the organism to react quickly and efficiently to the perceived threat.<sup>170,175</sup> These processes are collectively called 'allostasis'.<sup>176</sup> There are two endocrine systems which are particularly reactive to physiological stress: the hypothalamic-pituitary-adrenocortical axis (HPA) and the sympathetic-adrenal-medullar (SAM) axis. The HPA axis consists of the paraventricular nucleus of the hypothalamus, the pituitary gland, and the adrenal gland. In response to a stressor, the paraventricular nucleus makes and secretes corticotropin-releasing factor (CRF), a hypothalamic hormone which regulates the HPA axis, which is directed at the pituitary gland. When CRF binds to its receptor on the pituitary gland, adrenocorticotrophic hormone (ACTH) is released into the circulatory system, where it is picked up by the adrenal cortex, stimulating the creation and secretion of glucocorticoids, which regulate the body's physiologic response (see Figure 4.1).<sup>170</sup>



Simultaneous to HPA axis activation, stress triggers activation of the SAM axis, which results in the release of the catecholamines epinephrine and norepinephrine by the adrenal gland. Epinephrine and norepinephrine work on the autonomic nervous system to elevate breathing and heartrate.<sup>177</sup> Collectively, the HPA and SAM axis allow an organism to react to stressors.

While there is clear benefit in the

activation of both systems in the short term as a means of mitigating threat, long-term activation through chronic or repeated stressors may result in pathologies.<sup>175,178</sup> The wear and tear on the body and brain resulting from the chronic over-activation of physiological systems is called allostatic load, and is associated with the development of chronic disease later in life.<sup>179</sup> Biologically, chronic stress has been associated with an elevated risk of cardiovascular disease,<sup>180</sup> depression,<sup>181,182</sup> PTSD,<sup>183</sup> and some cancers.<sup>184,185</sup> Within AIAN populations, chronic stress has been associated with multiple poor mental and physical health outcomes.<sup>186,187</sup> Poor health resulting from stress may be compounded behaviorally by people initiating maladaptive strategies in an attempt to cope with stress, including smoking or alcohol use, diminished sleep or exercise, and poor diet, each of which is associated with poor health.<sup>171</sup>

Substantial research has been conducted on the impact of the childhood environment on allostatic load both as a youth and an adult. Higher levels of allostatic load have been measured

in youth from disadvantaged backgrounds, and among adults who as children experienced child abuse and neglect, even when controlling for age, sex, and race.<sup>188</sup> Per Gustaffson and colleagues<sup>189</sup> found that, using a life course model, childhood disadvantage resulted in increased allostatic load in adulthood, even after controlling for stressful events following adolescence. The cumulative effects of social and economic adversity experienced by minority populations have been theorized to impact allostatic load, a process referred to as “weathering”.<sup>190</sup> Indeed, Arline Geronimus, Margaret Hicken, Danya Keene, and John Bound<sup>191</sup> found that for both men and women, Black Americans were found to have higher allostatic load scores at all ages than were White Americans, and that poverty did not account for the disparity. In Alaska Natives, researchers have found that household crowding among Inuit populations is associated with an elevated allostatic load.<sup>192</sup> Further, using a large sample from a Northern Plains tribe, individuals who experienced early life trauma and subsequently developed PTSD had a higher allostatic load in middle age.<sup>12</sup>

#### **4.4 Interdisciplinary Integration of Theory**

In this work I use historical trauma theory because I believe that it is most inclusive of the specific colonial context in which AIAN people live and have lived for 500 years. However, as a Human Biologist and interdisciplinary researcher, my thinking is informed by other theories and avenues of inquiry. I incorporate LCT alongside historical trauma theory into the framing for Chapter 6 because collectively they offer a better way of understanding how the traumas of the past may interact with an individual’s life experiences to lay the groundwork for the health and wellbeing of the next generation. Furthermore, I acknowledge that there is likely overlap between DOHaD and historical trauma theory, especially in the examination of biological pathways for the intergenerational transmission of the trauma response resulting especially from maternal stress and nutritional deprivation stemming from relocation and boarding school

exposure, which is outside of the scope of this work. Similarly, I believe that the stress response system, including the concepts of allostatic load and weathering, play a role in the intergenerational patterns of poor health stemming from historical trauma events that we see in Indian Country.



## **CHAPTER 5: THE INDIVIDUAL LEVEL: PHYSICAL HEALTH AND A FAMILY HISTORY OF AMERICAN INDIAN BOARDING SCHOOL EXPOSURE**

### **5.1 Background**

Since the 15<sup>th</sup> century, the experience of peoples indigenous to what is currently called the United States has been one of colonization.<sup>7</sup> Early contact with European settlers often resulted in conflict and disease. With the establishment of the United States, the federal government explicitly sought the elimination of the land's Native people through genocide, relocation, and assimilation.<sup>7,8,45</sup> Policies and practices which perpetuate inequality have continued into the present, resulting in a disproportionate number of AIAN children in foster care and rampant poverty in many tribal communities.<sup>3,193</sup> Given its temporal scope, colonialism is an ongoing structure of domination<sup>8,16,125</sup> for AIAN peoples, resulting in cumulative wounding across generations<sup>194</sup> from both discrete and chronic traumas,<sup>22,25</sup> making it a significant determinant of health for American Indigenous populations.<sup>125,195</sup>

A key tool in the government's colonial toolkit was the Indian federal boarding school program, which began in the 1870s.<sup>196</sup> The program removed children from their families and in addition to instruction in menial, gendered labor, forced children to abandon their traditional language, religion, and clothing.<sup>60,126</sup> There are reports of significant physical and sexual abuse and neglect suffered by attendees of the schools,<sup>62,197,198</sup> and infectious disease was rampant.<sup>61,199</sup> The system was developed with the intention of assimilating and eradicating AIANs through forced cultural erasure and the disruption of family and community ties.<sup>6,200</sup> While boarding school attendance resulted in some unintended positive outcomes such as the development of

Native American advocacy organizations,<sup>201</sup> the overwhelming consensus is that the federal Indian boarding school era was devastating for Native nations, communities, families, and children.<sup>9,61</sup> At the program's peak in the early 1900s, up to 25,000 Native youth per year were enrolled in more than 350 boarding schools in 29 states.<sup>60,64,202,203</sup> The total number of AIAN children who ultimately attended boarding schools between the 1870s and 1930s is unknown,<sup>204</sup> however in 1887 it was reported that 95% of AI children were attending boarding schools.<sup>205</sup> The federal boarding school era largely ended by the 1930s; however, states, religious organizations, and later tribes have continued to run boarding schools for AIAN youth into the present.<sup>6,65</sup> Many contemporary boarding schools differ dramatically from earlier models by encouraging cultural engagement and supporting Indigenous students to thrive using both traditional and Western educational models.<sup>66,67</sup>

The role that boarding school attendance may play in impacting contemporary health outcomes, both personally and intergenerationally, has received increasing attention. This focus stems from a larger body of work examining the impact of historical trauma on intergenerational mental and physical health outcomes for AIAN people,<sup>16,20,21,23,26,73,109,119</sup> which have found associations between traumatic events in the past, such as massacres and relocation, and poor mental health outcomes like elevated rates of depression<sup>119,21,206</sup> and substance use<sup>207</sup> and poor physical health outcomes like diabetes.<sup>208</sup> Studies of the boarding school era have identified the institutions as interrupting traditional parenting techniques and familial roles,<sup>69</sup> leading to intergenerational abuse<sup>70</sup> and loss of Indigenous language,<sup>71</sup> as well as contributing to systemic poverty<sup>72</sup> and the overrepresentation of Indigenous people in the prison system.<sup>209</sup> Increased substance abuse and suicidality has been reported among attendees,<sup>25</sup> and increased anxiety disorder and PTSD symptoms among those raised by attendees.<sup>21</sup> The impacts of historical

trauma events, including boarding schools, have been theorized to compound across generations and with contemporary experiences of trauma.<sup>16</sup>

Much of the research on the health impacts of boarding schools has focused on the impact of attendance on mental health.<sup>21,206</sup> Very few have looked at the intergenerational impacts of attendance on physical health,<sup>19,31,32</sup> and none have looked at the impact of boarding school exposure on health past the parental generation. Given the temporal scope of the boarding school era and the different pathways through which the historical trauma response may be transmitted (socially and biologically), there is precedent for further understanding how the impact of boarding school exposure on health may compound across generations and the role that exposure at specific generation points may play in contemporary AIAN health. This study builds on and expands earlier work by examining associations between boarding school attendance and physical health outcomes, both individually and intergenerationally. Using data from the Honor Study, a multi-sited survey of urban AIAN adults (n=447), we ask 1) How does a personal history of boarding school attendance impact self-reported and measured physical health? 2) How does a family history of boarding school attendance impact self-reported and measured physical health? And 3) What is the impact of multiple generations of family boarding school attendance on self-reported and measured physical health?

## **5.2 Methods**

The current study is a secondary analysis of data collected as part of a comprehensive, multi-site, cross-sectional health survey of AIAN two-spirit people from seven urban centers (Seattle, San Francisco/Oakland, Los Angeles, Oklahoma City, Minneapolis/St. Paul, and New York City) in the U.S. between October 2005 and November 2006. Two-spirit is a self-descriptor for lesbian, gay, and bisexual AIAN people which recognizes sexuality within the context of culture, and its interrelation with identity, gender, community, and spirituality.<sup>2</sup> Details on the

survey design process and participant recruitment have been previously published elsewhere.<sup>21,210</sup> The original study was approved by the ethics board of the University of Washington and all participants provided written consent. This analysis was conducted using de-identified data and did not require participant re-consent or secondary ethics board approval.

### **5.2.1 Participants**

Eligible participants 1) self-identified as AIAN or First Nations, demonstrated through either tribal enrollment or  $\geq 25\%$  blood quantum, 2) self-identified as gay, lesbian, bisexual, transgender, or two-spirit or had engaged in same-sex sexual behavior in the past 12 months, 3) 18 years or older, 4) English speaking, 5) associated with one of the seven urban sites included in the study. Potential participants were identified through a combination of targeted, partial network, and response-driven sampling techniques in order to minimize selection bias and through invitations to participate from newsletters, brochures, posters, and word-of-mouth. A response rate of 80.1% was achieved. Participants were compensated \$65 for completing the computer-assisted self-interview, which typically lasted between 3 and 4 hours. After four interviews were excluded for ineligibility, a total of 447 participants were included in the study.

### **5.2.2 Measures**

Boarding school exposure was determined through response to the question: “Removed from family and placed into boarding or residential school: self (yes/no), parents (yes/no), grandparents (yes/no), great-grandparents (yes/no), great-great grandparents (yes/no).” A family history of boarding school exposure was identified through a “yes” response to the parent, grandparent, or great-grandparent categories in the same question. Any “yes” response beyond that to individual exposure (self) was considered a family exposure.

Three additional questions provided further context for boarding school exposure and experience while at the schools. The first, “Did any of the people who raised you go to boarding

schools?” enabled analysis of an alternative means of intergenerational exposure and is referred to throughout this text as “caregiver” exposure. The second, “Overall, how would you rate your experience at boarding school?” and the third, “Did your parents or legal guardian send you to boarding school willingly or against your will?” provide more context into the contemporary boarding school experience of study participants. It should be noted that the survey data does not allow us to identify the relationship to the study participant of the person who raised them (ex. parent, grandparent, other non-biological relative), thus, there is likely overlap between affirmative responses to this question and questions relating to boarding school attendance of parents and grandparents.

Physical health status was examined through participant responses to two questions. 1) Participants were prompted to self-report their general physical health with the question “In general, would you say your health is:” with the possible responses “excellent, very good, good, fair, poor”. 2) Measured physical health status was measured by HIV-MOS Physical Health Summary Score collected using the Medical Outcomes Study HIV Health Survey (MOS-HIV). This measure has been validated in diverse populations, and was recommended by its developer for use as a general health measure among non-HIV-positive populations. The measure is comprised of 35 questions regarding 11 aspects of health: general health perceptions, physical functioning, role functioning, pain, social functioning, mental health, energy, health distress, cognitive functioning, quality of life, and health transition and produces both physical and mental health summary scores that range from 0 to 100 with higher scores denoting poorer health, as well as other subscale scores.<sup>211</sup> This study exclusively used the physical health summary score, which was derived from 5 questions on general health perceptions, 2 questions on bodily pain, and 6 questions on physical functioning (Appendix A). In this study, participant

responses ranged from 18.64 to 66.52, with a mean of 49.21. Response range was recoded from a continuous variable into the quartiles excellent (18.00-30.25), good (30.26-42.5), fair (42.51-54.75), and poor (54.76-67) for analysis so as to be more easily comparable to self-reported physical health scores.

Basic demographic variables were analyzed to provide additional context and included age (recoded from a continuous variable into tertiles for strength in analysis [18-34.33] [34.34-50.67] [50.68-67]), education (<high school, high school, >high school), employment (re-coded as employed OR retired OR a student versus unemployed; those who were neither employed, retired, or a student hereby referred to as “unemployed”), and monthly personal income in U.S. dollars ( $\leq 500$ , 501-1500, 1501-2500,  $\geq 2501$ ).

### **5.2.3 Analysis**

Multinomial logistic regression was used to examine the probability of relationships between self, family, and generational boarding school exposures and the two physical health measures, providing a relative risk ratio (RRR) for the probability of outcome occurrence given exposure vs. non-exposure.

*Individual-Exposure:* Individual-exposure was analyzed by examining the probability of relationships between a personal history of boarding school attendance and self-reported health and measured physical health, controlling for demographic variables (age, education, income, and employment).

*Family-Exposure:* Family exposure to boarding schools was analyzed in three ways: 1) any family exposure, 2) magnitude of familial exposure (i.e., how many generations of exposure each participant had), and 3) specific combinations of generational exposure (i.e., self and parent vs. self and great grandparent, etc.).

Any Family Exposure: Participants with a “yes” response to any of the following questions “Removed from family and placed into boarding or residential school: Parent; Grandparent; Great-Grandparent; Great-Great Grandparent” were considered to have a family exposure to boarding schools. Controlling for demographics, the relationship between having a family exposure to boarding schools and participant self-rated health and measured physical health was examined using multinomial logistic regression.

Magnitude of Familial Exposure: The magnitude of familial exposure was determined using an additive generational score by which each generation a participant indicated attendance for (“yes” to parent, grandparent, great-grandparent, great-great grandparent) was given a point, with potential totals ranging from 0 (no exposure) to 5 (self and parent and grandparent and great-grandparent and great-great-grandparent). However, in analysis, all participants had some level of exposure and no participants reported more than three generations of exposure, so the true range extended from 1-3. The original survey did not collect data on the number of people within each generation who attended, so this measure is very likely an undercount of exposure. The relationship between magnitude of familial exposure to boarding schools and participant self-rated health and measured physical health was analyzed using multinomial logistic regression and controlled for demographic variables (age, education, income, and employment).

Specific Generational Exposure: Codes were generated in response to specific generational exposures. In total, twenty-eight unique combinations were examined ranging from no exposure to exposure at all five generations (self, parent, grandparent, great grandparent, and great-great grandparent). Details of combinations can be found in the supplementary materials in Appendix A, and all of the combinations which were applicable to participants are included in Table 1. Participants were coded at their greatest level of exposure in order to ensure that they

were not counted more than once. For example, those with self, parental, and grandparental exposure (three generations) were only counted in the category including self, parental and grandparental exposure, and were not also counted in the category including only self and parental exposure. The relationship between specific generational exposure to boarding schools, participant self-rated health, and measured physical health was examined using multinomial logistic regression and controlled for demographic variables (age, education, income, and employment).

Multinomial logistic regression was performed to examine the relationship between each level of exposure detailed above and the demographic variables of age, education, income, and employment. The same analytic strategy was employed to examine the relationship between boarding school attendance by a caregiver and the participant's self-reported experience at boarding school.



Table 5.1: Sample demographics of study participants, including each level of exposure.

Sample Demographics						
	N	gender identity N (%) (M/F/T)	mean age (SD)	> high school education N (%)	employed, in school, or retired N (%)	income <=\$500/month N (%)
total sample	444	227/183/34 (51/41/8)	39.8 (10.8)	234 (52.7)	241 (54.4)	173 (39.4)
individual exposure	56	28/21/7 (50/38/13)	45.0 (9.8)	25 (44.6)	23 (41.1)	26 (46.4)
any family exposure	409	210/172/27 (51/42/7)	39.3 (10.8)	225 (55.0)	226 (55.3)	156 (38.1)
caregiver exposure	175	86/75/14 (49/43/8)	39.7 (10.3)	95 (54.3)	102 (58.3)	62 (35.4)
magnitude of familial exposure						
1 generation	375	197/148/30 (53/39/8)	39.8 (10.9)	190 (50.7)	204 (54.4)	149 (40.2)
2 generations	61	26/31/4 (43/51/7)	38.6 (10.2)	37 (60.7)	34 (55.7)	22 (36.1)
3 generations	8	4/4/0 (50/50/0)	47.6 (6.7)	7 (87.5)	3 (37.5)	2 (25)
specific generational exposures						
self only	35	17/11/7 (49/31/20)	45.0 (9.7)	9 (25.7)	15 (42.9)	17 (48.6)
parent only	58	35/21/2 (60/36/3)	42.3 (10.3)	28 (48.3)	37 (63.8)	21 (36.2)
grandparent only	87	43/35/9 (49/40/10)	34.4 (9.9)	71 (81.6)	66 (75.9)	21 (24.7)
great-grandparent only	167	90/68/9 (54/41/5)	41.2 (10.8)	78 (46.7)	78 (46.7)	69 (41.3)
self & parent	12	7/5/0 (58/42/0)	43.4 (12.3)	8 (66.7)	5 (41.7)	7 (58.3)
self & grandparent	1	0/1/0 (0/100/0)	47 (.)	1 (100)	0 (0)	0 (0)
parent & grandparent	48	19/25/4 (40/52/8)	37.2 (9.4)	28 (58.3)	29 (60.4)	15 (31.3)
self, parent, & grandparent	8	4/4/0 (50/50/0)	47.6 (6.7)	7 (87.5)	3 (37.5)	2 (25.0)
other patterns of exposure	28	12/13/3 (43/46/11)	37.1 (10.2)	4 (14.3)	8 (28.6)	21 (75.0)

“Other patterns of exposure” includes participants who did not fall into the levels of exposure included.

## **5.3 Results**

### **5.3.1 Individual-Exposure**

After controlling for demographics (age, education, employment status, income), participants with a personal history of boarding school attendance were more likely to self-rate their health as poor rather than good compared to those who hadn't attended boarding school (RRR: 3.82, 95% CI: 1.56-9.38). Boarding school attendees were also, however, more likely to receive measured physical health summary score of excellent or good versus poor (RRR: 3.86 & 2.58; 95% CI: 1.52-9.79, 1.15-5.78) compared to those without personal exposure. (Table 5.2)

Demographically, people with a personal history of boarding school attendance were more likely to be older compared to younger (RRR: 3.31 & 5.75; 95% CI: 1.41-7.75, 2.27-14.57), to be unemployed (RRR: 1.78; 95% CI: 1.01-3.16), and to have an income below \$500/month (RRR: 2.17; 95% CI: 0.72-6.5).

### **5.3.2 Any Family Exposure**

Controlling for demographics, participants with a family history that includes exposure to boarding schools are less likely to self-report their health as poor versus good, compared to people without a family history of boarding school exposure (RRR: 0.180; 95% CI: 0.06-0.54). However, those with a family history of boarding school exposure were less likely to receive an excellent compared to a poor measured physical health summary score than those without a family history of boarding school exposure (RRR: 0.36; 95% CI: 0.12-1.09). (See Table 5.2)

Demographically, those with a family history of boarding school exposure tended to be younger (RRR: 6.04; 95% CI: 1.85-19.68) and more educated (RRR: 4.35; 95% CI: 1.76-10.75). There was no significant association with family history of boarding school attendance and income or employment.

### **5.3.3 Magnitude of Familial Exposure**

After controlling for demographics, people with two generations of boarding school exposure were more likely to have a self-rated health score of “very good” versus “good” compared to people with only one generation of exposure (RRR: 2.02; 95% CI: 0.98-4.15). They were also less likely to score a fair than a poor on the measured physical health summary score, denoting poorer health (RRR: 0.47; 95% CI: 0.22-1.01) compared to people with only one generation of exposure. There were no significant associations with income, education, employment, or age and magnitude of familial exposure. (See Table 5.2, Figure 5.4, and Figure 5.5)

### **5.3.4 Specific Generational Exposure**

**Self-Rated Health Score:** After controlling for demographics, people with boarding school exposure at only the parental level and only the grandparental level were less likely to self-rate their health as excellent than good (RRR: 0.19, & 0.18; 95% CI: 0.03–1.03, 0.04-0.87) and were also less likely to self-rate their health as poor than good (RRR: 0.04 & 0.11; 95% CI: 0.00-0.42, 0.02-0.49) compared to those with only personal exposure. Those with only great grandparental exposure were also less likely to self-rate their health as poor rather than good, as were those who had both parental and grandparental exposure (RRR: 0.21 & 0.17; 95% CI: 0.07-0.69, 0.03-2.41) compared to those with only individual-exposure. (Table 5.2, Figure 5.2, and Figure 5.3)

**Measured Physical Health Score:** After controlling for demographics, people with exposure to boarding schools at only the grandparental level and at both the parental and grandparental levels were less likely to have an excellent or fair physical health summary score vs. a poor score, compared to those with exclusively individual-exposure (RRR: 0.19 & 0.29; 95% CI: 0.04-0.87 & 0.87-1.00). (Table 5.2, Figure 5.2, and Figure 5.3)

### 5.3.5 Additional Analysis

Given the contradictory results for self-reported and measured physical health for at each level of exposure, I performed a Kendall’s Tau test of correlation between the two measures. Results indicate that the two measures have a strong negative association ( $\tau_b = -0.502$ ).

### 5.3.6 Additional Context on Caregiver and Study Participant Experience at Boarding School

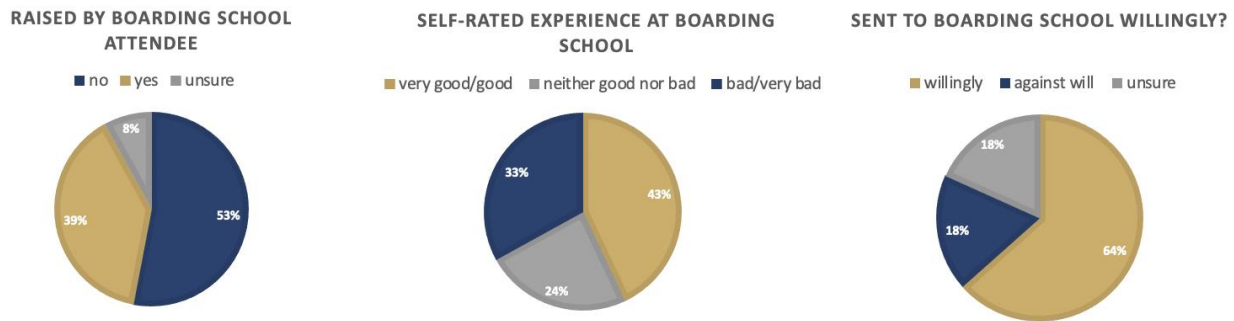


Figure 5.1: Results from additional analysis on caregiver boarding school exposure and study participant experience at boarding school.

Our analysis of caregiver and study participant boarding school attendance revealed that 39% (n=175) of study participants were raised by someone who attended boarding school, 53.6% (n=238) of participants didn’t go to boarding school themselves, and also were not raised by someone who did, while 6.9% (n=31) of participants attended themselves but were raised by someone who had not attended. By contrast, 33.8% (n=150) of participants did not attend boarding school themselves but were raised by someone who did, and 5.6% (n=25) of people both attended boarding school themselves and were also raised by someone who had attended boarding school. There was no significant association between being raised by someone who attended boarding school and self-reported health score, however, those who were raised by someone who attended boarding school were more likely to have worse measured physical health compared to people who were raised by someone who didn’t attend boarding school

(RRR: 0.627; 95% CI: 0.39-1.01), although this relationship did not reach statistical significance of 0.05 ( $p=0.053$ ).

Of study participants who reported attending boarding school themselves, 42.6% reported that their boarding school experience had been “very good” or “good”, compared to 32.9% who reported that it had been “bad” or “very bad”. Of those who attended boarding school, 63% reported that they had attended willingly, and there were no significant associations between experience at boarding school and willingness to attend. Of those who attended boarding school themselves, those who were sent against their will were more likely to self-report their health as poor compared to people who attended willingly (RRR: 5.71; 95% CI: 1.15-28.35), but they were also more likely to have better measured physical health compared to those who attended willingly (RRR: 9.2, 5.62; 95% CI: 1.97-42.97, 1.52-20.80).

Table 5.2: Only the generation combinations corresponding to participant responses are included in the table. The entirety of the combinations analyzed are included in supplement 1.

	Individual-Exposure		Any Family Exposure		Generational Exposure				Specific Generational Exposures													
	RRR	95% CI	RRR	95% CI	1 Gen	2 Gen		3 Gen		self only (1)	parent only (2)		grandparent only (3)		g. grandparent only (4)		self & parent (5)		parent & grandparent (8)		self & parent & g. grandparent (11)	
Self-Rated Health						RRR	95% CI	RRR	95% CI		RRR	95% CI	RRR	95% CI	RRR	95% CI	RRR	95% CI	RRR	95% CI	RRR	95% CI
Excellent	1.83	0.58 - 5.70	0.3	0.08 - 1.16		0.83	0.26 - 2.69	6.21E-06	0		0.19~	0.03 - 1.03	0.18*	0.04 - 0.87	0.32	0.08 - 1.33	0.29	0.23 - 3.69	0.25	0.04 - 1.63	1.28E-06	0
Very Good	0.52	0.19 - 1.40	1.25	0.35 - 4.43		2.02~	0.98 - 4.15	0.46	0.04 - 4.67		0.89	0.21 - 3.73	0.68	0.17 - 2.74	1.3	0.35 - 4.82	0.32	0.026 - 3.91	2.95	0.69 - 12.73	0.47	0.03 - 6.48
Good		reference		reference	reference		reference		reference	reference		reference		reference		reference		reference		reference		reference
Fair	1.22	0.58 - 2.60	0.63	0.23 - 1.70		1.22	0.56 - 2.64	0.9	0.14 - 5.82		0.77	0.20 - 3.39	0.46	0.14 - 1.45	0.61	0.22 - 1.73	0.41	0.072 - 2.37	0.84	0.23 - 3.08	0.56	0.07 - 4.49
Poor	3.82*	1.56 - 9.38	0.18*	0.06 - 0.54		1.12	0.34 - 3.68	1.28	0.11 - 15.10		0.04*	0.00 - 0.42	0.11*	0.02 - 0.49	0.21*	0.07 - 0.69	0.34	0.05 - 2.41	0.17~	0.03 - 2.41	0.27	0.02 - 3.64
Objective Health																						
Excellent	3.86*	1.52 - 9.79	0.36~	0.12 - 1.09		0.39	0.11 - 1.37	3.84	0.21 - 68.82		0.38	0.09 - 1.59	0.19*	0.04 - 0.87	0.53	0.17 - 1.71	1.49	0.15 - 14.38	1.12E-07	0	1.63	0.08 - 34.56
Good	2.58*	1.15 - 5.78	0.63	0.24 - 1.67		1.11	0.55 - 2.22	4.3	0.35 - 52.71		0.58	0.17 - 1.91	0.49	0.15 - 1.57	0.74	0.27 - 2.07	3.78	0.55 - 25.94	0.5	0.15 - 1.63	2.73	0.19 - 38.82
Fair	1.78	0.81 - 3.91	0.78	0.31 - 1.98	reference	0.47~	0.22 - 1.01	4.99	4.86 - 51.26	reference	0.76	0.25 - 2.27	0.63	0.22 - 1.83	0.93	0.35 - 2.47	1.69	0.22 - 12.76	0.29~	0.87 - 1.00	4.03	0.33 - 48.18
Poor		reference		reference			reference		reference			reference		reference		reference		reference		reference		reference

\* indicates significance of p=0.05, \*\* indicates significance of p=0.001, ~indicates significance of p=0.07

52

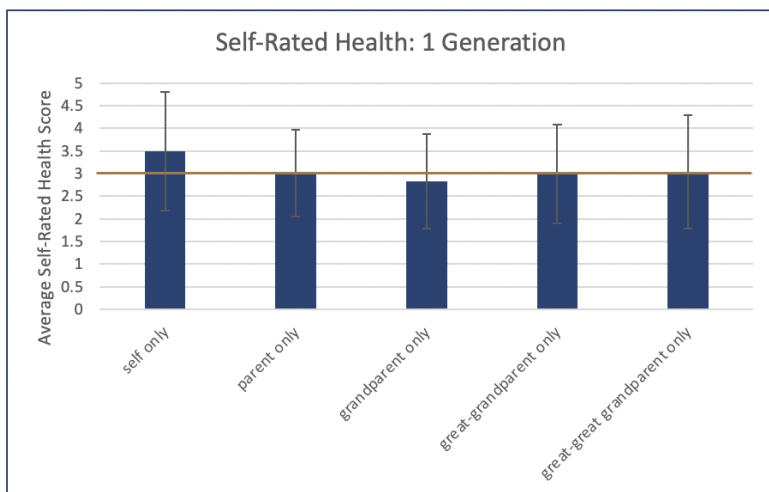


Figure 5.2 Self-rated and measured health with different types of single-generation of exposure to boarding schools.

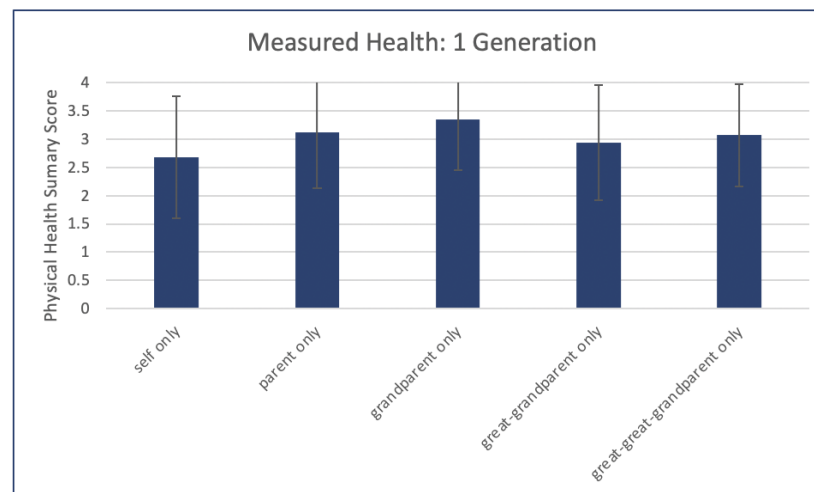


Figure 5.3 Measured health with different types of single-generation of exposure to boarding schools.

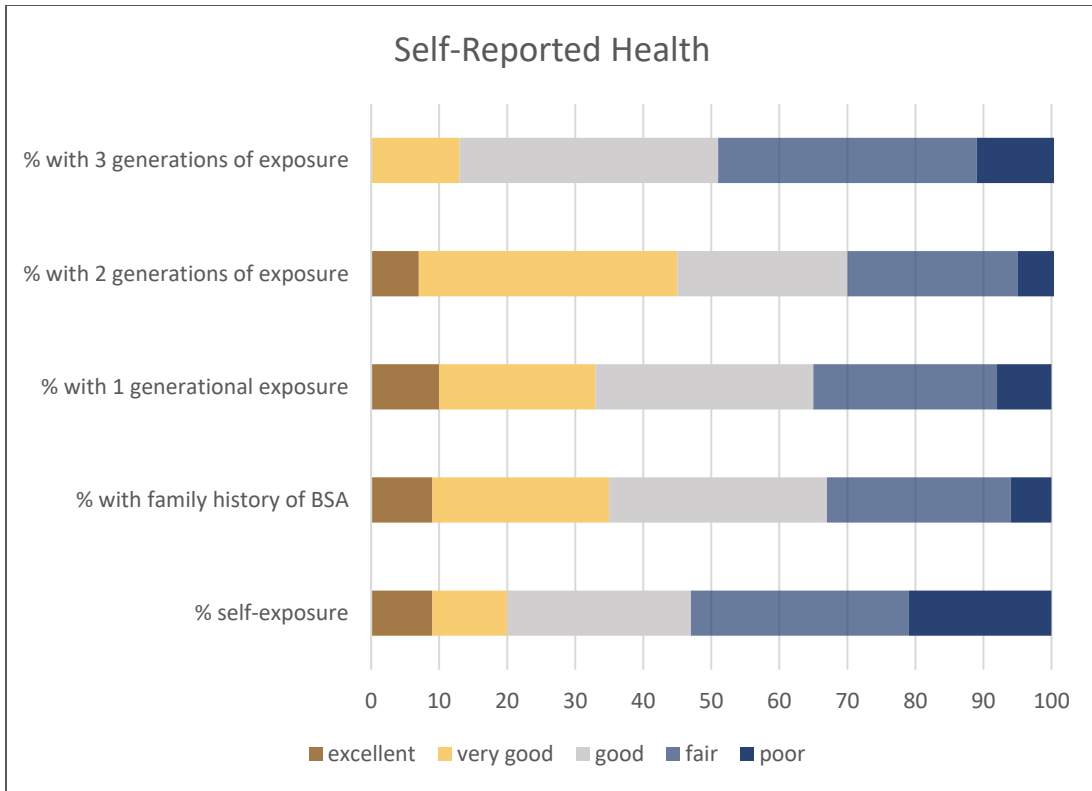


Figure 5.4: Self-reported health score percentages by magnitude of exposure.

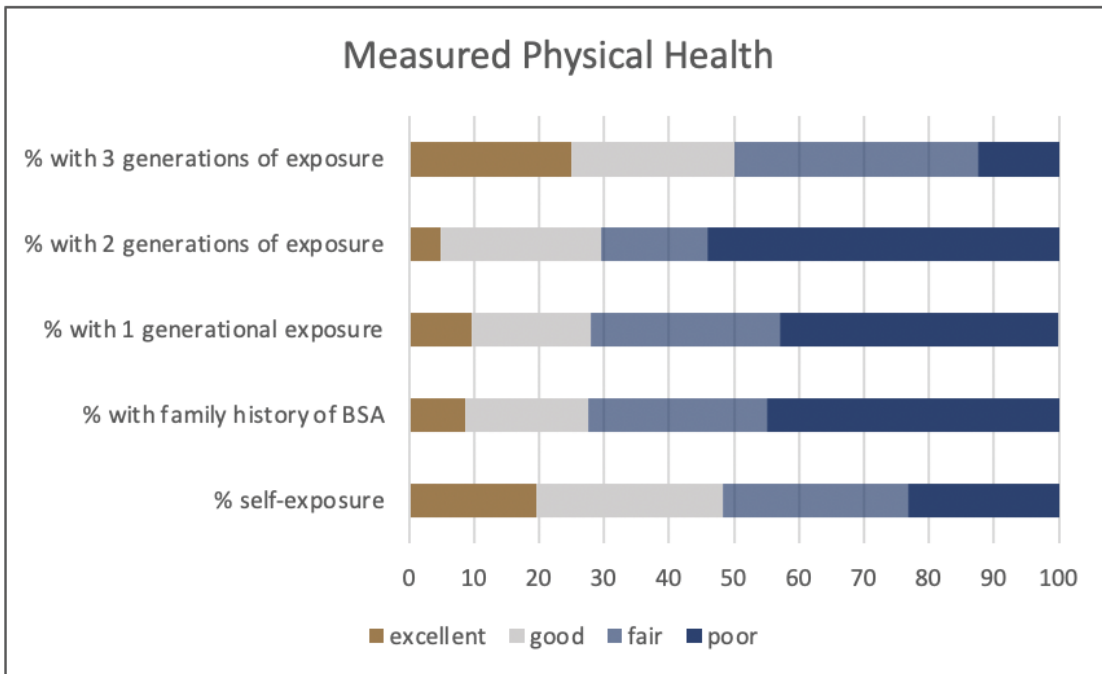


Figure 5.5: Measured health score percentages by magnitude of exposure.

## 5.4 Discussion

These findings indicate that boarding schools affected each study participant, either personally or intergenerationally. The type and level of exposure to boarding schools appears to differentially impact self-reported and measured physical health with the potential to inform public health interventions. Finally, analysis of self-reported and measured physical health by magnitude and specific relationship of exposure adds important context to our understanding of compounded intergenerational trauma within an urban AIAN population.

The degree to which this population has been impacted by boarding schools is surprising: every participant who responded to the questions relating to boarding schools (444/447) had some degree of exposure, either attending themselves or a family history that included boarding school attendance. Thus, those who didn't have family exposure had individual-exposure, and those who didn't have individual-exposure had family exposure, while some had both personal and family exposure. This finding has important implications when we consider the impact of boarding school attendance on AIAN individuals, families, and communities. There has been much recent focus on the Canadian Indian Residential School system and the extent of its impact on First Nations peoples. The Canadian government is currently in the process of implementing reparations for attendees of the schools, a payout which is expected to be the largest in Canadian history.<sup>212,213</sup> Rates of boarding school attendance in the U.S., however, have been hard to quantify due to improperly maintained records. These findings indicate that the impact may be much greater than is often acknowledged, with serious health, cultural, and political implications.

While everyone in this study had some degree of exposure to boarding schools, the findings indicate that there are key differences between individual exposure to boarding schools and family exposure to the schools. Participants who attended boarding school themselves were more likely to be aged 18-35 years, compared to those who didn't attend themselves (RRR: 0.30;



95% CI: 0.13-0.71). As data collection for this study occurred between 2005 and 2006, participants who reported attending boarding school themselves would likely have done so in the 1970s and 1980s, a time during which boarding schools for AIAN children in the U.S. were functionally quite different from the schools that their parents, grandparents, and great-grandparents attended. This assertion is supported by the finding that close to half of study participants who indicated that they attended AIAN boarding schools reported that their experience at the school was either good or very good.

While the level of exposure to boarding schools appears to play a role in impacting physical health, with two generations of exposure resulting in better self-rated health but poorer measured health, certain generations of family exposure appear to play a more important role than others. Both on their own and in combination with other generational exposures, grandparental boarding school attendance was associated with a greater likelihood of having a self-rated health score of good, rather than excellent or poor, while simultaneously being less objectively healthy. At all levels of exposure, we found that self-reported and measured physical health were contradictory, and additional analysis revealed a strong negative correlation between the two measures. The nature of the dataset does not allow us to identify why people in this study who had poor health self-reported their health as better than it was, or why those with good health would self-report it to be worse. This suggests an important avenue for future inquiry, and future studies should be conducted to verify this relationship and its cause.

Given the constraints of this dataset, we are unable to confidently point to potential reasons for the relationship between two generations of boarding school exposure and grandparental exposure with physical health. However, given the average age of about 40 years for study participants and assuming a generation-time of 22 years, it is reasonable to expect the

grandparents of study participants to have attended boarding schools in the 1920s and 1930s. During this period, the Meriam Report, an investigation commissioned by the Brookings Institution, reported widespread and significant abuse and neglect at Indian boarding schools; concluding “frankly and unequivocally [] the provisions for the care of the Indian children in boarding schools are grossly inadequate”<sup>52(p13)</sup> and “Routine institutionalism is almost the invariable characteristic of the Indian boarding school”.<sup>52(p14)</sup> A possible way in which a grandparent’s exposure to boarding schools could have an over-sized impact on the contemporary health of study participants could be through having a grandparent as a primary caregiver during childhood. AIAN children are more likely to be raised within “grandfamilies”, i.e., having a grandparent as the primary caregiver, than any other racial or ethnic group in the country,<sup>214</sup> including formally as adoptive or foster parents, and informally as non-legal caregivers.<sup>215</sup> Therefore, while a participant may be further removed generationally from a grandparent than a parent, if they were raised by a grandparent then their childhood environment will be influenced to a greater degree by that relationship. Given the well-documented role of the childhood environment on health in adulthood,<sup>12,13,191,216,217</sup> in grandfamilies, the boarding school experience of a grandparent may be more important in relation to the grandchild’s health as an adult than the boarding school experience of a parent. This theory may be supported in part by the finding that a history of boarding school attendance for the person who raised a study participant (a caregiver), without consideration of biological or generational tie to the participant, was associated with poorer measured physical health.

These findings align with previous research which has found associations between boarding school attendance at both the individual and intergenerational level and poorer physical health. While there are differences between the U.S. and Canadian schools for Indigenous youth,

the similarities are such that we have chosen to include results from studies conducted in both contexts. One study, conducted among Plains Tribes, found that boarding school attendees had a 44% greater incidence of chronic physical disease than children who didn't attend boarding school, and that the incidence of disease increased if the children's father had also been a boarding school attendee.<sup>19</sup> The same study reported worse self-rated physical health among boarding school attendees,<sup>32,218</sup> consistent with both our findings and that of other studies.<sup>219</sup> Another study of Canadian Residential Schools found an association between attendance and elevated allostatic load and adverse childhood event (ACE) scores in First Nations college students and that maternal attendance was further associated with elevated allostatic load in their children.<sup>31</sup> While earlier research highlights the impact of parental boarding school attendance on children's physical health, findings from this study suggest that the physical health implications of boarding school attendance may extend generationally further than parents, with attendance at specific generational points being of particular importance.

More research has been conducted on the mental, rather than the physical, health impacts of boarding and residential school attendance in the U.S. and Canada. Results stemming from this body of work has been mixed, with some studies finding an association between personal boarding school attendance and historical loss associated symptoms such as an elevated risk of depression and PTSD<sup>206</sup> while other studies, including one conducted using HONOR Study data, did not find the associations to be significant within their population.<sup>21</sup> Findings regarding the mental health impacts of parental or caregiver boarding or residential school attendance, however, appear to be more consistent; a 2011 Canadian study of intergenerational residential school attendance found that First Nations adults who had at least one parent who attended Residential Schools reported elevated symptoms of depression,<sup>36</sup> a finding supported in the U.S.

by research showing that people who were cared for as a child by someone who attended boarding school were more likely to have generalized anxiety disorder as an adult.<sup>21</sup>

Well-being is holistic, with well-documented feedback loops existing between mental and physical health.<sup>220,221</sup> Within the AIAN health fields, there is a large body of literature on the role of cultural loss, such as that reported to extend from boarding school attendance, acting as a stressor.<sup>18,103,222</sup> Elevated stress has been shown to contribute to the development of disease both directly, through pathways such as elevated allostatic load<sup>12,223–225</sup> and indirectly, through deleterious coping mechanisms such as smoking or substance use.<sup>226–229</sup> Indeed, thoughts about historical trauma events broadly,<sup>230,231</sup> and boarding school attendance specifically have been shown to increase stress,<sup>232</sup> and have been associated with an increase in smoking and alcohol and substance use at both the personal level<sup>21,210</sup> and the intergenerational levels.<sup>21,25</sup> One Canadian study found that descendants of Residential School survivors have more exposure to stressors and are more affected by them, impacting HPA activation and dysregulation,<sup>25</sup> with potential implications for the development of poor mental health outcomes like PTSD<sup>233</sup> and poor physical health outcomes such as cardiovascular disease.<sup>234</sup>

Findings from this study support earlier work which found associations between personal and intergenerational boarding school attendance and physical health outcomes.<sup>19,31,32</sup> Additionally, it identifies key factors which appear to influence both self-reported and measured physical health, such as the magnitude and specific generational patterns of boarding school exposure. These findings may contribute to health interventions aimed at interrupting the historical trauma response originating from exposure to Indian boarding or residential schools by supporting evidence-based approaches tailored to specific community, family, or individual experiences. Additional research into the relationship between mental and physical health

outcomes stemming from boarding school attendance for AIAN populations, including qualitative findings, would provide important additional context.

## **5.5 Limitations**

This study has a number of limitations. First, the population consists of AIAN individuals currently residing in urban settings, therefore, findings based on this population may not be generalizable to non-urban AIANs. However, currently 70% of AIAN in the U.S. live in urban areas,<sup>235</sup> so the applicability of this study may be high. Similarly, participants in this study were members of many different tribal nations. In addition to having unique cultural, historical, geographical, and sociopolitical backgrounds, each tribal community also has different experiences with boarding schools and different access to means of achieving health and well-being. Additionally, this study population consisted of people who identified during recruitment as two-spirit, and findings may not be generalizable to people who identify in a different way. Self-selection into the study may result in bias.

Another limitation of note for this study is that it relies on knowledge of past, potentially traumatic events, many of which occurred in previous generations. Previous studies of American Indian boarding school attendance have indicated that a commonly employed coping mechanism of attendees of the schools is silence, therefore, family histories of attendance are likely to be underreported in this dataset. Similarly, our measure of magnitude reports on the generations of exposure, but not the number of people in each generation who were impacted (ex. How many grandparents? How many great-grandparents? Etc.). Because of this it is likely that our findings are an underreport.

Finally, the construct of self-reported health can be challenging to analyze as it can mean different things to different people, depending on their unique context. Therefore, it may be an unreliable measure.

## 5.6 Conclusion

Findings from this study support earlier work which found that having a family history of federal Indian boarding school attendance has implications for the physical health of individuals in the present, and suggests that the type and magnitude of exposure to boarding schools appears to differentially impact both self-reported and measured physical health. Specifically, two-generations of exposure and attendance by at least one grandparent was associated with worse measured physical health. These findings may provide evidence for both biological and social pathways of transmission of the historical trauma response. Compounded generations of exposure or attendance by specific family members could have important epigenetic implications (biological), and attendance by a caregiver was associated with worse measured physical health, without consideration of the presence of a biological relationship between the respondent and their caregiver (social). Collectively, this work may be used to support health interventions aimed at addressing the enduring impacts of historical trauma events for AIAN populations by contributing to the existing knowledge on how historical trauma events, such as boarding school attendance, impacts physical health for future generations.

## **CHAPTER 6: THE FAMILY LEVEL: PARENTING STRUGGLE AS A SOCIAL PATHWAY FOR THE TRANSMISSION OF THE HISTORICAL TRAUMA RESPONSE: EARLY AND LATER-LIFE FACTORS**

### **6.1 Background**

U.S. federal policy regarding American Indians was historically one of assimilation to extinction.<sup>6,7,236</sup> A cornerstone of this effort was the federal Indian boarding schools, which sought to assimilate AIAN youth into the dominant settler culture.<sup>60,200,237</sup> Boarding school policies, which began in earnest in the 1870s and extended through the 1930s, removed children from their families and communities, often transporting them great distances.<sup>60,61</sup> Once at the schools, children were forbidden from speaking their language or practicing their culture.<sup>126,238</sup> They were trained in manual labor and experiences of extreme mental, physical, and sexual abuse were common.<sup>61,198,239</sup> Overcrowding was the norm, healthcare was limited, and rates of many infectious diseases were high.<sup>199,240</sup>

While each person's experience at the boarding schools was unique, for many, the experience constituted a historical trauma event.<sup>62,100</sup> The concept of historical trauma grew from research following the Holocaust and is defined as a massive, negative group experience with multifaceted intergenerational impacts.<sup>20,100,116,241</sup> The effects of historical traumas may span generations and can compound contemporary stressors and traumas.<sup>84</sup> In the early 1990s the concept of Historical Trauma was adapted by Maria Yellow Horse Brave Heart and colleagues and applied to the Indigenous experience of colonization in the United States and Canada. Within this context, the definition is elaborated on to include "the collective experience of violence perpetrated against Indigenous Peoples in the process of colonizing the Americas

resulting in an unresolved humanitarian crisis for Native communities”.<sup>101(p412)</sup> Scholars further suggest that “the effects of these historically traumatic events are transmitted intergenerationally as descendants continue to identify emotionally with ancestral suffering”.<sup>198(p6)</sup> An important distinction for the concept of historical trauma for Indigenous peoples is that it continues to manifest within a colonial context.<sup>125</sup> Hartmann & Gone contextualize historical trauma for Indigenous people as animated by 4 Cs: colonial injury, collective experience, cumulative effects, and the cross-generational impacts of such injuries.<sup>108</sup> There is no postcolonial era through which healing may occur.<sup>16,108</sup>

Historical trauma events have been associated with both mental and physical historical trauma responses, including morbidity and mortality from heart disease, hypertension, alcohol abuse, depression, and suicidal behavior.<sup>25,115</sup> Research examining the effects of the American Indian boarding schools, and the Residential schools in Canada, have found that attendance is associated with poor mental and physical health, including elevated risk of depression and PTSD,<sup>206</sup> higher levels of chronic disease,<sup>19</sup> elevated allostatic load, and early-life experiences of adverse childhood events.<sup>31</sup> These effects may act intergenerationally, with the children and descendants of boarding school survivors exhibiting a greater incidence of chronic disease,<sup>32</sup> elevated allostatic load,<sup>31</sup> elevated depressive symptoms, and increased risk of generalized anxiety disorder.<sup>21</sup>

Historical trauma events are theorized to lead to historical trauma responses through several pathways, including sociocultural and interpersonal behaviors and biological risk factors.<sup>110</sup> Determining causation of historical trauma responses from historical trauma events is challenging as there are many factors which may contribute to a person’s wellbeing, which themselves may be impacted by history, economics, politics, structural factors, and other



unrelated traumas.<sup>16,22,33,109,123,242</sup> While there is exciting and novel research around historical trauma involved in examining the role of epigenetic inheritance in the transmission of the historical trauma response,<sup>37,243</sup> it is likely that any biological factors work in tandem with social forces to result in the health outcomes that we see today.<sup>244</sup> Many researchers have theorized that one such social force is that of parenting, such that the childhood experiences of a parent may influence the environment in which that parent's children are raised.<sup>245–247</sup>

Research into the intergenerational transmission of trauma responses through parenting originated in the 1960s and focused on the enduring effects of the Holocaust. This body of work noted that children of Holocaust survivors suffered symptoms similar to those of their parents, despite lacking direct exposure to the traumatic events, a phenomenon dubbed the “survivor’s child complex”.<sup>248</sup> Survivors themselves were believed to suffer from “survivor syndrome”, demonstrating a constellation of symptoms including denial, isolation, depression, anxiety, guilt, and psychic numbing. It was theorized that these symptoms may impinge on parenting effectiveness,<sup>26</sup> resulting in similar symptoms in the children of survivors.<sup>80</sup> Theories on the mechanisms through which trauma may persist across generations for Holocaust survivors and their families include unresolved mourning and parental overprotection leading to disorganized and insecure attachment relationships,<sup>79,249,250</sup> the use of a “conspiracy of silence” as a coping mechanism by survivors resulting in disconnection from family history and imagined atrocities on the part of their children, and preoccupation with the pain experienced by their parents, resulting in feelings of overwhelming and persistent guilt and imminent danger, even when unwarranted, in second-generation survivors.<sup>79,83</sup>

Results from intergenerational Holocaust health research inspired studies into the intergenerational transmission of trauma for Indigenous people in the Americas, as AIAN

families have suffered family fracturing and parental loss resulting from settler-colonial policies repeatedly since the time of contact. In addition to loss due to disease, warfare against tribes and relocation policies also separated parents and children.<sup>251,252</sup> Within the 20<sup>th</sup> century, AIAN children were removed from their homes and placed in adoption or foster care significantly more often than children from other populations due to racist institutional bias against American Indian families, in which AIAN parents and communities were perceived as unfit.<sup>253</sup> Within this environment of constant assault, AIAN children were removed from their families – sometimes forcefully and sometimes by structural factors like generations of poverty and the earlier destruction of the supportive kinship network – and placed in boarding schools.

Qualitative findings suggest that the dissolution of family ties may contribute to difficulty in raising children for parents who attended boarding schools,<sup>246,251</sup> a finding in keeping with Conching & Thayer’s second pathway for intergenerational effects of parental experiences of trauma or stress, which demonstrates how offspring exposure to maternal stress hormones can result in differences in patterns of parental care.<sup>37</sup> The Adult Attachment Framework, developed by Marinus Van Ijzendoorn in 1992, has been used to explain this relationship from a behavioral perspective within an AIAN context,<sup>247</sup> with Christensen & Manson summarizing succinctly that:

The attachment status of a parent influences the attachment status of his or her child who later grows to be a parent himself or herself, whose behavior will in turn influence the attachment status of his or her own children, and so on. Given the historical reality of different types of parenting loss in American Indian communities, the adult attachment perspective suggests that American Indian parents today are affected to some degree by the legacy of many past generations of lost parenting.<sup>252(p1454)</sup>

Indeed, this idea raised concerns as far back as 1928, when Lewis Meriam submitted his report on the “The Problem of Indian Administration”, commissioned by the Brookings Institution.<sup>52</sup> In his findings and recommendations, Meriam states:

The Indian Services has not appreciated the fundamental importance of family life and community activities in the social and economic development of a people. The tendency has been rather toward weakening Indian family life and community activities than toward strengthening them. The continued policy of removing Indian children from the home and placing them for years in boarding school largely disintegrates the family and interferes with developing normal family life.<sup>52(p15)</sup>

Recent work provides further support for this concern. While interviewing AI elders about their boarding school and parenting experiences in the early 2000s, Chase recorded a participant as saying “we were never taught how to be parents, we just learned by our role models [at boarding school]”,<sup>251(p100)</sup> later noting that many participants believe that their lack of opportunity for connection as children influenced their own experiences building a family as an adult.<sup>251</sup> The interruption of traditional parenting techniques and the loss of cultural knowledge that occurs when children are raised outside of their communities is also thought to have a detrimental impact on AIAN children’s ability to parent effectively themselves as adults. Traditionally, AIAN parenting is based on established values and knowledge which are important for preserving the integrity of kinship networks and tribal society.<sup>254</sup> Within many Indigenous cultures, the nuclear family is a foreign concept, instead, each individual exists within an extensive network of family stretching back through the ancestors and forward seven generations. Knowledge of family and community history structures a child’s identity and positions them within the safety net of an extensive kinship network.<sup>255</sup> Thus, removal from family, community, and land as a child severs the means of transmitting knowledge and traditions around not only parenting, but ingrained social support systems integral to raising one’s own children. Therefore, the loss of traditional parenting techniques, including an understanding of an individual’s role within a family and society, has far reaching implications beyond individuals and families to communities as a whole.

Previous research suggests additional factors which may play a role in the relationship between a family history of boarding school attendance and one's success as a parent. Within the early life, it has been theorized that a family history of historical trauma may impact ACE events intergenerationally, and Kat Moon-Riley found that the children of Canadian Residential School attendees had higher ACE scores.<sup>31</sup> Similarly, AIAN children are over-represented in the adoption and foster-care systems,<sup>256</sup> and a study of Canadian Residential School survivors found that their children and grandchildren were more likely to have spent time in the child welfare system than the children of families without residential school exposure.<sup>257</sup> Qualitative findings have indicated that children who experience out-of-home-placement later struggle to parent their own children,<sup>258</sup> potentially resulting in a cycle of displacement.

Both as an adolescent and in adulthood there is significant evidence, conducted among AIANs as with other racial and ethnic minorities in the U.S., that perceived discrimination can act as a psychological stressor, and contribute to lower self-esteem, depression, and psychological distress.<sup>259-262</sup> Previous research has found an association between family histories of historical trauma and greater vulnerability to perceived discrimination as an ongoing traumatic stressor<sup>103,258,263</sup> and perceived discrimination has been found to negatively impact parenting.<sup>264,265</sup> The ways in which AIAN parents process or cope with perceived discrimination has been reported to mitigate the impacts of discriminatory experiences on their children.<sup>266</sup> Other research has found that the children of boarding school attendees are more vulnerable to stressors in their own lives, including microaggressions, and that historical and contemporary stressors can compound within an individual.<sup>22</sup> Experiences of racial discrimination, such as microaggressions, have been shown to become internalized and can result in feelings of low self-worth,<sup>261</sup> and historical traumas and oppression are found to be associated with lower collective

self-esteem,<sup>267,268</sup> with greater self-esteem found to be associated with greater resilience.<sup>269</sup> In accordance with the stress-buffering hypothesis, interpersonal social support assists in coping during periods of high stress and reduces the stress response,<sup>270</sup> particularly for stressors related to adversity.<sup>271,272</sup> Among AIAN, social support has been shown to mitigate the negative effects of childhood traumas<sup>273</sup> and improve resilience<sup>269</sup> and in one study of majority urban AIAN who had experienced historical loss, high levels of social support was associated with lower levels of psychological stress in response to the COVID-19 pandemic.<sup>274</sup> Greater levels of social support have also been associated with less anxious maternal parenting styles for non-White mothers<sup>275</sup> while there are conflicting findings regarding the role of social support in mitigating parenting stress, with some studies finding that increased social support reduces parenting stress,<sup>276</sup> while others find no relationships.<sup>277</sup>

Predicated on these earlier studies, this work uses a LCT to understand the ways that early and later life factors may mediate the relationship between historical factors and parenting within a population of urban AIAN adults.<sup>127,130-132</sup> We achieve this by asking: What are the early and later-life factors that influence the relationship between intergenerational AIAN boarding school attendance and respondent struggles with parenting? We used path analysis to evaluate the causal model (Figure 6.1) between hypothesized early and later life mediators of intergenerational exposure to boarding schools and parenting struggle. Independent religious, state, and tribal organizations have continued to operate schools for Indigenous youth in the U.S. since the 1940s, however these schools differ from those of earlier models and are not the focus of this work.

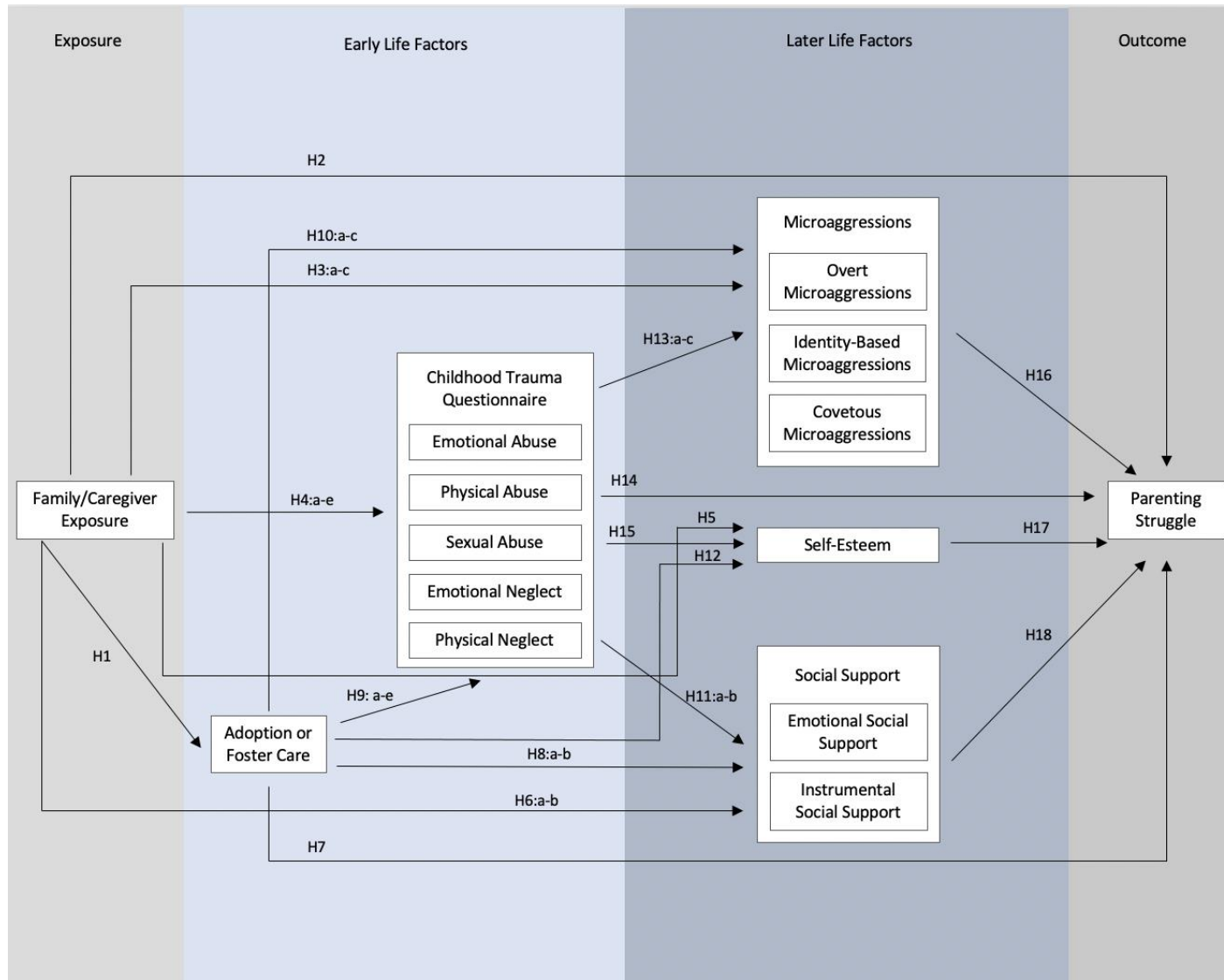


Figure 6.1: Initial Research Model. Four intergenerational exposures were analyzed. Within analysis each variable was examined in relation to each other variable in the model, working unidirectionally from exposure to outcome. For the ease of visualization, however, only key arrows are presented in the model above.

It is important to note that the model above presents only a few of the many potential pathways through which a family history of AIAN boarding school attendance may influence the parenting strategies or experiences of AIAN parents. In addition, individuals respond uniquely to stressors, and there is no single model that will be demonstrative of the pathway from historical boarding school exposure to parenting response for all people.

While complete methods are detailed below, two clarifications are necessary in order to appropriately comprehend the initial research model (Figure 6.1): 1) Within the model, adoption or foster care represents removal from one's home and placement in the adoption or foster care system. It does not reflect the reasons behind the action, experiences while in the system, or length of time a participant was exposed to the system. 2) Three subscales of microaggressions are presented in the model. Their presence is not indicative of whether or not study participants experienced the microaggressions within each category, but the degree to which participants were bothered by them when they were encountered.

The model includes 18 specific hypotheses which apply to the research study questions (Figure 6.1), each of which is included in detail in Appendix B.

## **6.2 Methods**

The current study is a secondary analysis of data collected as part of a comprehensive, multi-site, cross-sectional health survey of AIAN two-spirit people from seven urban centers (Seattle, San Francisco/Oakland, Los Angeles, Oklahoma City, Minneapolis/St. Paul, and New York City) in the United States between October 2005 and November 2006. Two-spirit is a self-descriptor for lesbian, gay, and bisexual AIAN people which recognizes sexuality within the context of culture, and its interrelation with identity, gender, community, and spirituality.<sup>2</sup> Details on the survey design process and participant recruitment have been previously published elsewhere.<sup>21,210</sup> The original study was approved by the ethics board of the University of

Washington and all participants provided written consent. This analysis was conducted using de-identified data and did not require participant re-consent or secondary ethics board approval.

### **6.2.1 Participants**

Eligible participants 1) self-identified as AIAN or First Nations, demonstrated through either tribal enrollment or  $\geq 25\%$  blood quantum, 2) self-identified as gay, lesbian, bisexual, transgender, or two-spirit or had engaged in same-sex sexual behavior in the past 12 months, 3) 18 years or older, 4) English speaking, 5) associated with one of the seven urban sites included in the study. Potential participants were identified through a combination of targeted, partial network, and response-driven sampling techniques in order to minimize selection bias and through invitations to participate from newsletters, brochures, posters, and word-of-mouth. A response rate of 80.1% was achieved. Participants were compensated \$65 for completing the computer-assisted self-interview, which typically lasted between 3 and 4 hours. After four interviews were excluded for ineligibility, a total of 447 participants were included in the study.

### **6.2.2 Measures**

*Exposure:* Family or caregiver boarding school exposure was determined through response to the question: “Removed from family and placed into boarding or residential school: self (yes/no), parents (yes/no), grandparents (yes/no), great-grandparents (yes/no), great-great grandparents (yes/no).” Four different family histories of boarding school exposure were included in analysis: any family exposure to boarding schools, exposure most recently for one or more parents, exposure most recently for one or more grandparents, and exposure for the person who raised the study participant. A family history of boarding school exposure was identified through a “yes” response to the parent, grandparent, or great-grandparent categories in the same question. Exposure most recently for a parent was determined by a “yes” response to the parent question with a “no” to the self-exposure question, similarly for a grandparent with a “yes”



response to the grandparent question but a “no” to the self and parent questions. A “yes” response to the question “Did any of the people who raised you go to boarding schools?” was used to identify those raised by boarding school attendees, with “yes” being considered exposure and “no” or “unsure” coded as non-exposure. This relationship is referred to throughout the study as the ‘caregiver’ relationship. It should be noted that this question did not identify the relationship of the caregiver to the study participant, and could therefore have been a parent, grandparent, other biological relation, or a non-biological relation.

*Early-Life Factors:* The early-life variable of experiences with the adoption or foster care systems were determined through a “yes” response to either the question “Were you legally adopted” or “Were you in foster care?”. These two variables were coded together such that a yes response to either became a positive response to the collective score.

Experiences of trauma in childhood were collected using the 2003 short-form version of the Childhood Trauma Questionnaire (CTQ).<sup>278</sup> See Appendix B for the complete scale. The 28-question scale can be subdivided and coded into five subscales with cut-off scores indicating the presence of moderate to severe abuse at each level: emotional abuse ( $\geq 13$ ), physical abuse ( $\geq 10$ ), sexual abuse ( $\geq 8$ ), emotional neglect ( $\geq 15$ ), and physical neglect ( $\geq 10$ ), coded dichotomously as yes/no. It is also possible to calculate a total CTQ score for each participant, however, we posit that each category of abuse or neglect may impact our model differently, and therefore chose to include each CTQ category as a stand-alone variable in our model. The complete model (Figure 6.1) includes covariance terms between the CTQ sub-categories of emotional abuse and emotional neglect, and between physical abuse and physical neglect.

*Later-Life Factors:* Data on microaggressions was collected using a 33-question microaggression scale (Appendix B). The scale was further subdivided into three subscales

according to type of microaggression: overt microaggressions, microaggressions relating to AIAN identity, and what we chose to call “covetous microaggressions” related to envy of AIAN identity or culture by non-AIAN individuals. Higher scores within each subscale indicate a greater degree of discomfort when experiencing each type of microaggression. Each subscale was evaluated for goodness of fit for the study population and was coded into a continuous variable. The complete model (Figure 6.1) includes covariance terms between each of the three microaggression subscales.

Self-esteem was measured using the 10-question Rosenberg Self-Esteem Scale in which higher scores indicate greater self-esteem (Appendix B).<sup>279</sup> Using GOF tests, we established a subscale of the measure which included 8 of the 10 original questions which was a better fit for the study population. Scores for each participant were coded continuously.

Social support was measured using the 19-question MOS Social Support Scale.<sup>280</sup> The scale was subdivided into the subcategories of emotional social support and physical social support, referred to as instrumental social support in keeping with previous literature (Appendix B),<sup>281</sup> and each subcategory was evaluated for GOF within the study population and coded continuously. Covariance terms were included in the complete model (Figure 6.1) between the two sub-categories of social support.

*Outcome:* A parenting struggle score unique to this study was calculated for each participant. The measure was derived from questions in the original survey relating to parenting losses due to colonial stress and was evaluated for GOF within the study population. The measure includes 4 questions regarding the study participant’s feelings about their parenting abilities (Appendix B). The resulting scale was coded continuously, with higher scores denoting

greater parental struggle. The variable was found to have high goodness of fit in the study population (see GOF measures in Table 6.1).

Missing values were dropped from analysis; each variable had between 0 and 4 missing values.

Table 6.1: Goodness-of-fit measures for study-specific endogenous variables.

	RMSEA	CFI	TLI
instrumental social support	0.223	0.902	0.853
emotional social support	0.195	0.921	0.889
overt microaggressions	0.147	0.835	0.805
identity-based microaggressions	0.143	0.982	0.947
covetous microaggressions	0.000	1.000	1.000
self-esteem	0.126	0.881	0.834
parenting struggle	0.065	0.991	0.972

### 6.2.3 Analysis

I used recursive path analysis, a form of structural equation model (SEM) to evaluate my causal model showing the relationship between different family or caregiver exposures to AIAN boarding school and parenting struggle, mediated by both early and later-life factors. The model was first run as a whole, then different components of the model were run individually in order to understand which variables improved fit and which decreased it. Ultimately 48 models were tested for GOF. SEM modeling is a theory-based large-sample technique, therefore studies utilizing a smaller sample size, such as this one, may be expected to achieve lower goodness of fit or insignificant coefficients, regardless of the quality of the model.<sup>282,283</sup>

### 6.3 Results

Table 6.2: Sample demographics of all participants, those who had boarding school exposure most recently for one or more parents, exposure most recently for one or more grandparents, or exposure most recently for a caregiver.

<b>Boarding School Exposure</b>	<b>N (%)</b>	<b>Gender identity N (%) (M/F/T)</b>	<b>Mean age (SD)</b>	<b>&gt;high school education N (%)</b>	<b>Employed, in school, or retired N (%)</b>	<b>Income &lt;=\$500/month N (%)</b>
Total	444	227/183/34 (51/41/8)	39.8 (10.8)	234 (53)	241 (54)	173 (39)
Parent only	106 (24)	54/46/6 (51/43/6)	40.0 (10.2)	56 (53)	66 (62)	36 (34)
Grandparent only	87 (20)	43/35/9 (49/40/10)	34.6 (9.9)	71 (82)	66 (76)	21 (24)
Caregiver	176 (39)	86/76/14 (49/43/8)	39.7 (10.3)	96 (55)	102 (58)	63 (36)

All participants are included in the “total”, while subcategories (parent only etc.) are inclusive of all participants included in analysis (those without missing data).

Details of the combinations of early and later-life variables mediating the relationship between the four exogenous exposure variables and the outcome variable of parental struggle are included in Table 6.3 below. In total 48 models including different combinations of mediating variables were examined for goodness of fit.

Table 6.3: Details of the 48 total models run and the combinations of mediating variables included in each.

Model #	Early-Life Variables		Later-Life Variables		
	Adoption/Foster	5 CTQ Scales	3 Microaggression Scales	Physical and Emotional Social Support	Self-Esteem
1-4	X	X	X	X	X
5-8*				X	
9-12*			X		
13-16*					X
17-20*			X	X	X
21-24		X			
25-28*	X				
29-32*	X		X		
33-36**	X		X	X	X
37-40*	X	X		X	
41-44**	X	X	X		
45-48**	X	X			X

\*indicates significant GOF achieved for at least one of the 4 intergenerational exposures examined. \*\* indicates significant GOF approached for at least one of the 4 intergenerational exposures examined.

Model fit results for each of the 48 total models run, inclusive of the four types of intergenerational exposure to AIAN boarding school, are shown in table 6.4. Of the 48 models, significant goodness of fit was achieved for 21 (models: 5 – 16, 19, 25-30, 32, 38), while 14 additional models (17-18, 20, 31, 34-42, 44, 46) approached significance. 13 models failed to demonstrate goodness of fit. Significant goodness of fit was determined using a number of measures, including  $\chi^2 \geq 0.05$ , RMSEA of  $\leq 0.08$ ,<sup>284</sup> pclose values  $\geq 0.05$ , and CFI and TLI values near 1.00.<sup>285</sup> Results, inclusive of covariates, for each of the 18 hypothesis is included in Appendix B.

Table 6.4: Model fit results for all models tested.

<b>Model #</b>	<b>chi2</b>	<b>RMSEA</b>	<b>pclose</b>	<b>AIC</b>	<b>BIC</b>	<b>CFI</b>	<b>TLI</b>
<b>1</b>	0.000	0.143	0.000	4579.872	4797.675	0.881	0.651
<b>2</b>	0.000	0.138	0.000	4644.423	4862.226	0.888	0.673
<b>3</b>	0.000	0.112	0.000	4616.530	4834.333	0.880	0.646
<b>4</b>	0.000	0.140	0.000	4668.139	4885.942	0.886	0.666
<b>5</b>	*0.528	0.000	0.573	1657.599	1685.458	1.000	1.022
<b>6</b>	*0.526	0.000	0.572	1726.749	1754.607	1.000	1.022
<b>7</b>	*0.513	0.000	0.056	1702.886	1730.745	1.000	1.021
<b>8</b>	*0.372	0.000	0.425	1748.738	1776.596	1.000	1.007
<b>9</b>	*0.821	0.000	0.840	2167.418	2210.472	1.000	1.040
<b>10</b>	*0.675	0.000	0.708	2233.539	2276.593	1.000	1.035
<b>11</b>	*0.808	0.000	0.829	2208.332	2251.386	1.000	1.039
<b>12</b>	*0.282	0.041	0.335	2255.192	2289.246	0.999	0.993
<b>13</b>	*0.73	0.000	0.758	1072.437	1087.437	1.000	1.636
<b>14</b>	*0.421	0.000	0.472	1143.574	1158.770	1.000	5.815
<b>15</b>	*0.659	0.000	0.694	1123.314	1138.510	.	-0.712
<b>16</b>	*0.375	0.000	0.428	1167.203	1182.399	.	0.640
<b>17</b>	**0.044	0.093	0.131	3841.868	3917.846	0.977	0.947
<b>18</b>	**0.032	0.098	0.103	3914.922	3990.900	0.974	0.940
<b>19</b>	*0.07	0.084	0.183	3888.470	3964.448	0.981	0.956
<b>20</b>	**0.023	0.102	0.082	3939.206	4015.184	0.972	0.934
<b>21</b>	0.000	0.246	0.000	1101.300	1162.082	0.293	-0.651
<b>22</b>	0.000	0.248	0.000	1171.883	1232.665	0.248	-0.754
<b>23</b>	0.000	0.253	0.000	1143.174	1203.956	0.311	-0.607
<b>24</b>	0.000	0.255	0.000	1194.195	1254.977	0.229	-0.800
<b>25</b>	*0.477	0.000	0.525	664.336	679.532	1.000	2.093
<b>26</b>	*0.765	0.000	0.790	725.513	740.709	1.000	1.424
<b>27</b>	*0.407	0.000	0.459	707.456	722.652	1.000	1.256
<b>28</b>	*0.245	0.062	0.297	751.664	766.859	0.884	0.651
<b>29</b>	*0.306	0.047	0.434	2306.795	2357.447	0.996	0.987
<b>30</b>	*0.303	0.047	0.431	2367.972	2418.624	0.996	0.987
<b>31</b>	**0.043	0.118	0.095	2349.915	2400.567	0.973	0.920
<b>32</b>	*0.193	0.072	0.306	2394.122	2444.774	0.990	0.970
<b>33</b>	0.009	0.101	0.051	3988.388	4071.964	0.958	0.920
<b>34</b>	**0.046	0.081	0.165	4049.564	4133.14	0.972	0.948
<b>35</b>	**0.014	0.095	0.073	4031.508	4115.084	0.962	0.928
<b>36</b>	**0.048	0.08	0.169	4075.715	4159.291	0.972	0.948
<b>37</b>	**0.028	0.084	0.128	23334.346	2438.183	0.941	0.879

<b>38</b>	*0.080	0.07	0.253	2395.523	2499.359	0.959	0.917
<b>39</b>	**0.003	0.105	0.028	2377.466	2481.303	0.911	0.819
<b>40</b>	**0.023	0.086	0.111	2421.673	2525.51	0.938	0.873
<b>41</b>	**0.027	0.083	0.129	2850.15	2979.312	0.951	0.888
<b>42</b>	**0.048	0.075	0.191	2911.326	3040.489	0.96	0.908
<b>43</b>	0.001	0.113	0.01	2893.27	3022.432	0.913	0.8
<b>44</b>	**0.020	0.086	0.107	2937.477	3066.639	0.948	0.881
<b>45</b>	0.006	0.102	0.042	1749.77	1830.813	0.760	0.568
<b>46</b>	**0.038	0.082	0.149	1810.947	1891.99	0.841	0.714
<b>47</b>	0.002	0.113	0.016	1792.89	1873.933	0.727	0.508
<b>48</b>	0.014	0.094	0.075	1837.097	1918.14	0.791	0.623

\* indicates significance achieved, \*\* indicates significance approached using the criteria  $\chi^2 \geq 0.05$ , RMSEA of  $\leq 0.08$ ,<sup>284</sup> pclose values  $\geq 0.05$ , and CFI and TLI values near 1.00.<sup>285</sup>

### 6.3.1 Total Model

Models 1-4 include all variables, both early (adoption/foster care, all 5 CTQ variables) and later-life (three microaggression variables, self-esteem, and two social support variables), hypothesized to mediate the relationship between the four exogenous exposure variables (any family history, parent attendance most recently, grandparent attendance most recently, and caregiver attendance). These findings indicate that the model as a whole has a poor fit, with the models for each exogenous variable showing  $\chi^2$  scores of 0.000, RMSEA greater than 1.0, and CFI and TLI scores below 0.8 each.

### 6.3.2 Early-Life Variables Alone and in Combination

Looking at individual components of the larger model, we see that models 21-24, in which the relationship between each of the four exogenous exposure variables and parenting struggle, the outcome variable, is mediate individually by each of the five CTQ scales (emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect), also have a poor fit. This finding indicates that it is unlikely that childhood traumas captured by the CTQ scale on

their own mediate the relationship between the four family exposures to AIAN boarding schools included in this study and the measure that we're calling parental struggle.

On its own as a mediator, the variable indicating experience in the adoption or foster care systems as a child was shown to significantly mediate the relationship between all four exposure variables and parental struggle (models 25-28) (Figure 6.6).

### **6.3.3 Later-Life Variables Alone**

Both emotional and instrumental social support appear achieved significant GOF when mediating the relationship between all four exposure variables and parental struggle (models 5-8) (Figure 6.2), as do the three microaggressions scales (models 9-12) (Figure 6.3), and self-esteem (models 13-16) (Figure 6.4). Goodness of fit approaches significance when all six later-life variables are simultaneously included as mediators between the exposure variables of any family history, parental, and caregiver exposure (models 17, 18 and 20 respectively), and reaches significance for grandparental exposure (model 19) (Figure 6.5).

### **6.3.4 Early-Life and Later-Life Variables Combined**

When the five CTQ scales are included in combination with the additional exposure of adoption or foster care as early-life mediators, along with the later-life mediators of emotional and instrumental social support (models 37-40) (Figure 6.9), they approach significance for family history, grandparent, and caregiver exposure, and the model achieves significance for parent exposure. When all of the early-life variables are included (adoption and foster care as well as each of the 5 CTQ scales, in combination with the 3 microaggression subscales as later-life mediators (models 41-44) (Figure 6.10) significant GOF is not achieved, it is however approached for family history, parental, and caregiver exposures, although not for grandparental exposure. Similarly, when both early-life variables are included in combination with the later-life



variable of self-esteem (models 45-48) (Figure 6.11) significant GOF is approached for parental exposure, but not for family history, grandparent exposure, or caregiver exposures.

When adoption or foster care is included in the model as an early-life mediator in combination with the three microaggression subscales as later-life mediators (models 29-32) (Figure 6.7), the model achieves significance for family history, parent, and caregiver exposures, while approaching significance for grandparent exposure. When the additional later life variables of self-esteem and emotional and physical support are added to the model already including adoption and foster care as an early-life variable and the three microaggression subscales as later life variables (models 33-36) (Figure 6.8), the model approaches significance for parent, grandparent, and caregiver exposures, but does not achieve GOF for family history exposure.

The strength of the relationships between variables indicated to have goodness of fit within the models included in Table 6.4 are shown below in Figures 6.2 through 6.11. Each of the four exposure variables for each relationship is contained within a single model, with individual results indicated by color.

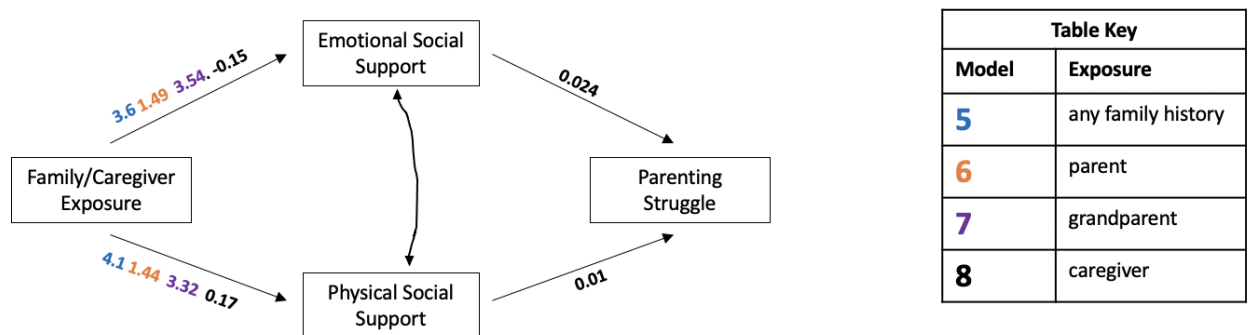


Figure 6.2: Path coefficient results for models 5-8. When a single path coefficient result appears for a relationship, it represents a shared path coefficient result for each of the exposure models.

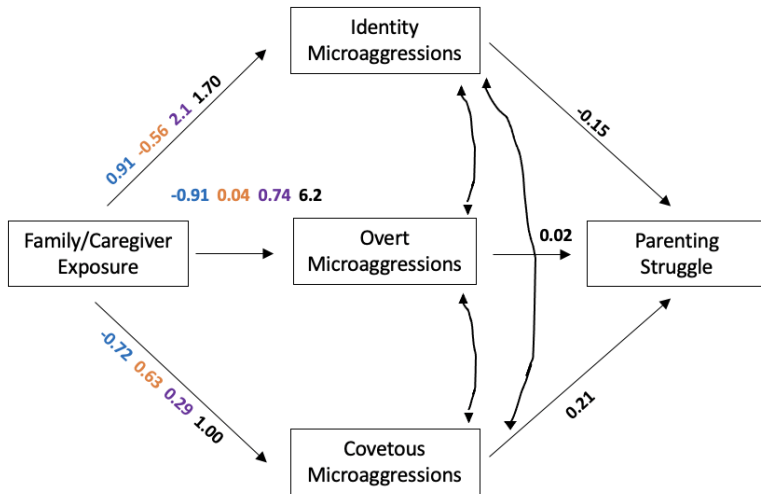


Table Key	
Model	Exposure
9	any family history
10	parent
11	grandparent
12	caregiver

Figure 6.3: Path coefficient results for models 9-12. When a single path coefficient result appears for a relationship, it represents a shared path coefficient result for each of the exposure models.

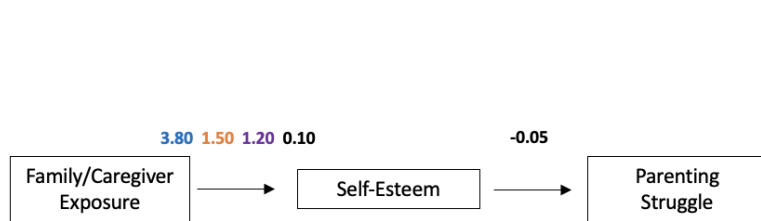


Table Key	
Model	Exposure
13	any family history
14	parent
15	grandparent
16	caregiver

Figure 6.4: Path coefficient results for models 13-16. When a single path coefficient result appears for a relationship, it represents a shared path coefficient result for each of the exposure models.

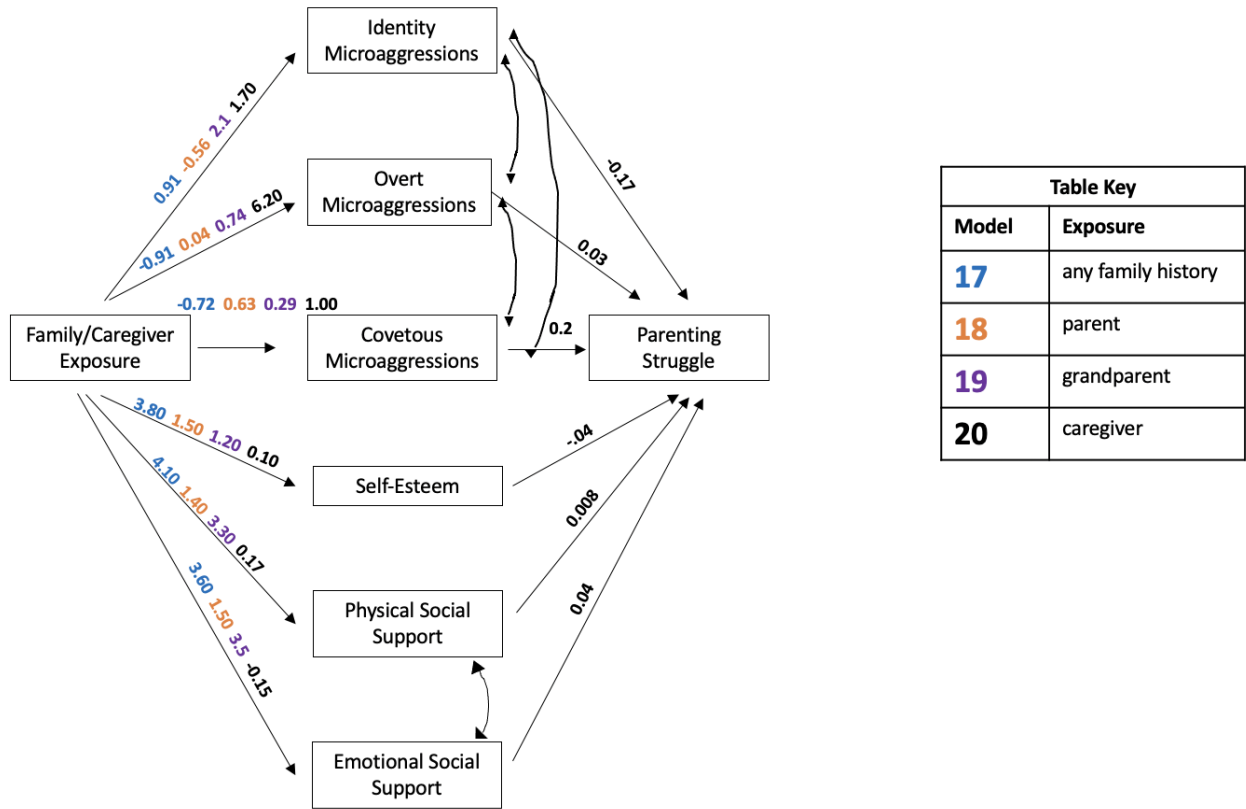


Figure 6.5: Path coefficient results for models 17-20. When a single path coefficient result appears for a relationship, it represents a shared path coefficient result for each of the exposure models.

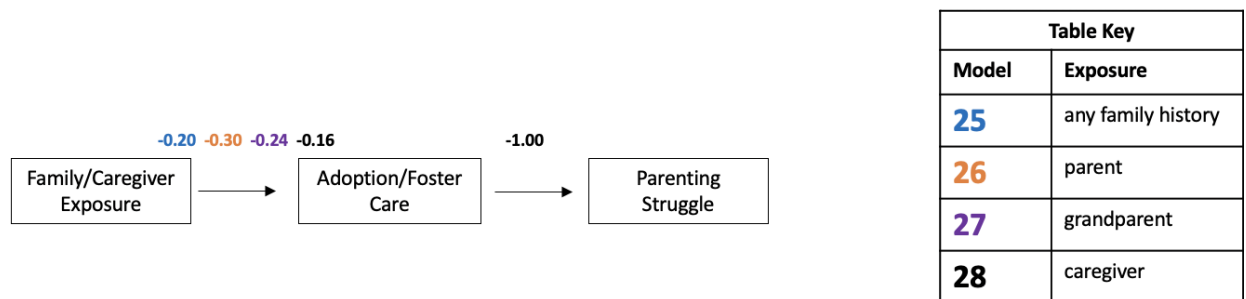


Figure 6.6: Path coefficient results for models 25-28. When a single path coefficient result appears for a relationship, it represents a shared path coefficient result for each of the exposure models.

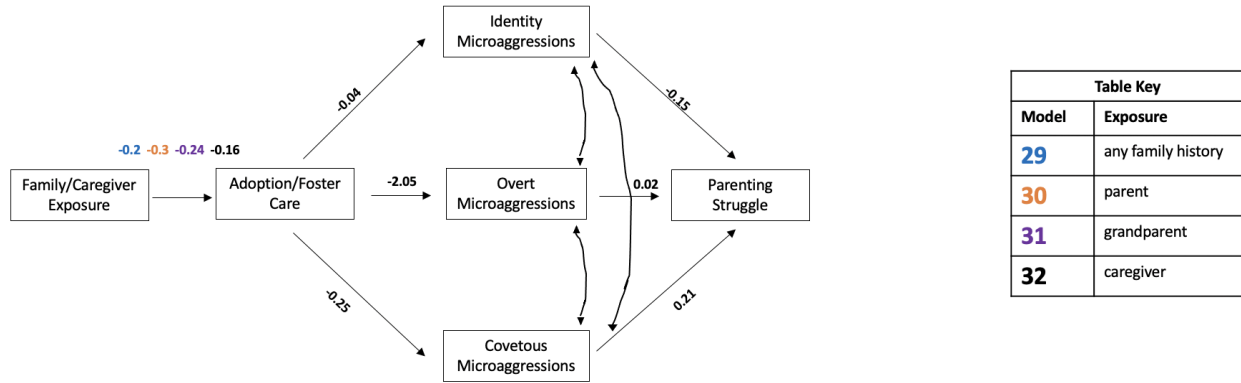


Figure 6.7: Path coefficient results for models 29-32. When a single path coefficient result appears for a relationship, it represents a shared path coefficient result for each of the exposure models.

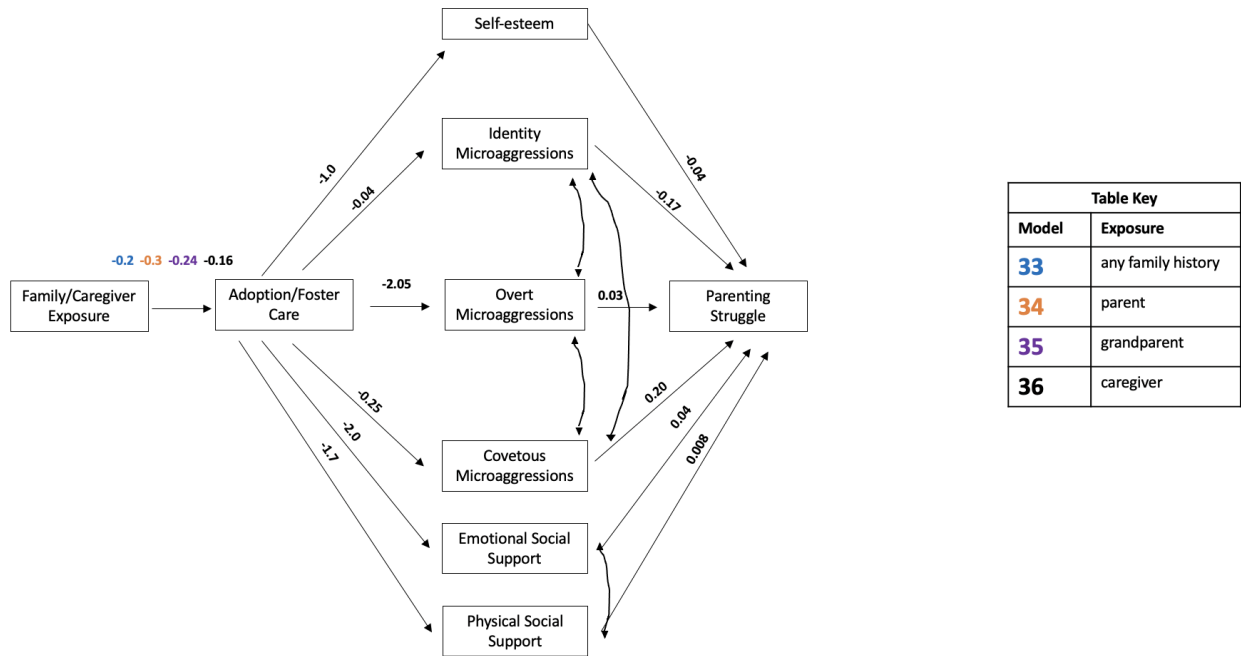


Figure 6.8: Path coefficient results for models 33-36. When a single path coefficient result appears for a relationship, it represents a shared path coefficient result for each of the exposure models.

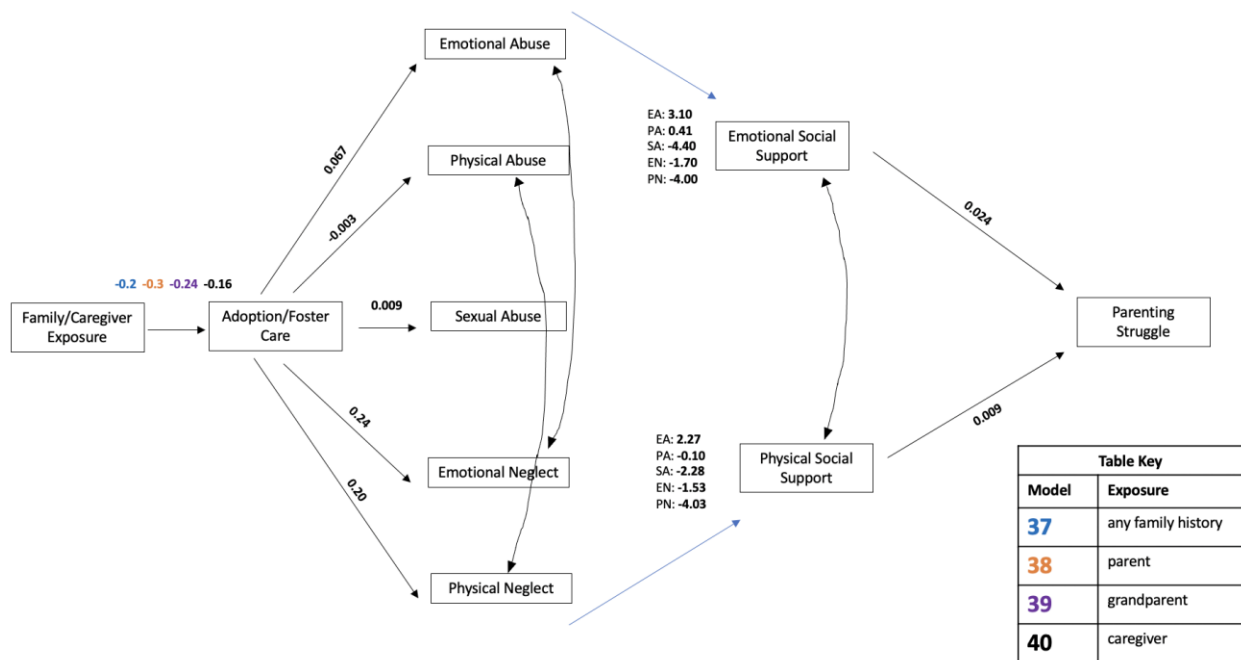


Figure 6.9: Path coefficient results for models 37-40. When a single path coefficient result appears for a relationship, it represents a shared path coefficient result for each of the exposure models. The blue arrows in this model indicate the presence of pathways between each of the five CTQ subscales and the two social support measures. The coefficients for each pathway are included next to the CTQ subscale acronym and the corresponding social support variable.

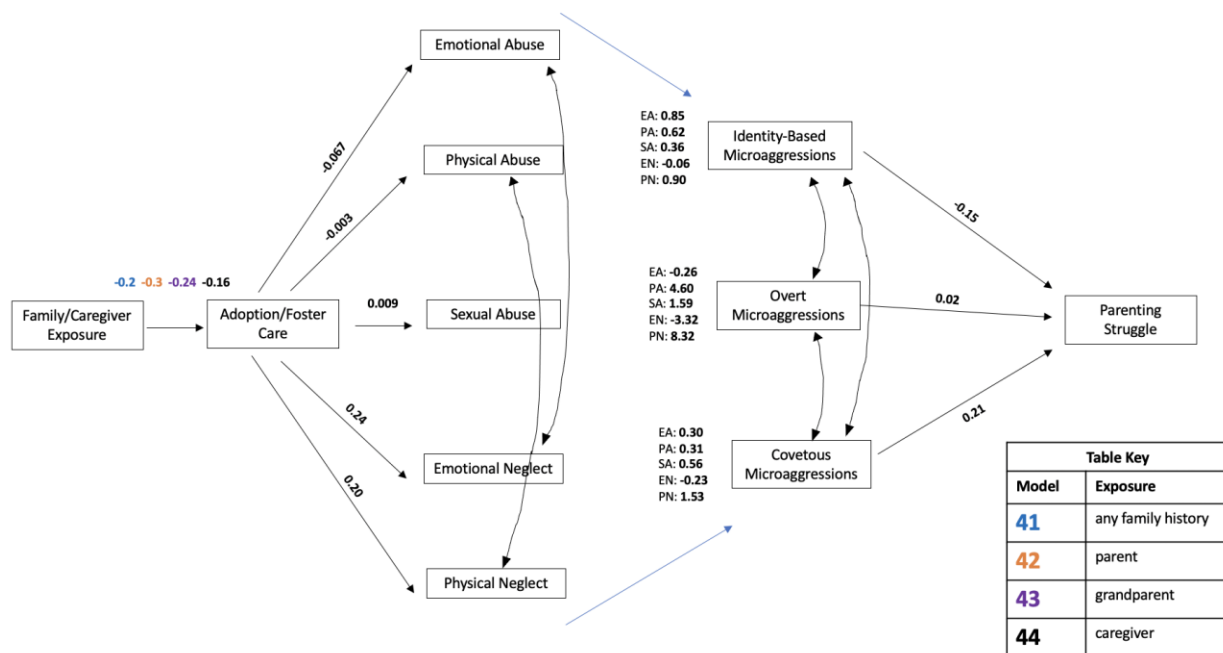


Figure 6.10: Path coefficient results for models 41-44. When a single path coefficient result appears for a relationship, it represents a shared path coefficient result for each of the exposure models. The blue arrows in this model indicate the presence of pathways between each of the five CTQ subscales and three microaggression subscales. The coefficients for each pathway are included next to the CTQ subscale acronym and the corresponding microaggression variable.

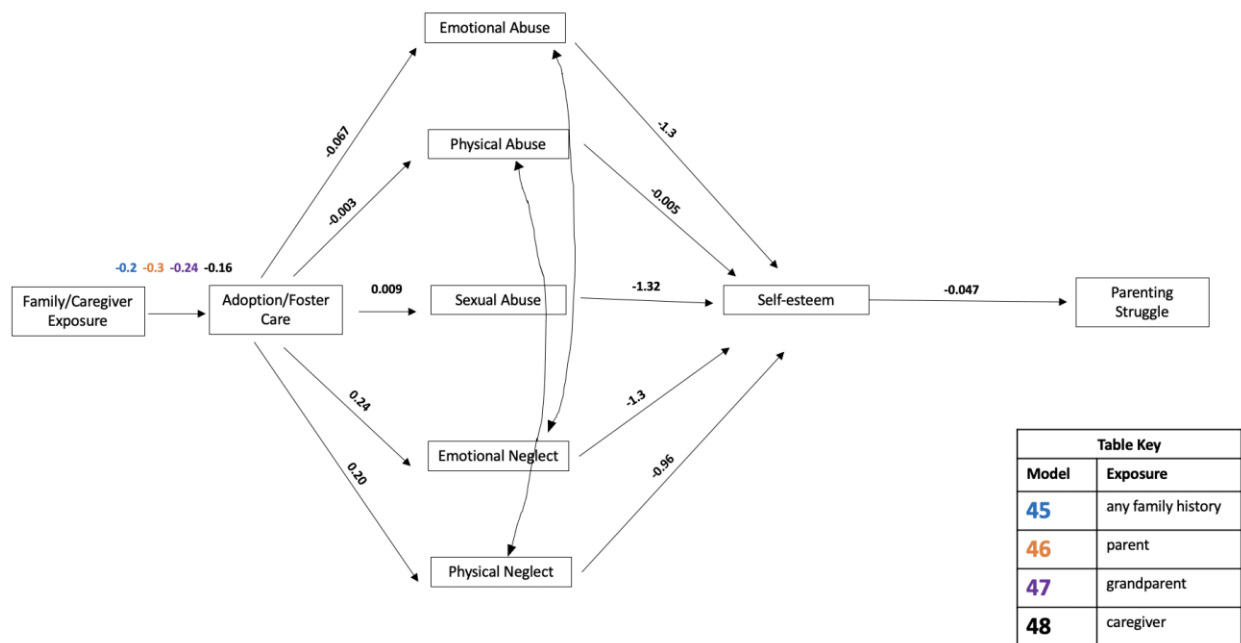


Figure 6.11: Path coefficient results for models 45-48. When a single path coefficient result appears for a relationship, it represents a shared path coefficient result for each of the exposure models.

### **6.3.5 Results Summary:**

*Family History:* Having a family history of boarding school attendance is a significant positive predictor for both emotional (3.6) and instrumental (4.1) social support, as well as self-esteem (3.8) and being distressed by experiences of identity-based microaggressions (0.91). A family history of boarding school attendance was a negative predictor of having been involved in the adoption or foster care systems (-0.20) and of being distressed by overt (-0.91) or covetous microaggressions (-0.72).

*Parental Exposure:* Having a parent who attended AIAN boarding school was a strong positive predictor of greater emotional (1.50) and instrumental (1.44) social support and self-esteem (1.50), and a negative predictor of having been involved in the adoption or foster care systems (-0.30). Parental attendance was also a positive predictor of being distressed by experiences of overt (0.04) and covetous (0.63) microaggressions, but was a negative predictor of being distressed by identity-based microaggressions (-0.56).

*Grandparent Exposure:* Having a grandparent who attended AIAN boarding school was a strong positive predictor of greater emotional (3.50) and instrumental (3.30) social support, self-esteem (1.20), and being distressed by identity-based microaggressions (2.10). It was also a positive predictor of being distressed by both overt (0.74) and covetous (0.29) microaggressions. Grandparental attendance was a negative predictor of experiencing adoption or foster care as a child (-0.24).

*Caregiver Exposure:* Being raised by someone who attended AIAN boarding school, regardless of their relationship to the study participant, was a strong positive predictor of being distressed by overt (6.20), covetous (1.00), and identity-based (1.70) microaggressions and was also a positive predictor, although not a strong one, of having high levels of instrumental social

support (0.17). Caregiver exposure to boarding schools was negatively associated with emotional social support (-0.15) and experiencing adoption or foster care as a child (-0.16).

*All Exposures:* Both emotional and instrumental social support are positive predictors of parenting struggle, indicating that greater social support contributes to greater parenting struggle. Being distressed by experiences of overt or covert microaggressions is a positive predictor of parenting struggle, while self-esteem, experiencing adoption or foster care, and being distressed by identity-based microaggressions are negative predictors of parenting struggle.

*Collectively:* Individually, the later-life variables each appear to be strong mediators for the relationship between the exposure and outcome variables, both on their own and when combined into a single model, and represent the strongest fit of any of the models included in the analysis. The early-life mediators are less strong, however even on its own, exposure to the adoption or foster care systems was a significant mediator of the relationship between intergenerational exposure to the institutions and parenting struggle.

Exposure in childhood to adoption or foster care, when included in a model with each of the three microaggression subscales also proved to be a strong model for predicting parenting struggle in this population. The same was true when exposure in childhood to adoption or foster care was combined with each of the five CTQ subscales and the later-life variables of physical and emotional social support.

Both early and later-life factors appear to be important in shaping the parenting experience of AIANs who have some intergenerational exposure to boarding schools. In early life, family history of exposure to boarding schools, as well as exposure for parents, grandparents, and caregivers, appears to have a negative relationship with childhood exposure to the adoption or foster care systems. Early-life experiences appear to impact measures of



confidence and security later in life, such as level of discomfort with microaggressions, self-esteem, and social support, each of which impact the individual parenting struggles of individuals.

#### **6.4 Discussion**

Each of the variables examined appear to be important mediators of the relationship between the different types of family or caregiver exposure to AIAN boarding schools and parenting struggle, however not all in combination with one another. Not all variables have equal impact and the ways in which they are combined appears to be important. It is integral to note, however, that these findings are not indicative of causation. Each individual's parenting confidence and struggles, regardless of family or caregiver exposure to boarding schools, occurs within the context of their collective life experiences as well as the structural forces which constrain or enable access to resources and support. While the upstream effects of boarding school exposure in previous generations may contribute to the environment of resources and support in which later generations are raised, it does not define them.

Within this population there appears to be a clear relationship between having a family or caregiver history of boarding school attendance and being impacted to a greater degree by experiences of microaggressions. This finding supports earlier work which found that people with family histories of historical trauma have increased vulnerability to perceived discrimination.<sup>22,103,258</sup> Similarly, in this population increased distress at experiences of microaggressions was associated with greater parenting struggle, mirroring earlier work which found that perceived discrimination negatively impacted parenting.<sup>264,265</sup>

Each of the exposures included in analysis (family history of exposure, parent exposure, grandparent exposure, and caregiver exposure), was a positive predictor of instrumental social support. The same was true for emotional social support, with the exception of caregiver

exposure, which was a weak negative predictor. Contrary to expectation, higher levels of social support appear to be associated with increased parenting struggle. While surprising, this may actually be indicative of reverse causality, in which those who are struggling as a parent seek out greater social support, and would therefore be in alignment with some earlier findings.<sup>275</sup> Further analyses should be conducted in the future in order to determine directionality of this relationship. Each of the four exposures was found to be a positive predictor of self-esteem, and a negative predictor of experience in the adoption or foster care systems as a child.

Many of these findings are contrary to expectation and could be interpreted on their surface as indicating positive outcomes resulting from past generation's exposure to American Indian boarding schools. The deleterious impacts of the boarding schools, however, are exceedingly well documented, and I do not believe that these findings contradict generations of evidence. Instead, I believe that what the data are capturing is survivance. Despite an overwhelming burden of colonialism and ongoing oppression,<sup>22</sup> AIAN individuals in this dataset appear to maintain strong networks of social support and exhibit significant self-esteem, contributing to confidence in their ability to parent the next generation. These data do not capture the intention or effort behind these findings, and it may be that future qualitative research could further elaborate on the means through which urban Indigenous peoples with a history of family or caregiver boarding school exposure create intertribal community and build support networks away from designated tribal lands.

It is not uncommon for both communities and academics to talk about Indigenous resilience, particularly as a reaction to histories of trauma.<sup>286,287</sup> Within this context, resilience pertains to the ability or process of overcoming challenges by drawing on social networks and cultural practices engrained in community.<sup>288</sup> Survivance differs in that its focus is not on

overcoming at all. Survivance recognizes that Indigenous people in the Americas have not been stalled by the experiences of the past, but instead continue to exist in the contemporary world as complex, active, and vibrant individuals and cultures. Survivance turns the identity of the victim on its head and identifies it as a colonialist label of dominance through which Native peoples may be perpetually defined by past actions committed against them rather than the enduring presence of a strong and thriving population.<sup>289</sup> The individuals in this study, as well as those who birthed and raised them, appear to be actively pushing back against the dominant narrative of intergenerational victimhood by using enduring Indigenous practices centered on kinship and community support to improve the environment and life-chances of future AIAN children.

One well-documented mechanism for survivance within AIAN communities is narrative. Narratives with a strength-based perspective can act as both motivation and a guide for overcoming adversity,<sup>123</sup> and can serve as a means of transmitting lessons and resilience. Narratives about past traumas specifically have been found to serve as a source of strength, optimism, and coping strategies that become internalized within families and individuals, and can help individuals to organize and understand their own life events in relation to those of the past.<sup>290</sup> Different narrative influence has been found to increase or reduce stress following collective trauma events.<sup>291</sup> In addition to perpetuating stories of resilience across generations, narrative has been found to further cultural-continuity and to serve as a protective factor against some deleterious health behaviors.<sup>292</sup> Indeed, Mohatt and colleagues believed narrative to play such an important role in both mitigating and transmitting the historical trauma response that they included it in their 2014 historical trauma model.<sup>84</sup> Where an individual lives and who they interact with daily may impact the narratives that influence their lives, and it is plausible that the

urban status of this study population could have resulted in reduced salience of narratives around boarding schools and historical trauma.<sup>22,84</sup>

Narrative can also be a tool of identity maintenance and construction, with “family and community narratives of resilience, action, and aspiration provid[ing] a counter-weight to oppressive dominant cultural narratives.”<sup>84(p132)</sup> The strength of shared cultural identity following historical trauma events has been found to be associated with both positive and negative outcomes: it may increase self-reported racism<sup>293</sup> as well as reduce detrimental health impacts associated with the event.<sup>125</sup> Within this study participants reported a high degree of discomfort following self-reported microaggressions, which may be an outcome of stronger Indigenous identity. The reinforcement of Indigenous identity has been found to mitigate the impacts of trauma<sup>100,103,255,294</sup> to such an extent that it is an integral component of Walters and Simoni’s Indigenist Stress-Coping Framework, which models the relationship between identity attitudes, self-esteem and coping following psychological distress.<sup>103</sup> In this study we did not analyze measures of the strength of Indigenous identity for this study population. This analysis should be conducted in the future in order to further understand the role that identity may play in the relationships that we found between family and caregiver histories of boarding school attendance, early and later-life mediating factors, and parenting struggle in later generations.

Future research should build on this work by exploring the role that Indigenous identity plays in mediating the relationship between family or caregiver histories of boarding school attendance and parenting struggles. Additionally, these findings raised important questions about the intentional steps that individuals are making in order to interrupt recognized social pathways for the transmission of the historical trauma response. Future research should explore the types

of healing, both professional and through alternative means like building and accessing networks of social support, that urban AIAN people are making use of.

## **6.5 Limitations**

This study had a number of limitations. First, the “parenting struggle” variable used as an outcome is novel and should be validated using other samples and populations. Second, we were limited by our ability to identify degree of exposure by relationship but not quantity. For example, participants indicated if a parent, grandparent, or caregiver had attended boarding school, but not the number of people who had attended within each generation. Results, therefore, likely represent an undercount of the magnitude of many individuals’ intergenerational exposure to the institutions. Similarly, it is likely that the five childhood trauma variables are also underreported, as earlier research has found that a common coping mechanism of trauma is silence.<sup>34,79</sup> It is possible that recruitment methods introduced bias into the data, as study participants were recruited at AIAN centers and through social networks, which may have led to a study population that was more engaged with their Indigenous identity or had higher levels of social support than would be found within a population recruited through other means. Analytically, SEM models are large-data models, so goodness of fit for models may not have been achieved even if pathways were important. Finally, it is important to note that there are many factors which could impact the relationship between boarding school attendance and parenting struggle, and those explored in this study represent a far from exhaustive list.

## **6.6 Conclusion**

These findings demonstrate that, while the historical trauma response may be transmitted via sociocultural pathways related to parenting practices, these pathways may also be harnessed to interrupt such transmissions. The population of urban, two-spirit AIAN individuals who participated in this research demonstrated evidence of both resilience and survivance, with the

potential for increased positive outcomes for their children. Results such as these indicate that future efforts addressing the long-term effects of AIAN boarding schools might find success by supporting Indigenous-led, community-based efforts aimed at improving connection and engagement within urban Indigenous settings.

## **CHAPTER 7: THE COMMUNITY LEVEL: ENGAGEMENT IN TRADITIONAL CULTURAL ACTIVITIES AS A STRATEGY FOR MITIGATING THE ENDURING PHYSICAL HEALTH IMPACTS OF HISTORICAL TRAUMA EVENTS**

### **7.1 Background**

Historical trauma events for the First Peoples of the United States were routinely aimed at the systematic destruction of culture, actions which meet the United Nations definition of cultural genocide.<sup>295</sup> A cornerstone of these efforts were the federal Indian boarding schools, which sought to assimilate AIAN children into the dominant Euro-American culture as a means of eradicating populations in order to enable Settler land acquisition.<sup>6</sup> Survivors of the boarding schools frequently state that one of the enduring impacts of attendance was a loss of traditional culture and family cohesion.<sup>28,109,251</sup> Resulting dislocation from culture, family support, lands, and traditional food systems has been identified as a key contributor to many of the health disparities currently recognized among AIANs in the U.S.<sup>296,297</sup>

AIAN as a population experience worse health than any other group in the U.S. including a lower life expectancy and quality of life, and higher rates of many chronic diseases.<sup>298</sup> While health outcomes differ by nation, community, and individual, the role of structural inequality in U.S. Indigenous health is undeniable.<sup>296,299</sup> Historical forces impact structural inequality directly through resource allocation and access, including healthcare and education,<sup>27</sup> as well as indirectly through the intergenerational truncation of life chances due to social pressures.<sup>300,301</sup> Increasingly, the role of historical traumas is being implicated as a contributing factor to a range of contemporary health disparities for AIAN people including epidemics of youth suicide and depression and chronic health conditions.<sup>16,21,206</sup>

Western-centric health interventions, the norm in the U.S., have at times proven less effective when applied in AIAN settings,<sup>302-305,306,307</sup> and may even perpetuate harms.<sup>308</sup> Indigenous scholars and practitioners have suggested that interventions originating from Euro-American systems may be alienating and assimilative for Indigenous populations,<sup>109</sup> and that they may further cultural hegemony.<sup>16</sup> Such interventions commonly fail to take into account cultural norms and expectations, including Indigenous perceptions of health and well-being which encompass more than the self.<sup>309</sup> The concept of “healing” itself, as an outcome of health interventions has been questioned by Indigenous scholars, who suggest that such an approach situates well-being on a continuum which is incongruous with Indigenous perceptions of wellness, and which places the onus for improvement on the individual, instead of the structural forces which constrain opportunities for health.<sup>310</sup>

There is, instead, strong evidence to support health programs and interventions which are community-based and center Indigenous ways of knowing.<sup>306,310</sup> Such approaches perceive healing as the “spiritual revitalization of indigenous orientations and practices”<sup>109(p758)</sup> and often focus on the well-being of the community as a whole. There are currently 574 federally recognized tribes in the U.S., as well as 63 state-recognized tribal communities, each with their own unique social, historical, linguistic, and geopolitical experiences. Effective and ethical health promotion activities may derive from pan-Indigenous conceptions, but should be tailored to the specific needs, culture, and experiences of each population.<sup>11</sup> One such approach which is being increasingly employed in addressing disparities in both mental and physical health within AIAN populations is the revitalization of cultural practices which were lost due to colonization. These efforts may involve re-connection with land and language, encouraging a return to traditional foodways and re-investment in kinship systems of support and reciprocity.<sup>311</sup> They



may also bolster pride in Indigenous identity and community,<sup>35,312</sup> and encourage intergenerational engagement.<sup>311,313</sup>

Much of the research focused on cultural revitalization as a means of addressing health disparities experienced by AIAN populations is conducted within specific tribal communities, often in reservation-based settings. Currently, over 70% of AIAN people in the U.S. live in urban settings. Urban AIAN communities may have additional experiences, either personal or historical, of disconnection, and may face further barriers to re-connection and revitalization. They may also face additional challenges to accessing mental and physical health services.<sup>314,315</sup> Within the context of cultural revitalization as a means of promoting health, it may not be feasible to develop programs aimed at reviving and supporting the unique cultural practices of each tribe represented within the population. Thus, in this study, we seek to understand the role of cultural engagement in health promotion for urban AIAN individuals whose parents, grandparents, or caregivers were survivors of federal Indian boarding schools by asking: How does engagement in traditional cultural activities impact the relationship between past generation federal Indian boarding school attendance and physical health within an urban AIAN population? We use a collective measure of cultural practices common across Turtle Island to see how non-tribe specific practices impact physical health within a study population of intertribal, urban AIAN. Specifically, we seek to understand how engagement in traditional cultural activities moderates the relationship between an intergenerational history of trauma and physical health, outside of intentional or organized health interventions.

## **7.2 Methods**

The current study is a secondary analysis of data collected as part of a comprehensive, multi-site, cross-sectional health survey of AIAN two-spirit people from seven urban centers (Seattle, San Francisco/Oakland, Los Angeles, Oklahoma City, Minneapolis/St. Paul, and New

York City) in the United States between October 2005 and November 2006. Two-spirit is a self-descriptor for lesbian, gay, and bisexual AIAN people which recognizes sexuality within the context of culture, and its interrelation with identity, gender, community, and spirituality.<sup>2</sup>

Details on the survey design process and participant recruitment have been previously published elsewhere.<sup>21,210</sup> The original study was approved by the ethics board of the University of Washington and all participants provided written consent. This analysis was conducted using de-identified data and did not require participant re-consent or secondary ethics board approval.

### **7.2.1 Participants**

Eligible participants 1) self-identified as AIAN or First Nations, demonstrated through either tribal enrollment or  $\geq 25\%$  blood quantum, 2) self-identified as gay, lesbian, bisexual, transgender, or two-spirit or had engaged in same-sex sexual behavior in the past 12 months, 3) 18 years or older, 4) English speaking, 5) associated with one of the seven urban sites included in the study. Potential participants were identified through a combination of targeted, partial network, and response-driven sampling techniques in order to minimize selection bias and through invitations to participate from newsletters, brochures, posters, and word-of-mouth. A response rate of 80.1% was achieved. Participants were compensated \$65 for completing the computer-assisted self-interview, which typically lasted between 3 and 4 hours. After four interviews were excluded for ineligibility, a total of 447 participants were included in the study.

### **7.2.2 Measures**

*Exposure:* The same four intergenerational boarding school exposures were used in this analysis as in the analysis for Chapter 6: 1) any family exposure, 2) exposure most recently by at least one parent, 3) exposure most recently by at least one grandparent, and 4) exposure by the person who raised the study participant, referred to as the “caregiver” relationship. As before, the

relationship of the caregiver to the study participant could not be elucidated through the survey, and could therefore have been a parent, grandparent, other relation, or non-relation.

*Cultural Engagement:* Study participant degree of cultural engagement was identified using a novel measure comprised of responses to nine questions regarding traditional AIAN practices and ceremonies common to tribes and communities across Turtle Island. Participants were asked to indicate using a yes/no binary response if they had participated in each of the following activities over the past 12 months: 1) daily prayers or meditation, 2) pow wows, 3) talking circles, 4) stick, hand, or bone games (gambling games), 5) other gambling games, 6) stick ball, 7) berry picking, 8) memorial feast or ceremony, 9) sweat lodge, bath, or purification ceremonies. “No” responses were coded as 0 and “yes” responses were coded as 1. Each participant’s response to the 9 questions was summed, with scores ranging from 0 to 9. Measure goodness of fit was calculated and determined to be sufficient (RMSEA 0.079, CFI: 0.877, TLI: 0.835). Questions included in the measure do not indicate the context within which engagement in the activities is undertaken, for example, personally motivated or through organized intervention.

*Physical Health Outcome:* Physical health status was examined through participant responses to two questions. 1) Participants were prompted to self-report their general physical health with the question “In general, would you say your health is:” with the possible responses “excellent, very good, good, fair, poor”, responses were analyzed on a continuous scale. 2) Measured physical health status was measured by HIV-MOS Physical Health Summary Score collected using the Medical Outcomes Study HIV Health Survey (MOS-HIV). This measure has been validated in diverse populations, and was recommended by its developer for use as a general health measure among non-HIV-positive populations. The measure is comprised of 35

questions regarding 11 aspects of health: general health perceptions, physical functioning, role functioning, pain, social functioning, mental health, energy, health distress, cognitive functioning, quality of life, and health transition and produces both physical and mental health summary scores that range from 0 to 100 with higher scores denoting poorer health, as well as other subscale scores.<sup>211</sup> This study exclusively used the physical health summary score, which was derived from 5 questions on general health perceptions, 2 questions on bodily pain, and 6 questions on physical functioning (Appendix A). In this study, participant responses ranged from 18.64 to 66.52, with a mean of 49.21 and were analyzed continuously.

### 7.2.3 Analysis

Recursive path analysis, a form of structural equation model (SEM) was used to evaluate causal models showing the relationships between different intergenerational exposures to AIAN boarding schools and self-reported and measured physical health, mediated by the novel cultural engagement variable.<sup>282</sup> Missing values were dropped from analysis. Study population demographics are included in Table 7.1 and goodness of fit indices for each of the measures is included in Table 7.2.

### 7.3 Results

Table 7.1: Sample demographics

	N (%)	Gender identity N (%) (M/F/T)	Mean age (SD)	>high school education N (%)	Employed, in school, or retired N (%)	Income <=\$500/month N (%)
Total	444	227/183/34 (51/41/8)	39.8 (10.8)	234 (53)	241 (54)	173 (39)
Parent	106 (24)	54/46/6 (51/43/6)	40.0 (10.2)	56 (53)	66 (62)	36 (34)
Grandparent	87 (20)	43/35/9 (49/40/10)	34.4 (9.9)	71 (82)	66 (76)	21 (24)
Caregiver	176 (39)	86/76/14 (49/43/8)	39.7 (10.3)	96 (55)	102 (58)	63 (36)

Table 7.2: Goodness of fit statistics.

Model	Chi2	RMSEA	pclose	AIC	BIC	CFI	TLI
family history --> traditional activities --> measured physical health	0.008	0.118	0.053	5436.59	5461.15	0.344	-0.967
parent --> traditional activities --> measured physical health	0.011	0.111	0.069	5837.05	5861.61	0.622	-0.135
grandparent --> traditional activities --> measured physical health	0.002	0.139	0.021	5761.73	5786.30	0.711	0.132
caregiver --> traditional activities --> measured physical health	*0.513	0.000	0.700	5998.63	6023.23	1.000	1.162
family history --> traditional activities --> self-rated health	0.007	0.120	0.049	3328.91	3353.48	0.315	-1.054
parent --> traditional activities --> self-rated health	*0.260	0.025	0.485	3730.25	3754.83	0.971	0.913
grandparent --> traditional activities --> self-rated health	*0.125	0.055	0.319	3654.68	3679.25	0.939	0.818
caregiver --> traditional activities --> self-rated health	*0.938	0.000	0.965	3878.33	3902.94	1.000	1.283

\*indicates models that achieve statistical significance.

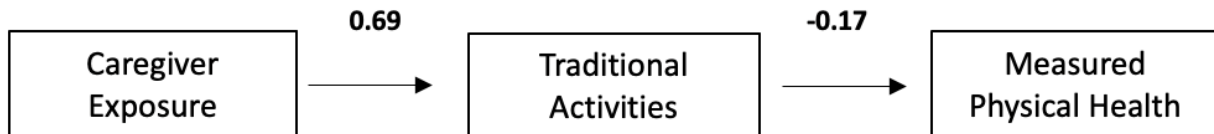


Figure 7.1: Coefficients for statistically significant model in which engagement in traditional activities mediates the relationship between caregiver exposure to AIAN boarding schools and objectively-measured physical health.

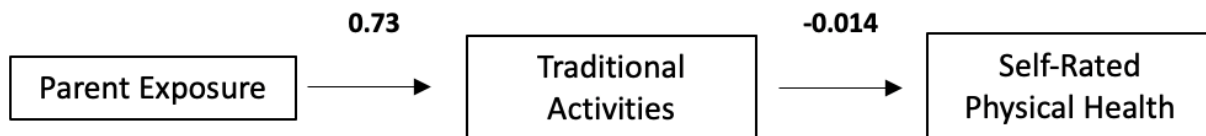


Figure 7.2: Coefficients for statistically significant model in which engagement in traditional activities mediates the relationship between parent exposure to AIAN boarding schools and self-rated physical health.

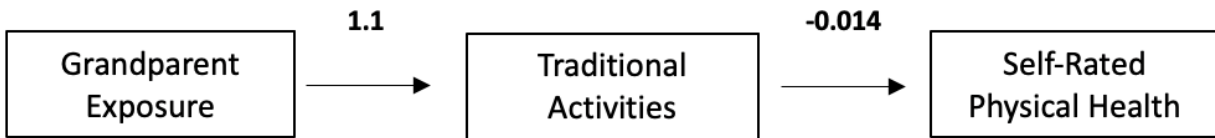


Figure 7.3: Coefficients for statistically significant model in which engagement in traditional activities mediates the relationship between grandparent exposure to AIAN boarding schools and self-rated physical health.

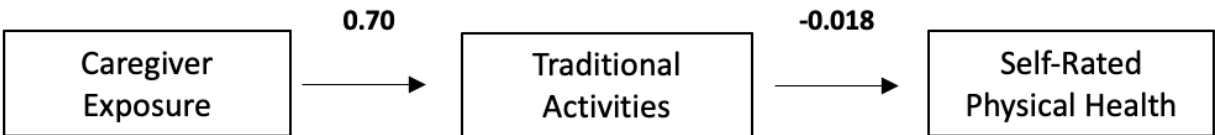


Figure 7.4: Coefficients for statistically significant model in which engagement in traditional activities mediates the relationship between caregiver exposure to AIAN boarding schools and self-rated physical health.

Four of the eight analyzed models were found to be statistically significant: 1) the relationship between caregiver exposure to AIAN boarding schools and measured physical health was mediated by traditional activities such that caregiver exposure to boarding schools was positively associated with participation in traditional activities within the previous 12 months, and participation in traditional activities was negatively associated with measured physical health, indicating better health. 2) the relationship between parental exposure to AIAN boarding schools and self-rated physical health was mediated by traditional activities such that parent exposure to boarding schools was positively associated with participation in traditional activities within the previous 12 months, and participation in traditional activities was negatively associated with self-rated physical health, indicating better health. 3) the relationship between grandparent exposure to AIAN boarding schools and self-rated physical health was mediated by traditional activities such that grandparent exposure to boarding schools was positively associated with participation in traditional activities within the previous 12 months, and participation in traditional activities was negatively associated with self-rated physical health,

indicating better health. 4) the relationship between caregiver exposure to AIAN boarding schools and self-rated physical health was mediated by traditional activities such that caregiver exposure to boarding schools was positively associated with participation in traditional activities within the previous 12 months, and participation in traditional activities was negatively associated with self-rated physical health, indicating better health.

#### **7.4 Discussion**

Within this population, intergenerational exposure to boarding schools is associated with a greater level of engagement with traditional cultural activities, and, engagement in traditional cultural activities was associated with better self-rated physical health.

These findings indicate that, despite the well-established role of federal Indian boarding schools in interrupting knowledge of and engagement in traditional cultural practices, participants in this study were finding ways to engage, even within an urban context. While the survey results don't allow us to elucidate the motivations behind engagement, it may be hypothesized that participants, or their family members who were survivors of the institutions, recognized the deleterious role that boarding schools played in maintaining cultural connection and explicitly sought out ways of reconnecting. These findings are in line with results from a study of American Indian adolescents from California which found a positive association between scoring high on Whitbeck's Historical Loss Scale and increased engagement in cultural activities.<sup>230</sup> Indeed, qualitative studies of boarding school survivors routinely report the interruption of traditional knowledge and cultural engagement to be a recurrent theme of loss among survivors,<sup>109,310,311</sup> and interventions aimed at addressing the historical trauma response stemming from boarding school attendance frequently use elements of cultural revitalization.

The finding that engagement in traditional cultural activities contributes to improved self-reported physical health supports earlier work in the fields of social work and public health

which found that engagement in traditional cultural activities has multifaceted benefits to both mental and physical health for AIAN peoples. Programs incorporating cultural revitalization have demonstrated success at improving cognition and physical health,<sup>316</sup> mental health<sup>317</sup> through reductions in depression,<sup>318</sup> suicidality,<sup>292,319</sup> anxiety,<sup>320</sup> and improved self-esteem<sup>312</sup> as well as the reclamation of traditional knowledge and practices<sup>321</sup> and a reduction in substance use.<sup>25,319</sup> Qualitative findings from programs supporting cultural revitalization and engagement have noted an increase in pride around Indigenous identity community cohesion,<sup>322,323</sup> with Mohatt et al. noting that “strong cultural identity may be emblematic of public resilience in the face of historical trauma”.<sup>84(p131)</sup>

Few studies have been conducted among urban AIAN populations, and these findings indicate that interventions which utilize cultural engagement for health promotion among reservation-based populations may be broadly generalizable to urban populations. Similarly, most interventions have focused on cultural practices specific to a certain tribal nation or population.<sup>311,313</sup> While it is true that Indigenous peoples of North America are deeply heterogeneous, there are certain ceremonies and practices which are commonly shared across many tribal communities. By using some of these as the core of our novel measure of traditional cultural engagement, we demonstrate that there may be some benefits to physical health to participating in pan-Indigenous ceremonies and practices. This finding may be of particular interest to urban Indigenous populations seeking to implement culturally-based health interventions within inter-tribal communities. Finally, our findings do not specify cultural engagement as a component of formal intervention, lending support to the idea that engagement, regardless of organized intent, is beneficial to physical health.



## **7.5 Limitations**

This study includes a number of limitations. First, the cultural engagement variable developed to examine the role of cultural engagement in moderating the relationship between a history of boarding school attendance and physical health was novel and should be validated using other outcomes and populations. Second, we were limited by our ability to identify degree of exposure by relationship but not quantity. For example, participants indicated if a parent, grandparent, or caregiver had attended boarding school, but not the number of people who had attended within each generation. Results, therefore, likely represent an undercount of the magnitude of many individuals' intergenerational exposure to the institutions. Third, it is possible that recruitment methods introduced bias into the data, as study participants were recruited at AIAN centers and through social networks, which may have led to a study population that was more engaged with their Indigenous identity or were more involved in traditional cultural practices than others not recruited to the study. Finally, the construct of self-reported health can be challenging to analyze as it can mean different things to different people, depending on their unique context. Therefore, it may be an unreliable measure.

It is also important to note that cultural engagement is just one of many ways in which AIAN people have approached recovery from the impacts of historical traumas, and that participants may be engaged in other health-promotion activities not captured within this study that nevertheless impacted findings.

## **7.6 Conclusion**

Findings from this study provide support for the inclusion of cultural engagement in interventions aimed at addressing physical health disparities which may stem from historical trauma events, especially past-generational exposure to federal Indian boarding schools. While

interventions should be personalized to the traditions, culture, and needs of the population of focus, our findings indicate some positive impact from engagement in more widely-practiced pan-Indigenous ceremonies and traditions.

## CHAPTER 8: CONCLUSION

There is a large body of evidence suggesting that historical forces, in combination with social, biological, and structural factors, contribute to the disparities in health experienced by many AIAN populations today.<sup>20,22,73,100,115–117,123,124,262,263</sup> AIAN historical trauma theory, which was first introduced in the 1990s and has since evolved thanks to the contributions of scholars from diverse disciplines, provides an explanatory model for understanding how events from the past can contribute to poor health in the present.<sup>20</sup> Research utilizing the theory has implicated historical trauma events in a broad spectrum of mental and physical health outcomes.<sup>19,22,31,115,210</sup> A subset of research focused on the impacts of historical trauma events on health has looked at federal Indian boarding schools and poor mental and physical health, even generations after exposure.<sup>21,25,31</sup> The majority of this research has focused on mental health, transmission between parent-child dyads, and among majority reservation-based populations, although some notable studies have recently begun to explore the impacts on physical health and among urban populations.<sup>10,210,31,32,218,324</sup> A parallel body of work has examined the role of cultural engagement and revitalization in healing from historical traumas, primarily with intra-tribal, reservation-based study populations.<sup>109,120,254,255,309–311,313</sup> This study seeks to contribute to existing gaps in the literature by 1) examining how boarding school attendance in different generations and compounded across generations impacts physical health for contemporary urban AIAN, 2) how early and later-life factors may contribute to a commonly-theorized social pathway for the transmission of the historical trauma response, and 3) what role engagement in

pan-Indigenous cultural practices might play in healing from historical trauma events among urban AIAN.

Findings from this study show that the federal Indian boarding school era of the 1880s to the 1930s continues to impact AIAN people today at the individual, family, and community levels. Specifically, we found that, at the individual level, all survey participants had some level of exposure to boarding schools, and that the type and magnitude of exposure to the institutions appears to differentially impact both self-reported and measured physical health. For families, both early and later-life factors appear to mediate the relationship between family and caregiver exposure to boarding schools and parenting struggles, and that participants appear to maintain strong networks of social support and to exhibit high levels of self-esteem, contributing to confidence in their ability to parent the next generation. For communities, this study found support for cultural engagement efforts, as participants in this study who had a history of family or caregiver exposure to the schools demonstrated a greater level of engagement in pan-Indigenous cultural activities and that engagement in such activities was associated with better physical health.

Collectively, these findings demonstrate that a family history of boarding school exposure has negative implications for individual's health, but that it is possible to engage in activities which may interrupt that relationship; people in this study who had a family or caregiver exposure to boarding schools exhibited remarkable rates of social support, particularly those who also self-reported struggling as a parent, indicating that participants may be actively seeking to reduce the burden on themselves and improve outcomes for their children. High levels of social support and self-esteem have been associated in other studies with reduced stress-response,<sup>325,326</sup> and future research should look at the role that elevated social support plays in

mediating the relationship between family histories of boarding school attendance and physical health in this population. People in this study also demonstrated agency in addressing the transmission of trauma through engaging in traditional cultural activities at higher rates, with positive impacts on their physical health. These findings show that a family history of boarding school exposure is not deterministic. Over the past 30 years AIAN people have been talking about and engaging with the concept of historical trauma and the theoretical pathways through which traumas of the past continue to impact the health and wellbeing of Indigenous people today. It is not unlikely, therefore, that participants in this study are demonstrating both survivance and resilience by engaging with narratives of the past and using them to work towards healthier futures for both themselves and future generations.<sup>34,84,123,311,327</sup>

Part of the continued decolonizing of historical trauma-informed research is acknowledging Indigenous people's agency to make meaning from previous knowledge gained through research and practice. Earlier studies have found that, although the broad concept of historical trauma is widely recognized in Indian Country, both in clinical practice and in personal life, how it is understood and applied appears to vary widely.<sup>108</sup> I would argue, however, that it is not necessary, likely, or perhaps even beneficial, for all Indigenous people to adhere to the same definition of historical trauma, or to recognize or exhibit the same responses to it.<sup>123</sup> What may be of more importance is how people apply the concepts to their own lives in ways that are most cogent to their unique situations and experiences. This is in keeping with the idea of historical trauma as an explanatory rather than causative theory.<sup>120</sup> Indeed, if the ultimate intention of historical trauma theory is to support wellbeing by providing an avenue for making meaning of the current state of AIAN health within the broader context of ongoing settler-colonialism, then the theory must prioritize the individual, family, or community utility of the theory over

convenience in research or clinical practice. Within the context of this study, it is imperative to understand that people are continuously and actively engaging in meaning-making with their family histories of boarding school exposure and that, far from stagnating at the point in which the concept of AIAN historical trauma theory was developed, Native people have widely embraced the concept and are applying it within their own lives.

Therefore, although some of the findings from this study, particularly those in chapter 6, conflict with other research on the impacts of historical traumas on contemporary AIAN people, I believe that this discrepancy is indicative of agency and engagement on the part of research participants as well as their families and communities, and that these variables should be included in future historical trauma models. Simply put, the findings from this work indicate that we should not expect to see the same results over time in research examining the impacts of historical trauma events because the populations under study are actively incorporating knowledge as it emerges into existing knowledge bases and narratives and using the findings to improve their own lives and those of future generations. By incorporating Indigenous agency into existing models of historical trauma, in much the same way that agency is included in LCT,<sup>127</sup> we shift from a primarily deficits-based approach to understanding the legacy of boarding schools on survivors and their families to one focused on strength, healing, and the future.<sup>123</sup> Perceiving populations as static is a common fallacy of Western research, which has its roots in colonialism and othering.<sup>24,328</sup> Incorporating agency into models of historical trauma builds off of Mohatt et al.'s 2014 narrative model of historical trauma by adding an action step in response to narratives – family, community, and research – with the clear potential to alter outcomes.<sup>84</sup>

Incorporating agency and applying a strengths-based lens to research and practice which uses historical trauma theory is most likely to occur through decolonizing and community-based approaches. Indeed, Western research has its roots in colonial policies and motivations which were active agents in the historical trauma events commonly implicated in contemporary health disparities in Indian Country.<sup>328</sup> Decolonization is “the intelligent, calculated, and active resistance to the forces of colonialism that perpetuate the subjugation and/or exploitation of our minds, bodies, and lands”<sup>329(p5)</sup> and decolonized research is that which is conceived and designed with the needs of participants and communities in mind<sup>30,328</sup> and is conducted by or with Indigenous peoples, instead of on them.<sup>330</sup> It is likely to function outside of Western cosmologies,<sup>24</sup> and to endorse different measures and outcomes of well-being. Decolonized, community-based research is the future of research with Indigenous populations, both in the U.S. and in other colonized lands and should be the approach used for all future historical trauma research.

While this research contributes to current gaps in the historical trauma literature, it also raises a number of questions. In particular, the intentional application of agency into the relationship between past traumas and current health and wellbeing is a direction which requires further inquiry. Specifically, qualitative approaches should be employed to understand the ways that urban Indigenous people 1) understand historical trauma theory, 2) apply it to their own health and wellbeing and that of their families and broader community, and 3) how they are (or are not) actively engaging with the concept in order to impact positive change in their own lives and those of later generations.

Results of this work may be used to support health interventions aimed at contributing to the physical health and wellbeing of urban AIAN populations. Findings suggest that the scope of

boarding school impact may be greater than has previously been presumed, and that investment in programs which act on both early and later-life factors, particularly those which enable social support networks and build self-esteem, may assist in addressing parenting practices which could contribute to the intergenerational transmission of historical trauma responses. Finally, this work contributes to the evidence-base regarding the utility of cultural engagement as means of promoting physical health, and suggests that pan-Indigenous cultural practices may be of benefit in diverse, urban Indigenous communities.



## APPENDIX A: CHAPTER 5 APPENDIX MATERIALS

### MOS-Physical Health Summary Score Questions<sup>211</sup>

#### Physical Functioning

Q1: Does your health now limit you in the kinds or amounts of vigorous activities you can do, like lifting heavy objects, running, or participating in strenuous sports?

yes, limited a lot

yes, limited a little

no, not limited

Q2: Does your health now limit you in the kinds or amounts of moderate activities you can do, like moving a table, carrying groceries or bowling?

yes, limited a lot

yes, limited a little

no, not limited

Q3: Does your health now limit you in walking uphill or climbing (a few flights of stairs)?

yes, limited a lot

yes, limited a little

no, not limited

Q4: Does your health now limit you in bending, lifting or stooping?

yes, limited a lot

yes, limited a little

no, not limited

Q5: Does your health now limit you in walking one block?

yes, limited a lot

yes, limited a little

no, not limited

Q6: Does your health now limit you in eating, dressing, bathing or using the toilet?

yes, limited a lot

yes, limited a little

no, not limited

#### General Health Perceptions

Q1: In general, would you say your health is:

Excellent

Very good

Good

Fair

Poor

Q2: How true or false is each of the following statements for you? I am somewhat ill.

- Definitely true
- Mostly true
- Do not know
- Mostly false
- Definitely false

Q3: How true is each of the following statements for you? I am as healthy as anybody I know.

- Definitely true
- Mostly true
- Do not know
- Mostly false
- Definitely false

Q4: How true or false is each of the following statements for you? My health is excellent.

- Definitely true
- Mostly true
- Do not know
- Mostly false
- Definitely false

Q5: How true or false is each of the following statements for you? I have been feeling bad lately.

- Definitely true
- Mostly true
- Do not know
- Mostly false
- Definitely false

### Bodily Pain

Q1: How much bodily pain have you generally had during the past 4 weeks?

- None
- Very mild
- Mild
- Moderate
- Severe
- Very severe

Q2: During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?

- Not at all
- A little bit
- Moderately
- A lot
- Extremely

## 28 Relationship Combinations Included in Chapter 5 Analysis

- 0 no exposure
- 1 self only
- 2 parent only
- 3 grandparent only
- 4 great grandparent only
- 5 self + parent
- 6 self + grandparent
- 7 self + great-grandparent
- 8 parent + grandparent
- 9 parent + great-grandparent
- 10 grandparent + great-grandparent
- 11 self + parent + grandparent
- 12 self + parent + great-grandparent
- 13 self + grandparent + great-grandparent
- 14 parent + grandparent + great grandparent
- 15 self + parent+ grandparent + great-grandparent
- 16 great-great-grandparent only
- 17 self + great-great-grandparent
- 18 parent + great-great-grandparent
- 19 grandparent + great-great-grandparent
- 20 great-grandparent + great-great-grandparent
- 21 self + parent + great-great-grandparent
- 22 self + grandparent + great-great-grandparent
- 23 self + great-grandparent + great-great-grandparent
- 24 self + parent+ grandparent + great-great-grandparent
- 25 self + parent + great-grandparent + great-great-grandparent
- 26 self + grandparent + great-grandparent + great-great-grandparent
- 27 parent + grandparent + great-grandparent + great-great-grandparent
- 28 self + parent + grandparent + great-grandparent + great-great-grandparent

## APPENDIX B: CHAPTER 6 APPENDIX MATERIALS

### 18 Hypotheses applicable to the research study question for Chapter 6 analysis

- H1. The intergenerational exposure variable may positively influence adoption or foster care.
- H2. The intergenerational exposure variable may positively influence parenting struggle.
- H3. a. The intergenerational exposure variable may positively influence overt microaggressions.
  - b. The intergenerational exposure variable may positively influence identity-based microaggressions.
  - c. The intergenerational exposure variable may positively influence covetous microaggressions.
- H4. a. The intergenerational exposure variable may positively influence emotional abuse score.
  - b. The intergenerational exposure variable may positively influence physical abuse score.
  - c. The intergenerational exposure variable may positively influence sexual abuse score.
  - d. The intergenerational exposure variable may positively influence emotional neglect score.
  - e. The intergenerational exposure variable may positively influence physical neglect score.
- H5. The intergenerational exposure variable may negatively influence self-esteem.
- H6. a. The intergenerational exposure variable may negatively influence emotional social support.
  - b. The intergenerational exposure variable may negatively influence physical social support.
- H7. Adoption or foster care may positively influence parenting struggle.
- H8. a. Adoption or foster care may negatively influence emotional social support.
  - b. Adoption or foster care may negatively influence physical social support.
- H9. a. Adoption or foster care may positively influence emotional abuse score.
  - b. Adoption or foster care may positively influence physical abuse score.
  - c. Adoption or foster care may positively influence sexual abuse score.
  - d. Adoption or foster care may positively influence emotional neglect score.
  - e. Adoption or foster care may positively influence physical neglect score.
- H10. a. Adoption or foster care may positively influence overt microaggressions.
  - b. Adoption or foster care may positively influence identity-based microaggressions.
  - c. Adoption or foster care may positively influence covetous microaggressions.
- H11. a.1. Emotional abuse may negatively influence emotional social support.

- a.2. Physical abuse may negatively influence emotional social support.
  - a.3. Sexual abuse may negatively influence emotional social support.
  - a.4. Emotional neglect may negatively influence emotional social support.
  - a.5. Physical neglect may negatively influence emotional social support.
  - b.1. Emotional abuse may negatively influence physical social support.
  - b.2. Physical abuse may negatively influence physical social support.
  - b.3. Sexual abuse may negatively influence physical social support.
  - b.4. Emotional neglect may negatively influence physical social support.
  - b.5. Physical neglect may negatively influence physical social support.
- H12. Adoption or foster care may negatively influence self-esteem.
- H13. a.1. Emotional abuse may positively influence overt microaggressions.
- a.2. Physical abuse may positively influence overt microaggressions.
  - a.3. Sexual abuse may positively influence overt microaggressions.
  - a.4. Emotional neglect may positively influence overt microaggressions.
  - a.5. Physical neglect may positively influence overt microaggressions.
  - b.1. Emotional abuse may positively influence identity-based microaggressions.
  - b.2. Physical abuse may positively influence identity-based microaggressions.
  - b.3. Sexual abuse may positively influence identity-based microaggressions.
  - b.4. Emotional neglect may positively influence identity-based microaggressions.
  - b.5. Physical neglect may positively influence identity-based microaggressions.
  - c.1. Emotional abuse may positively influence covetous microaggressions.
  - c.2. Physical abuse may positively influence covetous microaggressions.
  - c.3. Sexual abuse may positively influence covetous microaggressions.
  - c.4. Emotional neglect may positively influence covetous microaggressions.
  - c.5. Physical neglect may positively influence covetous microaggressions.
- H14.1. Emotional abuse may negatively influence parenting struggle.
- 2. Physical abuse may negatively influence parenting struggle.
  - 3. Sexual abuse may negatively influence parenting struggle.
  - 4. Emotional neglect may negatively influence parenting struggle.
  - 5. Physical neglect may negatively influence parenting struggle.
- H15. 1. Emotional abuse may negatively influence self-esteem.

2. Physical abuse may negatively influence self-esteem.
  3. Sexual abuse may negatively influence self-esteem.
  4. Emotional neglect may negatively influence self-esteem.
  5. Physical neglect may negatively influence self-esteem.
- H16. 1. Overt microaggressions may positively influence parenting struggle.
2. Identity-based microaggressions may positively influence parenting struggle.
  3. Covetous microaggressions may positively influence parenting struggle.
- H17. Self-esteem may negatively influence parenting struggle.
- H18.1. Emotional social support may negatively influence parenting struggle.
2. Physical social support may negatively influence parenting struggle.

**Bernstein et al. (2003) Childhood Trauma Questionnaire<sup>278</sup>**

1. When I was growing up I didn't have enough to eat.	0. Never true 1. Seldom true 2. Sometimes true 3. Halftimes true 4. Often true 5. Very often true	Physical neglect
2. When I was growing up, I knew that there was someone to take care of me and protect me.	0. Very often true 1. Often true 2. Halftimes true 3. Sometimes true 4. Seldom true 5. Never true	Physical neglect
3. When I was growing up, people in my family called me things like stupid, lazy, or ugly.	0. Never true 1. Seldom true 2. Sometimes true 3. Halftimes true 4. Often true 5. Very often true	Emotional abuse
4. When I was growing up, my parents were too drunk or high to take care of the family.	0. Never true 1. Seldom true 2. Sometimes true 3. Halftimes true 4. Often true 5. Very often true	Physical neglect
5. When I was growing up, there was someone in my family who helped me feel that I was important or special.	0. Never true 1. Seldom true 2. Sometimes true 3. Halftimes true 4. Often true 5. Very often true	Emotional neglect
6. When I was growing up, I had to wear dirty clothes.	0. Never true 1. Seldom true 2. Sometimes true 3. Halftimes true 4. Often true 5. Very often true	Physical neglect
7. When I was growing up, I felt loved.	0. Never true 1. Seldom true 2. Sometimes true 3. Halftimes true 4. Often true 5. Very often true	Emotional neglect
8. When I was growing up, I thought that my parents	0. Never true 1. Seldom true	Emotional abuse

wished I had never been born.	<ul style="list-style-type: none"> <li>2. Sometimes true</li> <li>3. Halftimes true</li> <li>4. Often true</li> <li>5. Very often true</li> </ul>	
9. When I was growing up, I got hit so hard by someone in my family that I had to see a doctor or go to the hospital.	<ul style="list-style-type: none"> <li>0. Never true</li> <li>1. Seldom true</li> <li>2. Sometimes true</li> <li>3. Halftimes true</li> <li>4. Often true</li> <li>5. Very often true</li> </ul>	Physical abuse
10. When I was growing up, there was nothing I wanted to change about my family.	<ul style="list-style-type: none"> <li>0. Never true</li> <li>1. Seldom true</li> <li>2. Sometimes true</li> <li>3. Halftimes true</li> <li>4. Often true</li> <li>5. Very often true</li> </ul>	
11. When I was growing up, people in my family hit me so hard that it left me with bruises or marks.	<ul style="list-style-type: none"> <li>0. Never true</li> <li>1. Seldom true</li> <li>2. Sometimes true</li> <li>3. Halftimes true</li> <li>4. Often true</li> <li>5. Very often true</li> </ul>	Physical abuse
12. When I was growing up, I was punished with a belt, a board, a cord, or some other hard objects.	<ul style="list-style-type: none"> <li>0. Never true</li> <li>1. Seldom true</li> <li>2. Sometimes true</li> <li>3. Halftimes true</li> <li>4. Often true</li> <li>5. Very often true</li> </ul>	Physical abuse
13. When I was growing up, people in my family looked out for each other.	<ul style="list-style-type: none"> <li>0. Never true</li> <li>1. Seldom true</li> <li>2. Sometimes true</li> <li>3. Halftimes true</li> <li>4. Often true</li> <li>5. Very often true</li> </ul>	Emotional neglect
14. When I was growing up, people in my family said hurtful or insulting things to me.	<ul style="list-style-type: none"> <li>0. Never true</li> <li>1. Seldom true</li> <li>2. Sometimes true</li> <li>3. Halftimes true</li> <li>4. Often true</li> <li>5. Very often true</li> </ul>	Emotional abuse
15. When I was growing up, I believe that I was physically abused.	<ul style="list-style-type: none"> <li>0. Never true</li> <li>1. Seldom true</li> <li>2. Sometimes true</li> <li>3. Halftimes true</li> <li>4. Often true</li> <li>5. Very often true</li> </ul>	Physical abuse



16. When I was growing up, I had the perfect childhood.	0. Never true 1. Seldom true 2. Sometimes true 3. Halftimes true 4. Often true 5. Very often true	
17. When I was growing up, I got hit or beaten so badly that it was noticed by someone like a teacher, neighbor, or doctor.	0. Never true 1. Seldom true 2. Sometimes true 3. Halftimes true 4. Often true 5. Very often true	Physical abuse
18. When I was growing up, I felt that someone in my family hated me.	0. Never true 1. Seldom true 2. Sometimes true 3. Halftimes true 4. Often true 5. Very often true	Emotional abuse
19. When I was growing up, people in my family felt close to each other.	0. Never true 1. Seldom true 2. Sometimes true 3. Halftimes true 4. Often true 5. Very often true	Emotional neglect
20. When I was growing up, I had the best family in the world.	0. Never true 1. Seldom true 2. Sometimes true 3. Halftimes true 4. Often true 5. Very often true	Sexual abuse
21. When I was growing up, someone tried to touch me in a sexual way or tried to make me touch them.	0. Never true 1. Seldom true 2. Sometimes true 3. Halftimes true 4. Often true 5. Very often true	Sexual abuse
22. When I was growing up, someone threatened to hurt me or tell lies about me unless I did something sexual with them.	0. Never true 1. Seldom true 2. Sometimes true 3. Halftimes true 4. Often true 5. Very often true	
23. When I was growing up, someone tried to make me do sexual things or watch sexual things.	0. Never true 1. Seldom true 2. Sometimes true 3. Halftimes true	Sexual abuse

	<ul style="list-style-type: none"> <li>4. Often true</li> <li>5. Very often true</li> </ul>	
24. When I was growing up, someone molested me.	<ul style="list-style-type: none"> <li>0. Never true</li> <li>1. Seldom true</li> <li>2. Sometimes true</li> <li>3. Halftimes true</li> <li>4. Often true</li> <li>5. Very often true</li> </ul>	Sexual abuse
25. When I was growing up, I believe that I was emotionally abused.	<ul style="list-style-type: none"> <li>0. Never true</li> <li>1. Seldom true</li> <li>2. Sometimes true</li> <li>3. Halftimes true</li> <li>4. Often true</li> <li>5. Very often true</li> </ul>	Emotional abuse
26. When I was growing up, there was someone to take me to the doctor if I needed it.	<ul style="list-style-type: none"> <li>0. Never true</li> <li>1. Seldom true</li> <li>2. Sometimes true</li> <li>3. Halftimes true</li> <li>4. Often true</li> <li>5. Very often true</li> </ul>	Physical neglect
27. When I was growing up, I believe that I was sexually abused	<ul style="list-style-type: none"> <li>0. Never true</li> <li>1. Seldom true</li> <li>2. Sometimes true</li> <li>3. Halftimes true</li> <li>4. Often true</li> <li>5. Very often true</li> </ul>	Sexual abuse
28. When I was growing up, my family was a source of strength and support.	<ul style="list-style-type: none"> <li>0. Never true</li> <li>1. Seldom true</li> <li>2. Sometimes true</li> <li>3. Halftimes true</li> <li>4. Often true</li> <li>5. Very often true</li> </ul>	Emotional neglect

### 33 Microaggressions Questions

<p>1. In your lifetime, how much were you distressed or bothered by unfair treatment by your bosses or supervisors because you are Native?</p>	<p>0. Not at all 1. A little bit 2. Moderately 3. Quite a bit 4. Extremely</p>	<p>overt</p>
<p>2. In your lifetime, how much were you distressed or bothered by unfair treatment from people in helping or social service jobs, such as a therapist or social worker?</p>	<p>0. Not at all 1. A little bit 2. Moderately 3. Quite a bit 4. Extremely</p>	<p>overt</p>
<p>3. In your lifetime, how much were you distressed or bothered by unfair treatment by institutions, such as schools, police, social services, or immigration because you are Native?</p>	<p>0. Not at all 1. A little bit 2. Moderately 3. Quite a bit 4. Extremely</p>	<p>overt</p>
<p>4. In your lifetime, how much were you distressed or bothered by wanting to verbally respond to someone for being anti-Indian, but didn't?</p>	<p>0. Not at all 1. A little bit 2. Moderately 3. Quite a bit 4. Extremely</p>	
<p>5. In your lifetime, how much were you distressed or bothered by being accused of not doing your share of the work because you are Native?</p>	<p>0. Not at all 1. A little bit 2. Moderately 3. Quite a bit 4. Extremely</p>	<p>overt</p>
<p>6. In your lifetime, how much were you distressed or bothered by anti-Indian</p>	<p>0. Not at all 1. A little bit 2. Moderately 3. Quite a bit 4. Extremely</p>	<p>overt</p>

sentiments made to you?		
7. In your lifetime, how much were you distressed or bothered by having to take drastic steps such as quitting your job or moving away to deal with some racist thing that was done to you?	<ul style="list-style-type: none"> <li>0. Not at all</li> <li>1. A little bit</li> <li>2. Moderately</li> <li>3. Quite a bit</li> <li>4. Extremely</li> </ul>	overt
8. In your lifetime, how much were you distressed or bothered by being called a racist name like Chief, Wahoo, Squaw, or Pocahontas?	<ul style="list-style-type: none"> <li>0. Not at all</li> <li>1. A little bit</li> <li>2. Moderately</li> <li>3. Quite a bit</li> <li>4. Extremely</li> </ul>	overt
9. In your lifetime, how much were you distressed or bothered by getting into an argument with non-Natives about sometime they said that was racist towards Native Americans?	<ul style="list-style-type: none"> <li>0. Not at all</li> <li>1. A little bit</li> <li>2. Moderately</li> <li>3. Quite a bit</li> <li>4. Extremely</li> </ul>	overt
10. In your lifetime, how much were you distressed or bothered by being made fun of or picked-on because you are Native?	<ul style="list-style-type: none"> <li>0. Not at all</li> <li>1. A little bit</li> <li>2. Moderately</li> <li>3. Quite a bit</li> <li>4. Extremely</li> </ul>	overt
11. In your lifetime, how much were you distressed or bothered by being asked if you are a “real Indian” by a non-Native person?	<ul style="list-style-type: none"> <li>0. Not at all</li> <li>1. A little bit</li> <li>2. Moderately</li> <li>3. Quite a bit</li> <li>4. Extremely</li> </ul>	identity
12. In your lifetime, how much were you distressed or bothered by being asked to prove your Indianness	<ul style="list-style-type: none"> <li>0. Not at all</li> <li>1. A little bit</li> <li>2. Moderately</li> <li>3. Quite a bit</li> <li>4. Extremely</li> </ul>	identity

or authenticity by a non-Native person?		
13. In your lifetime, how much were you distressed or bothered by being asked by a stranger if he or she could touch you because you are Native?	<ul style="list-style-type: none"> <li>0. Not at all</li> <li>1. A little bit</li> <li>2. Moderately</li> <li>3. Quite a bit</li> <li>4. Extremely</li> </ul>	covet
14. In your lifetime, how much were you distressed or bothered by being asked by a non-Native stranger if you could perform a ceremony or contact a medicine person for him or her?	<ul style="list-style-type: none"> <li>0. Not at all</li> <li>1. A little bit</li> <li>2. Moderately</li> <li>3. Quite a bit</li> <li>4. Extremely</li> </ul>	covet
15. In your lifetime, how much were you distressed or bothered by feeling invisible to non-Natives?	<ul style="list-style-type: none"> <li>0. Not at all</li> <li>1. A little bit</li> <li>2. Moderately</li> <li>3. Quite a bit</li> <li>4. Extremely</li> </ul>	
16. In your lifetime, how much were you distressed or bothered by teaching “Indian 101” to non-Natives to make your point or be heard?	<ul style="list-style-type: none"> <li>0. Not at all</li> <li>1. A little bit</li> <li>2. Moderately</li> <li>3. Quite a bit</li> <li>4. Extremely</li> </ul>	
17. In your lifetime, how much were you distressed or bothered by being asked to change your Native appearance or apparel by your employer or agency, for example, being asked to cut your hair?	<ul style="list-style-type: none"> <li>0. Not at all</li> <li>1. A little bit</li> <li>2. Moderately</li> <li>3. Quite a bit</li> <li>4. Extremely</li> </ul>	overt
18. In your lifetime, how much were you distressed or bothered by hearing from non-	<ul style="list-style-type: none"> <li>0. Not at all</li> <li>1. A little bit</li> <li>2. Moderately</li> <li>3. Quite a bit</li> </ul>	overt

Natives how surprisingly articulate, well read, or good your language skills are?	4. Extremely	
19. In your lifetime, how much were you distressed or bothered by non-Natives stating to you that you “don’t look or act Indian”?	0. Not at all 1. A little bit 2. Moderately 3. Quite a bit 4. Extremely	identity
20. In your lifetime, how much were you distressed or bothered by hearing discussion by instructors or other persons in authority about Indians as if they no longer exist?	0. Not at all 1. A little bit 2. Moderately 3. Quite a bit 4. Extremely	
21. In your lifetime, how much were you distressed or bothered by feeling stereotyped or boxed-in to a certain way of being “Native” by non-Native persons?	0. Not at all 1. A little bit 2. Moderately 3. Quite a bit 4. Extremely	
22. In your lifetime, how much were you distressed or bothered by being hit, kicked, or physically attacked because you are Native?	0. Not at all 1. A little bit 2. Moderately 3. Quite a bit 4. Extremely	overt
23. In your lifetime, how much were you distressed or bothered by being trailed or followed in a store because you are Native?	0. Not at all 1. A little bit 2. Moderately 3. Quite a bit 4. Extremely	overt
24. In your lifetime, how much were you distressed or bothered by being told to lighten up or get a	0. Not at all 1. A little bit 2. Moderately 3. Quite a bit 4. Extremely	

sense of humor about Indian mascots or logos (example, Cleveland Indians or Tomahawk Chop)?		
25. In your lifetime, how much were you distressed or bothered by being mistaken by non-Natives as a racial group other than Native?	<ul style="list-style-type: none"> <li>0. Not at all</li> <li>1. A little bit</li> <li>2. Moderately</li> <li>3. Quite a bit</li> <li>4. Extremely</li> </ul>	identity
26. In your lifetime, how much were you distressed or bothered by hearing racist statements such as “Indian giver” among others?	<ul style="list-style-type: none"> <li>0. Not at all</li> <li>1. A little bit</li> <li>2. Moderately</li> <li>3. Quite a bit</li> <li>4. Extremely</li> </ul>	overt
27. In your lifetime, how much were you distressed or bothered by having non-Native strangers speak a foreign language to you such as Spanish or Chinese?	<ul style="list-style-type: none"> <li>0. Not at all</li> <li>1. A little bit</li> <li>2. Moderately</li> <li>3. Quite a bit</li> <li>4. Extremely</li> </ul>	
28. In your lifetime, how much were you distressed or bothered by being told that Indians are conquered and should stop trying to live in the past?	<ul style="list-style-type: none"> <li>0. Not at all</li> <li>1. A little bit</li> <li>2. Moderately</li> <li>3. Quite a bit</li> <li>4. Extremely</li> </ul>	
29. In your lifetime, how much were you distressed or bothered by being told by a non-native person that he or she was an Indian in a past life or that their grandmother was a Cherokee princess?	<ul style="list-style-type: none"> <li>0. Not at all</li> <li>1. A little bit</li> <li>2. Moderately</li> <li>3. Quite a bit</li> <li>4. Extremely</li> </ul>	
30. In your lifetime, how much were you	<ul style="list-style-type: none"> <li>0. Not at all</li> <li>1. A little bit</li> </ul>	

distressed or bothered by being told by non-Natives how they wished they were Indian too?	<ul style="list-style-type: none"> <li>2. Moderately</li> <li>3. Quite a bit</li> <li>4. Extremely</li> </ul>	
31. In your lifetime, how much were you distressed or bothered by being told by non-Natives that they felt a spiritual connection to Indian people?	<ul style="list-style-type: none"> <li>0. Not at all.</li> <li>1. A little bit</li> <li>2. Moderately</li> <li>3. Quite a bit</li> <li>4. Extremely</li> </ul>	
32. In your lifetime, how much were you distressed or bothered by being told you are paranoid by non-Natives?	<ul style="list-style-type: none"> <li>0. Not at all</li> <li>1. A little bit</li> <li>2. Moderately</li> <li>3. Quite a bit</li> <li>4. Extremely</li> </ul>	
33. In your lifetime, how much were you distressed or bothered by being told by non-Natives how “lucky” you are to be Indian?	<ul style="list-style-type: none"> <li>0. Not at all</li> <li>1. A little bit</li> <li>2. Moderately</li> <li>3. Quite a bit</li> <li>4. Extremely</li> </ul>	covet



### 10-Question Rosenberg Self-Esteem Scale<sup>279</sup>

How much do you agree or disagree with the following statements: 1. I feel that I am a person of worth, at least on an equal plane with others.	1. Strongly disagree 2. Somewhat disagree 3. Somewhat agree 4. Strongly agree	included
2. I feel that I have a number of good qualities.	1. Strongly disagree 2. Somewhat disagree 3. Somewhat agree 4. Strongly agree	
3. All in all, I am inclined to feel that I am a failure.	1. Strongly disagree 2. Somewhat disagree 3. Somewhat agree 4. Strongly agree	included
4. I am able to do things as well as most other people.	1. Strongly disagree 2. Somewhat disagree 3. Somewhat agree 4. Strongly agree	included
5. I feel I do not have much to be proud of.	1. Strongly disagree 2. Somewhat disagree 3. Somewhat agree 4. Strongly agree	included
6. I take a positive attitude toward myself.	1. Strongly disagree 2. Somewhat disagree 3. Somewhat agree 4. Strongly agree	
7. On the whole, I am satisfied with myself.	1. Strongly disagree 2. Somewhat disagree 3. Somewhat agree 4. Strongly agree	included
8. I wish I could have more respect for myself.	1. Strongly disagree 2. Somewhat disagree 3. Somewhat agree 4. Strongly agree	included
9. I certainly feel useless at times.	1. Strongly disagree 2. Somewhat disagree 3. Somewhat agree 4. Strongly agree	included
10. At times I think I am no good at all.	1. Strongly disagree 2. Somewhat disagree 3. Somewhat agree 4. Strongly agree	included

**MOS Social Support Scale.<sup>280</sup> Variables that were ultimately included are indicated with either an “emotional” or “instrumental” label.**

How often is someone available to provide the following types of support to you if you need it? 1. Someone you can count on to listen to you when you need to talk.	0. None of the time 1. A little of the time 2. Some of the time 3. Most of the time	emotional
2. Someone to give you good advice about a crisis.	0. None of the time 1. A little of the time 2. Some of the time 3. Most of the time	emotional
3. Someone to give you a ride to the doctor if you needed it.	0. None of the time 1. A little of the time 2. Some of the time 3. Most of the time	instrumental
4. Someone who shows you love and affection.	0. None of the time 1. A little of the time 2. Some of the time 3. Most of the time	emotional
5. Someone to have a good time with.	0. None of the time 1. A little of the time 2. Some of the time 3. Most of the time	instrumental
6. Someone to give you information to help you understand a situation.	0. None of the time 1. A little of the time 2. Some of the time 3. Most of the time	emotional
7. Someone to confide in or talk to about yourself or your problems.	0. None of the time 1. A little of the time 2. Some of the time 3. Most of the time	emotional
8. Someone who hugs you.	0. None of the time 1. A little of the time 2. Some of the time 3. Most of the time	
9. Someone to get together with for relaxation.	0. None of the time 1. A little of the time 2. Some of the time 3. Most of the time	instrumental
10. Someone whose advice you really want.	0. None of the time 1. A little of the time 2. Some of the time	emotional

	3. Most of the time	
11. Someone to do things with to help you get your mind off things.	0. None of the time 1. A little of the time 2. Some of the time 3. Most of the time	instrumental
12. Someone to help you if you were confined to bed.	0. None of the time 1. A little of the time 2. Some of the time 3. Most of the time	instrumental
13. Someone to help with daily chores if you were sick.	0. None of the time 1. A little of the time 2. Some of the time 3. Most of the time	instrumental
14. Someone to share your most private worries and fears with.	0. None of the time 1. A little of the time 2. Some of the time 3. Most of the time	
15. Someone to turn to for suggestions about how to deal with a personal problem.	0. None of the time 1. A little of the time 2. Some of the time 3. Most of the time	emotional
16. Someone to do something enjoyable with.	0. None of the time 1. A little of the time 2. Some of the time 3. Most of the time	instrumental
17. Someone who understands your problems.	0. None of the time 1. A little of the time 2. Some of the time 3. Most of the time	emotional
18. Someone to love and make you feel wanted.	0. None of the time 1. A little of the time 2. Some of the time 3. Most of the time	
19. Someone to prepare your meals if you were unable to do it yourself.	0. None of the time 1. A little of the time 2. Some of the time 3. Most of the time	

### Unique Parenting Struggle Variable

1. It is hard to take care of myself when I have so much grief to deal with as a Native person.	1.strongly disagree 2. somewhat disagree 3. somewhat agree 4. strongly agree
2. I struggle with my role as a parent.	1. Strongly disagree 2. Somewhat disagree 3. Somewhat agree 4. Strongly agree
3. I feel overwhelmed with my duties as a parent.	1. Strongly disagree 2. Somewhat disagree 3. Somewhat agree 4. Strongly agree
4. I have had to learn to parent as an adult.	1. Strongly disagree 2. Somewhat disagree 3. Somewhat agree 4. Strongly agree

**Results Table Including Hypotheses and Covariates**

<b>Model</b>	<b>Hypothesis</b>	<b>Standardized Regression Coefficient</b>	<b>p-value</b>	<b>Hypothesis result</b>
25,26,27,28	H1: The intergenerational exposure variable will positively influence adoption or foster care.	family history: -0.20 parent: -0.30 grandparent: -0.24 caregiver: -0.16	family history: 0.217 parent: 0.007 grandparent: 0.054 caregiver: 0.122	Unsupported: all four intergenerational exposures negatively influenced adoption or foster care.
5,6,7,8	H2: The intergenerational exposure variable will positively influence parenting struggle.	family history: -0.68 parent: 0.47 grandparent: -0.55 caregiver: -0.58	family history: 0.615 parent: 0.487 grandparent: 0.614 caregiver: 0.371	family history: unsupported; family history negatively influenced parenting struggle. parent: supported grandparent: unsupported; grandparental exposure negatively influenced parenting struggle. caregiver: unsupported; caregiver exposure negatively influenced parenting struggle.
9,10,11,12	H3.a. The intergenerational exposure variable will positively influence identity-based microaggressions.	family history: 0.91 parent: -0.56 grandparent: 2.1 caregiver: 1.70	family history: 0.579 parent: 0.623 grandparent: 0.104 caregiver: 0.100	family history: supported parent: unsupported; parent exposure negatively influenced identity-based microaggressions. grandparent: supported caregiver: supported
9,10,11,12	H3.b. The intergenerational exposure variable will positively	family history: -0.91 parent: 0.04 grandparent:	family history: 0.868 parent: 0.991 grandparent:	family history: unsupported; family history negatively influenced overt microaggressions.

	influence overt microaggressions.	0.74 caregiver: 6.2	0.862 caregiver: 0.062	parent: supported grandparent: supported caregiver: supported
9,10,11,12	H3.c. The intergenerational exposure variable will positively influence covetous microaggressions.	family history: -0.72 parent: 0.63 grandparent: 0.29 caregiver: 1.00	family history: 0.569 parent: 0.473 grandparent: 0.772 caregiver: 0.194	family history: unsupported; family history negatively influenced covetous microaggressions. parent: supported grandparent: supported caregiver: supported
21,22,23,24	H4.a. The intergenerational exposure variable will positively influence emotional abuse score.	family history: -0.11 parent: -0.17 grandparent: 0.29 caregiver: -0.01	family history: 0.502 parent: 0.140 grandparent: 0.022 caregiver: 0.902	family history: unsupported; family history negatively influenced emotional abuse score. parent: unsupported; parental exposure negatively influenced emotional abuse score. grandparent: supported caregiver: unsupported; person raised by exposure negatively influenced emotional abuse score.
21,22,23,24	H4.b. The intergenerational exposure variable will positively influence physical abuse score.	family history: -0.12 parent: -0.10 grandparent: 0.09 caregiver: 0.14	family history: 0.458 parent: 0.394 grandparent: 0.468 caregiver: 0.176	family history: unsupported; family history negatively influenced physical abuse score. parent: unsupported; parental exposure negatively influenced physical abuse score. grandparent:

				supported caregiver: supported
21,22,23,24	H4.c. The intergenerational exposure variable will positively influence sexual abuse score.	family history: -0.01 parent: -0.07 grandparent: 0.06 caregiver: -0.02	family history: 0.935 parent: 0.319 grandparent: 0.426 caregiver: 0.745	family history: unsupported; family history negatively influenced sexual abuse score. parent: unsupported; parental exposure negatively influenced sexual abuse score. grandparent: supported caregiver: unsupported; person raised by exposure negatively influenced sexual abuse score.
21,22,23,24	H4.d. The intergenerational exposure variable will positively influence emotional neglect score.	family history: -0.31 parent: -0.11 grandparent: -0.19 caregiver: 0.02	family history: 0.042 parent: 0.299 grandparent: 0.110 caregiver: 0.840	family history: unsupported; family history negatively influenced emotional neglect score. parent: unsupported; parental exposure negatively influenced emotional neglect score. grandparent: unsupported; grandparental exposure negatively influenced emotional neglect score. caregiver: supported

21,22,23,24	H4.e. The intergenerational exposure variable will positively influence physical neglect score.	family history: -0.33 parent: -0.06 grandparent: -0.06 caregiver: 0.16	family history: 0.037 parent: 0.614 grandparent: 0.653 caregiver: 0.109	family history: unsupported; family history negatively influenced physical neglect score. parent: unsupported; parental exposure negatively influenced physical neglect score. grandparent: unsupported; grandparental exposure negatively influenced physical neglect score. caregiver: supported
13,14,15,16	H5. The intergenerational exposure variable will negatively influence self-esteem.	family history: 3.80 parent: 1.50 grandparent: 1.20 caregiver: 0.10	family history: 0.009 parent: 0.141 grandparent: 0.324 caregiver: 0.916	family history: unsupported; family history positively influenced self-esteem. parent: unsupported; parental exposure positively influenced self-esteem. grandparent: unsupported; grandparental exposure positively influenced self-esteem. caregiver: unsupported; person raised by exposure positively influenced self-esteem.
5,6,7,8	H6.a. The intergenerational exposure variable will negatively influence emotional social support.	family history: 3.6 parent: 1.49 grandparent: 3.54 caregiver: -0.15	family history: 0.177 parent: 0.430 grandparent: 0.090 caregiver: 0.931	family history: unsupported; family exposure positively influenced emotional social support. parent: unsupported;



				parental exposure positively influenced emotional social support. grandparent: unsupported; grandparental exposure positively influenced emotional social support. caregiver: supported	
5,6,7,8	H6.b. The intergenerational exposure variable will negatively influence physical social support.	family history: 4.1 parent: 1.44 grandparent: 3.32 caregiver: 0.17	family history: 0.085 parent: 0.391 grandparent: 0.074 caregiver: 0.909	family history: unsupported; family history positively influenced physical social support. parent: unsupported; parental exposure positively influenced physical social support. grandparent: unsupported; grandparental exposure positively influenced physical social support. caregiver: unsupported persona raised by exposure positively influenced physical social support.	
25,26,27,28	H7. Adoption or foster care will positively influence parenting struggle.		-1.00	0.124	unsupported; adoption or foster care negatively influenced parental struggle.
33,34,35,36	H8.a. Adoption or foster care will negatively influence		-2.00	0.226	supported

	emotional social support.			
33,34,35,36	H8.b. Adoption or foster care will negatively influence physical social support.	-1.70	0.272	supported
33,34,35,36	H9.a. Adoption or foster care will positively influence emotional abuse score.	0.07	0.514	supported
21,22,23,24	H9.b. Adoption or foster care will positively influence physical abuse score.	0.00	0.987	unsupported; adoption or foster care neither positively or negatively influenced physical abuse score.
21,22,23,24	H9.c. Adoption or foster care will positively influence sexual abuse score.	0.01	0.896	supported
21,22,23,24	H9.d. Adoption or foster care will positively influence emotional neglect score.	0.24	0.012	supported
21,22,23,24	H9.e. Adoption or foster care will positively influence physical neglect score.	0.20	0.048	supported
29, 30, 31,32	H10.a. Adoption or foster care will positively influence overt microaggressions.	-2.05	0.549	unsupported; adoption or foster care negatively influenced overt microaggressions.
29, 30, 31,32	H10.b. Adoption or foster care will positively	-0.04	0.969	unsupported; adoption or foster care negatively

	influence identity-based microaggressions.			influenced identity-based microaggressions.
29, 30, 31,32	H10.c. Adoption or foster care will positively influence covetous microaggressions.	-0.25	0.757	unsupported; adoption or foster care negatively influenced covetous microaggressions.
37,38,39,40	H11.a.1. Emotional abuse will negatively influence emotional social support.	3.09	0.135	unsupported; emotional abuse positively influences emotional social support.
37,38,39,40	H11.a.2. Physical abuse will negatively influence emotional social support.	0.41	0.841	unsupported; physical abuse positively influences emotional social support.
37,38,39,40	H11.a.3. Sexual abuse will negatively influence emotional social support.	-4.36	0.113	supported
37,38,39,40	H11.a.4. Emotional neglect will negatively influence emotional social support.	-1.71	0.354	supported
37,38,39,40	H11.a.5. Physical neglect will negatively influence emotional social support.	-3.98	0.026	supported
37,38,39,40	H11.b.1. Emotional abuse will negatively influence physical social support.	2.27	0.217	unsupported; emotional abuse positively influences physical social support.

37,38,39,40	H11.b.2. Physical abuse will negatively influence physical social support.	-0.10	0.955	supported
37,38,39,40	H11.b.3. Sexual abuse will negatively influence physical social support.	-2.28	0.352	supported
37,38,39,40	H11.b.4. Emotional neglect will negatively influence physical social support.	-1.53	0.352	supported
37,38,39,40	H11.b.5. Physical neglect will negatively influence physical social support.	-4.03	0.011	supported
33,34,35,36	H12. Adoption or foster care will negatively influence self-esteem.	-1.04	0.269	supported
41,42,43,44	H13.a.1. Emotional abuse will positively influence overt microaggressions.	-0.26	0.951	unsupported; emotional abuse negatively influences overt microaggressions.
41,42,43,44	H13.a.2. Physical abuse will positively influence overt microaggressions.	4.60	0.262	supported
41,42,43,44	H13.a.3. Sexual abuse will positively influence overt microaggressions.	1.59	0.775	supported

41,42,43,44	H13.a.4. Emotional neglect will positively influence overt microaggressions.	-3.32	0.372	unsupported; emotional neglect negatively influences overt microaggressions.
41,42,43,44	H13.a.5. Physical neglect will positively influence overt microaggressions.	8.32	0.021	supported
41,42,43,44	H13.b.1. Emotional abuse will positively influence identity-based microaggressions.	0.85	0.430	supported
41,42,43,44	H13.b.2. Physical abuse will positively influence identity-based microaggressions.	0.62	0.557	supported
41,42,43,44	H13.b.3. Sexual abuse will positively influence identity-based microaggressions.	0.36	0.799	supported
41,42,43,44	H13.b.4. Emotional neglect will positively influence identity-based microaggressions.	-0.06	0.952	unsupported; emotional neglect negatively influences identity-based microaggressions.
41,42,43,44	H13.b.5. Physical neglect will positively influence identity-based microaggressions.	0.90	0.329	supported
41,42,43,44	H13.c.1. Emotional abuse will positively influence	0.30	0.766	supported

	covetous microaggressions.			
41,42,43,44	H13.c.2. Physical abuse will positively influence covetous microaggressions.	0.31	0.753	supported
41,42,43,44	H13.c.3. Sexual abuse will positively influence covetous microaggressions.	0.56	0.674	supported
41,42,43,44	H13.c.4. Emotional neglect will positively influence covetous microaggressions.	-0.23	0.796	unsupported; emotional neglect negatively influences covetous microaggressions.
41,42,43,44	H13.c.5. Physical neglect will positively influence covetous microaggressions.	1.53	0.073	supported
21,22,23,24	H14.1. Emotional abuse will positively influence parenting struggle.	1.54	0.052	unsupported; emotional abuse positively influences parenting struggle.
21,22,23,24	H14.2. Physical abuse will negatively influence parenting struggle.	0.06	0.935	unsupported; physical abuse positively influences parenting struggle.
21,22,23,24	H14.3. Sexual abuse will negatively influence parenting struggle.	1.06	0.314	unsupported; sexual abuse positively influences parenting struggle.

21,22,23,24	H14.4. Emotional neglect will negatively influence parenting struggle.	-1.74	0.014	supported
21,22,23,24	H14.5. Physical neglect will negatively influence parenting struggle.	-0.07	0.913	supported
45,46,47,48	H15.1. Emotional abuse will negatively influence self-esteem.	-1.28	0.268	supported
45,46,47,48	H15.2. Physical abuse will negatively influence self-esteem.	-0.005	0.997	supported
45,46,47,48	H15.3. Sexual abuse will negatively influence self-esteem	-1.32	0.389	supported
45,46,47,48	H15.4. Emotional neglect will negatively influence self-esteem.	-1.28	0.215	supported
45,46,47,48	H15.5. Physical neglect will negatively influence self-esteem.	-0.96	0.338	supported
9,10,11,12	H16.1. Overt microaggressions positively influence parenting struggle.	0.02	0.623	supported
9,10,11,12	H16.2. Identity-based microaggressions	-0.15	0.243	unsupported; identity-based microaggressions

	will positively influence parenting struggle.			negatively influenced parenting struggle.
9,10,11,12	H16.3. Covetous microaggressions will positively influence parenting struggle.	0.21	0.224	supported
13,14,15,16	H17. Self-esteem will negatively influence parenting struggle.	-0.05	0.565	supported
5,6,7,8	H18.1. Emotional social support will negatively influence parenting struggle.	0.02	0.694	supported
5,6,7,8	H18.2. Physical social support will negatively influence parenting struggle.	0.02	0.942	supported

Standard regression coefficients for individual relationships included in the models. Cells in grey are relationships in models that achieved or approached significant GOF.



## REFERENCES

1. National Congress of American Indians. NCAI Response to Usage of the Term, “Indian Country.” Published December 27, 2019. Accessed April 18, 2022. <https://www.ncai.org/news/articles/2019/12/27/ncai-response-to-usage-of-the-term-indian-country>
2. Wilson A. How We Find Ourselves: Identity Development and Two Spirit People. *Harv Educ Rev.* 1996;66(2):303-318. doi:10.17763/haer.66.2.n551658577h927h4
3. Department of Health and Human Services Office of Minority Health. *Profile: American Indian/Alaska Native.* Department of Health and Human Services Office of Minority Health; 2018. <https://www.minorityhealth.hhs.gov/omh/browse.aspx?lvl=3&lvlid=62>
4. Gray JS. Suicide in Indian country: the continuing epidemic in rural Native American communities. *J Rural Ment Health.* 2014;38(2):79-86.
5. Probst JC. *Social Determinants of Health Among Rural American Indian and Alaska Native Populations.* Rural & Minority Health Research Center; 2019.
6. Prucha FP. *The Great Father: The United States Government and the American Indians.* University of Nebraska Press; 1995.
7. Dunbar-Ortiz R. *An Indigenous Peoples’ History of the United States.* Beacon Press; 2014.
8. Wolfe P. *Settler Colonialism and the Transformation of Anthropology: The Politics and Poetics of an Ethnographic Event.* Cassell; 1999.
9. Evans-Campbell T. Historical Trauma in American Indian/Native Alaska Communities: A Multilevel Framework for Exploring Impacts on Individuals, Families, and Communities. *J Interpers Violence.* 2008;23(3):316-338. doi:10.1177/0886260507312290
10. Yuan NP, Bartgis J, Demers D. Promoting Ethical Research With American Indian and Alaska Native People Living in Urban Areas. *Am J Public Health.* 2014;104(11):2085-2091. doi:10.2105/AJPH.2014.302027
11. Gartner DR, Wilbur RE, McCoy ML. “American Indian” as a Racial Category in Public Health: Implications for Communities and Practice. *Am J Public Health.* 2021;111(11):1969-1975. doi:10.2105/AJPH.2021.306465
12. Thayer Z, Barbosa-Leiker C, McDonell M, Nelson L, Buchwald D, Manson S. Early life trauma, post-traumatic stress disorder, and allostatic load in a sample of American Indian adults: Thayer et al. *Am J Hum Biol.* 2017;29(3):e22943. doi:10.1002/ajhb.22943
13. Thompson AL. Developmental origins of obesity: Early feeding environments, infant growth, and the intestinal microbiome. *Am J Hum Biol.* 2012;24(3):350-360. doi:10.1002/ajhb.22254

14. Sorensen MV, Snodgrass JJ, Leonard WR, et al. Lifestyle incongruity, stress and immune function in indigenous Siberians: The health impacts of rapid social and economic change. *Am J Phys Anthropol.* 2009;138(1):62-69. doi:10.1002/ajpa.20899
15. Leslie PW, Little MA. Human Biology and Ecology: Variation in Nature and the Nature of Variation. *Am Anthropol.* 2003;105(1):28-37. doi:10.1525/aa.2003.105.1.28
16. Duran E, Duran B, Heart MYHB, Horse-Davis SY. Healing the American Indian Soul Wound. In: Danieli Y, ed. *International Handbook of Multigenerational Legacies of Trauma.* Springer US; 1998:341-354. doi:10.1007/978-1-4757-5567-1\_22
17. Lightfoot AF, Taggart T, Woods-Jaeger BA, Riggins L, Jackson MR, Eng E. Where is the Faith? Using a CBPR Approach to Propose Adaptations to an Evidence-Based HIV Prevention Intervention for Adolescents in African American Faith Settings. *J Relig Health.* 2014;53(4):1223-1235. doi:10.1007/s10943-014-9846-y
18. Walls ML, Whitbeck LB. Advantages of Stress Process Approaches for Measuring Historical Trauma. *Am J Drug Alcohol Abuse.* 2012;38(5):416-420. doi:10.3109/00952990.2012.694524
19. Running Bear U, Thayer ZM, Croy CD, Kaufman CE, Manson SM. The Impact of Individual and Parental American Indian Boarding School Attendance on Chronic Physical Health of Northern Plains Tribes: *Fam Community Health.* 2019;42(1):1-7. doi:10.1097/FCH.0000000000000205
20. Brave Heart MYH, Chase J, Elkins J, Altschul DB. Historical Trauma Among Indigenous Peoples of the Americas: Concepts, Research, and Clinical Considerations. *J Psychoactive Drugs.* 2011;43(4):282-290. doi:10.1080/02791072.2011.628913
21. Evans-Campbell T, Walters KL, Pearson CR, Campbell CD. Indian Boarding School Experience, Substance Use, and Mental Health among Urban Two-Spirit American Indian/Alaska Natives. *Am J Drug Alcohol Abuse.* 2012;38(5):421-427. doi:10.3109/00952990.2012.701358
22. Walters KL, Mohammed SA, Evans-Campbell T, Beltrán RE, Chae DH, Duran B. BODIES DON'T JUST TELL STORIES, THEY TELL HISTORIES: Embodiment of Historical Trauma among American Indians and Alaska Natives. *Bois Rev Soc Sci Res Race.* 2011;8(1):179-189. doi:10.1017/S1742058X1100018X
23. Gone JP. Redressing First Nations historical trauma: Theorizing mechanisms for indigenous culture as mental health treatment. *Transcult Psychiatry.* 2013;50(5):683-706. doi:10.1177/1363461513487669
24. Duran B, Duran E. *Native American Postcolonial Psychology.* Suny; 1995. doi:10.13140/rg.2.2.25055.25769

25. Bombay A, Matheson K, Anisman H. The intergenerational effects of Indian Residential Schools: Implications for the concept of historical trauma. *Transcult Psychiatry*. 2014;51(3):320-338. doi:10.1177/1363461513503380
26. Whitbeck LB, Adams GW, Hoyt DR, Chen X. Conceptualizing and Measuring Historical Trauma Among American Indian People. *Am J Community Psychol*. 2004;33(3-4):119-130. doi:10.1023/B:AJCP.0000027000.77357.31
27. Dennis AC, Chung EO, Lodge EK, Martinez RA, Wilbur RE. Looking Back to Leap Forward: A Framework for Operationalizing the Structural Racism Construct in Minority and Immigrant Health Research. *Ethn Dis*. 2021;31(Suppl):301-310. doi:10.18865/ed.31.S1.301
28. Child B. The Boarding School as a Metaphor. *J Am Indian Educ*. 2018;57(1):37-57.
29. Lomawaima KT. The Mutuality of Citizenship And Sovereignty: The Society Of American Indians And The Battle To Inherit America. *Stud Am Indian Lit*. 2013;25(2):333-351.
30. Tuck E, Yang KW. Decolonization is not a metaphor. 2012;1(1):1-40.
31. Moon-Riley KC, Copeland JL, Metz GA, Currie CL. The Biological Impacts of Parental Residential School Attendance on the Next Generation. *SSM - Popul Health*. Published online December 2018:100343. doi:10.1016/j.ssmph.2018.100343
32. Bear UR, Croy C, Kaufman C, Thayer Z, Manson S, AI-SUPERPPF Team. The relationship of five boarding school experiences and physical health status among Northern Plains Tribes. *Qual Life Res*. 2018;27(1):153-157.
33. Ehlers CL, Gizer IR, Gilder DA, Ellingson JM, Yehuda R. Measuring historical trauma in an American Indian community sample: Contributions of substance dependence, affective disorder, conduct disorder and PTSD. *Drug Alcohol Depend*. 2013;133(1):180-187. doi:10.1016/j.drugalcdep.2013.05.011
34. Goodkind JR, Hess JM, Gorman B, Parker DP. "We're Still in a Struggle": Diné Resilience, Survival, Historical Trauma, and Healing. *Qual Health Res*. 2012;22(8):1019-1036. doi:10.1177/1049732312450324
35. Gone JP. Redressing First Nations historical trauma: theorizing mechanisms for Indigenous culture as mental health treatment. *Transcult Psychiatry*. 2013;50(5):683-706.
36. Bombay A, Matheson K, Anisman H. The impact of stressors on second generation Indian residential school survivors. *Transcult Psychiatry*. 2011;48(4):367-391. doi:10.1177/1363461511410240
37. Conching AKS, Thayer Z. Biological pathways for historical trauma to affect health: a conceptual model focusing on epigenetic modifications. *Soc Sci Med*. 2019;230:74-82.

38. Wolfe P. *Settler Colonialism and the Transformation of Anthropology: The Politics and Poetics of an Ethnographic Event*. Cassell; 1999.
39. Cox A. *Settler Colonialism*. Oxford University Press; 2017.
40. Glenn EN. Settler Colonialism as Structure: A Framework for Comparative Studies of U.S. Race and Gender Formation. *Sociol Race Ethn*. 2015;1(1):52-72. doi:10.1177/2332649214560440
41. Miller RJ, Ruru J, Behrendt L, Lindberg T. *Discovering Indigenous Lands: The Doctrine of Discovery in the English Colonies*. Oxford University Press; 2010.
42. *Johnson & Graham's Lessee v. McIntosh, 21 U.S. 8 Wheat. 543 543*.(U.S. Supreme Court 1893).
43. Wilkins DE, Lomawaima KT. *Uneven Ground: American Indian Sovereignty and Federal Law*. University of Oklahoma Press; 2001.
44. Crane DM. Congressional intent or good intentions: the inference of private rights of action under the Indian Trade and Intercourse Act. *Boston Univ Law Rev*. 1983;63(4):853.
45. Prucha FP. *American Indian Policy in Crisis: Christian Reformers and the Indians*. University of Oklahoma Press; 1976.
46. Black JE. *American Indians and the Rhetoric of Removal and Allotment*. University Press of Mississippi; 2015.
47. Wiedman D. Native American Embodiment of the Chronicities of Modernity: Reservation Food, Diabetes, and the Metabolic Syndrome among the Kiowa, Comanche, and Apache. *Med Anthropol Q*. 2012;26(4):595-612. doi:10.1111/maq.12009
48. Jernigan AK. Embodied Heritage: Obesity, Cultural Identity, and Food Distribution Programs in the Choctaw Nation of Oklahoma. Published online 2018.
49. Spruhan P. A legal history of blood quantum in federal Indian law to 1935. *S D Law Rev*. 51(1):1-51.
50. Rusco E. three The Indian Reorganization Act and Indian Self-Government. In: Lemont ED, ed. *American Indian Constitutional Reform and the Rebuilding of Native Nations*. University of Texas Press; 2006:49-104. doi:10.7560/712812-005
51. Talbot S. Indian Reorganization Act: 1934. In: *Race and Racism in the United States: An Encyclopedia of the American Mosaic*. Greenwood; 2014.
52. Meriam L. *The Problem of Indian Administration*. Institute for Government Research, Studies in Administration; 1928.

53. Treuer D. *The Heartbeak of Wounded Knee: Native America from 1890 to the Present*. Riverhead Books; 2019.
54. Miller DK. Willing Workers: Urban Relocation and American Indian Initiative, 1940s–1960s. *Ethnohistory*. 2013;60(1):51-76. doi:10.1215/00141801-1816175
55. LaPier R, Beck. A “one-man relocation team”: Scott Henry Peters and American Indian Urban Migration in the 1930s. *West Hist Q*. 2014;45(1):17-36. doi:10.2307/westhistquar.45.1.0017
56. *Expert Panel on Homelessness among American Indians, Alaska Natives, and Native Hawaiians*. Substance Abuse and Mental Health Services Administration; 2012.
57. Veile B. *Indian Self-Determination and Education Assistance Act (Public Law 93-638) from 1975-1989: A Look at Educational Aspects*. Dissertation. University of Arizona; 1989.
58. *Indian Child Welfare Act of 1978: Questions and Answers*. Department of Health, Education, and Welfare; 1979:2.
59. Cornell S, Kalt JP. American Indian Self-Determination: The Political Economy of a Policy that Works. *SSRN Electron J*. Published online 2010. doi:10.2139/ssrn.1724725
60. Adams DW. *Education for Extinction: American Indians and the Boarding School Experience, 1875-1928*. University Press of Kansas; 1995.
61. Child B. *Boarding School Seasons: American Indian Families, 1900-1940*. University of Nebraska Press; 1998.
62. Smith A. Boarding School Abuses, Human Rights and Reparations. *J Relig Abuse*. 2006;8(2):5-21. doi:10.1300/J154v08n02\_02
63. Adams DW. Fundamental Considerations: The Deep Meaning of Native American Schooling, 1880-1900. *Harv Educ Rev*. 1988;58(1):1-28.
64. Prucha FP. *Churches and the Indian Schools, 1888-1912*. University of Nebraska Press; 1979.
65. Robbins R, Colmant S, Dorton J, Schultz L, Colmant Y. Colonial Instillations in American Indian Boarding School Students. *J Educ Found*. 2006;20(3/4):69-88.
66. Chavez C. Toward culturally relevant instruction: a case study of a Pueblo-serving high school in New Mexico. Published online 2018.
67. Bureau of Indian Education. *Strategic Direction, 2018-2023*. Secretary of the Interior; 2018:1-80.

68. Comm. Labor Public Welf. *Indian Education: A National Tragedy - A National Challenge*. US Gov.; 1969.
69. Grant H. American Indians: Working with American Indians and Historical Trauma. *Illn Crisis Loss*. 2008;16(2):125-136. doi:10.2190/IL.16.2.c
70. Wiechelt SA, Gryczynski J, Johnson JL, Caldwell D. Historical Trauma Among Urban American Indians: Impact on Substance Abuse and Family Cohesion. *J Loss Trauma*. 2012;17(4):319-336. doi:10.1080/15325024.2011.616837
71. Whirlwind Soldier L. Lakota Language: Survival and Restoration; Lessons from the Boarding School. *Tribal Coll J*. 1993;4(4):24.
72. Gregg MT. The long-term effects of American Indian boarding schools. *J Dev Econ*. 2018;130:17-32.
73. Brave Heart MYH. The Historical Trauma Response Among Natives and Its Relationship with Substance Abuse: A Lakota Illustration. *J Psychoactive Drugs*. 2003;35(1):7-13. doi:10.1080/02791072.2003.10399988
74. Bombay A, Matheson K, Anisman H. Appraisals of discriminatory events among adult offspring of Indian residential school survivors: The influences of identity centrality and past perceptions of discrimination. *Cultur Divers Ethnic Minor Psychol*. 2014;20(1):75-86. doi:10.1037/a0033352
75. Niederland WG. Clinical observations on the "survivor syndrome." *Int J Psychoanal*. 1968;49(2-3):313-315.
76. Dor-Shav NK. On the long-range effects of concentration camp internment on Nazi victims: 25 years later. *J Consult Clin Psychol*. 1978;46(1):1-11.
77. Eitinger L, Strom A. *Mortality and Morbidity after Excessive Stress*. Humanities Press; 1973.
78. Rosenheck R, Nathan P. Secondary Traumatization in Children of Vietnam Veterans. *Psychiatr Serv*. 1985;36(5):538-539. doi:10.1176/ps.36.5.538
79. Bar-On D, Eland J, Kleber RJ, et al. Multigenerational Perspectives on Coping with the Holocaust Experience: An Attachment Perspective for Understanding the Developmental Sequelae of Trauma across Generations. *Int J Behav Dev*. 1998;22(2):315-338. doi:10.1080/016502598384397
80. Barocas HA, Barocas CB. Separation-individuation conflicts in children of Holocaust Survivors. *J Contemp Psychother*. 1980;11(1):6-14. doi:10.1007/BF00946270
81. Solkoff N. Children of survivors of the Nazi Holocaust: a critical review of the literature. *Am J Orthopsychiatry*. 1972;62(3):342-358.

82. Kellermann NPF. Transmission of Holocaust Trauma - An Integrative View. *Psychiatry Interpers Biol Process*. 2001;64(3):256-267. doi:10.1521/psyc.64.3.256.18464
83. Wardi D. *Memorial Candles: Children of the Holocaust*. Tavistock/Routledge; 1992.
84. Mohatt NV, Thompson AB, Thai ND, Tebes JK. Historical trauma as public narrative: A conceptual review of how history impacts present-day health. *Soc Sci Med*. 2014;106:128-136. doi:10.1016/j.socscimed.2014.01.043
85. Nagata D, Patel R. "Forever foreigners": intergenerational impacts of historical trauma from the World War II Japanese American incarceration. In: *Trauma and Racial Minority Immigrants: Turmoil, Uncertainty, and Resistance*. American Psychological Association; 2021.
86. Karenian H, Livaditis M, Karenian S, Zafiriadis K, Bochtsou V, Xenitidis K. Collective Trauma Transmission and Traumatic Reactions Among Descendants of Armenian Refugees. *Int J Soc Psychiatry*. 2011;57(4):327-337. doi:10.1177/0020764009354840
87. Atallah DG. A community-based qualitative study of intergenerational resilience with Palestinian refugee families facing structural violence and historical trauma. *Transcult Psychiatry*. 2017;54(3):357-383. doi:10.1177/1363461517706287
88. Maleku A, Soukenik E, Haran H, Kirsch J, Pyakurel S. Conceptualizing Mental Health Through Bhutanese Refugee Lens: Findings from a Mixed Methods Study. *Community Ment Health J*. 2022;58(2):376-393. doi:10.1007/s10597-021-00835-4
89. Britton M, Lotto D. From history's victims to the masters of Apartheid: South Africa and the power of historical trauma. *J Psychohist*. 2018;45(3):212-218.
90. Reid O, Mims S, Higginbottom L. *Post Traumatic Slavery Disorder: Definitions, Diagnosis, and Treatment*.; 2005.
91. Carlson V, Cicchetti D, Barnett D, Braunwald K. Disorganized/disoriented attachment relationships in maltreated infants. *Dev Psychol*. 1989;25(4):525-531.
92. Barker D. The fetal origins of adult disease. *Fetal Matern Med Rev*. 2012;6(2):71-80.
93. Barker ED. The duration and timing of maternal depression as a moderator of the relationship between dependent interpersonal stress, contextual risk and early child dysregulation. *Psychol Med*. 2013;43(8):1587-1596. doi:10.1017/S0033291712002450
94. Glover V, O'Donnell KJ, O'Connor TG, Fisher J. Prenatal maternal stress, fetal programming, and mechanisms underlying later psychopathology—A global perspective. *Dev Psychopathol*. 2018;30(3):843-854. doi:10.1017/S095457941800038X
95. Braun K, Champagne FA. Paternal Influences on Offspring Development: Behavioural and Epigenetic Pathways. *J Neuroendocrinol*. 2014;26(10):697-706. doi:10.1111/jne.12174

96. Monk C, Spicer J, Champagne FA. Linking prenatal maternal adversity to developmental outcomes in infants: The role of epigenetic pathways. *Dev Psychopathol.* 2012;24(4):1361-1376. doi:10.1017/S0954579412000764
97. Minarovits, Helmut Niller H. *Patho-Epigenetics of Infectious Disease.* Vol 879. Springer; 2016.
98. Lacal I, Ventura R. Epigenetic Inheritance: Concepts, Mechanisms and Perspectives. *Front Mol Neurosci.* 2018;11:292. doi:10.3389/fnmol.2018.00292
99. Yehuda R, Daskalakis NP, Lehrner A, et al. Influences of Maternal and Paternal PTSD on Epigenetic Regulation of the Glucocorticoid Receptor Gene in Holocaust Survivor Offspring. *Am J Psychiatry.* 2014;171(8):872-880. doi:10.1176/appi.ajp.2014.13121571
100. Brave Heart MYH, DeBruyn L. The American Indian holocaust: Healing historical unresolved grief. *Am Indian Alsk Native Ment Health Res.* 1998;8(2):56-78.
101. Brockie T, Heinzelmann M, Gill J. A framework to examine the role of epigenetics in health disparities among Native Americans. *Nurs Res Pract.* Published online epub 2013:1-9.
102. Kirmayer LJ, Gone JP, Moses J. Rethinking historical trauma. *Transcult Psychiatry.* 2014;51(3):299-319.
103. Walters KL, Simoni JM. Reconceptualizing Native Women's Health: An "Indigenist" Stress-Coping Model. *Am J Public Health.* 2002;92(4):520-524. doi:10.2105/AJPH.92.4.520
104. Boutwell BB, Nedelec JL, Winegard B, et al. The prevalence of discrimination across racial groups in contemporary America: Results from a nationally representative sample of adults. Stephen ID, ed. *PLOS ONE.* 2017;12(8):e0183356. doi:10.1371/journal.pone.0183356
105. Kenney MK, Singh GK. Adverse Childhood Experiences among American Indian/Alaska Native Children: The 2011-2012 National Survey of Children's Health. *Scientifica.* 2016;2016:1-14. doi:10.1155/2016/7424239
106. Kirmayer LJ, Brass GM, Tait CL. The Mental Health of Aboriginal Peoples: Transformations of Identity and Community. *Can J Psychiatry.* 2000;45(7):607-616. doi:10.1177/070674370004500702
107. Figley C. *Compassion Fatigue: Coping with Secondary Traumatic Stress Disorder in Those Who Treat the Traumatized.* Routledge Taylor & Francis Group; 1995.
108. Hartmann WE, Gone JP. Psychological-Mindedness and American Indian Historical Trauma: Interviews with Service Providers from a Great Plains Reservation. *Am J Community Psychol.* 2016;57(1-2):229-242. doi:10.1002/ajcp.12036



109. Gone JP. A community-based treatment for Native American historical trauma: Prospects for evidence-based practice. *J Consult Clin Psychol*. 2009;77(4):751-762. doi:10.1037/a0015390
110. Sotero MM. A Conceptual Model of Historical Trauma: Implications for Public Health Practice and Research. 2006;1(1):16.
111. Billings AC, Moos RH. Psychosocial theory and research on depression: An integrative framework and review. *Clin Psychol Rev*. 1982;2(2):213-237. doi:10.1016/0272-7358(82)90013-7
112. Gough I. *The Political Economy of the Welfare State*. Macmillan International Higher Education; 1979.
113. Harvey M. The Political Economy of Health: Revisiting Its Marxian Origins to Address 21st-Century Health Inequalities. *Am J Public Health*. 2021;111(2):293-300. doi:10.2105/AJPH.2020.305996
114. Krieger N. Embodying Inequality: A Review of Concepts, Measures, and Methods for Studying Health Consequences of Discrimination. *Int J Health Serv*. 1999;29(2):295-352. doi:10.2190/M11W-VWXE-KQM9-G97Q
115. Brave Heart MYH. Gender Differences in the Historical Trauma Response Among the Lakota. *J Health Soc Policy*. 1999;10(4):1-21. doi:10.1300/J045v10n04\_01
116. Brave Heart MYH. Oyate Ptayela: Rebuilding the Lakota Nation Through Addressing Historical Trauma Among Lakota Parents. *J Hum Behav Soc Environ*. 1999;2(1-2):109-126. doi:10.1300/J137v02n01\_08
117. Brave Heart MYH, Elkins J, Tafoya G, Bird D, Salvador M. Wicasa Was'aka: Restoring the Traditional Strength of American Indian Boys and Men. *Am J Public Health*. 2012;102(S2):S177-S183. doi:10.2105/AJPH.2011.300511
118. Aboriginal Healing Foundation. *Final Report of the Aboriginal Healing Foundation.*; 2006.
119. Whitbeck. Depressed Affect and Historical Loss Among North American Indigenous Adolescents. *Am Indian Alsk Native Ment Health Res*. 2009;16(3):16-41. doi:10.5820/aian.1603.2009.16
120. Gone JP. Reconsidering American Indian historical trauma: Lessons from an early Gros Ventre war narrative. *Transcult Psychiatry*. 2014;51(3):387-406. doi:10.1177/1363461513489722
121. Jablonka E, Lamb MJ. *Evolution in Four Dimensions: Genetic, Epigenetic, Behavioral, and Symbolic Variation in the History of Life*. MIT Press; 2006.

122. Palacios JF, Portillo CJ. Understanding Native Women's Health: Historical Legacies. *J Transcult Nurs.* 2009;20(1):15-27. doi:10.1177/1043659608325844
123. Denham AR. Rethinking Historical Trauma: Narratives of Resilience. *Transcult Psychiatry.* 2008;45(3):391-414. doi:10.1177/1363461508094673
124. Whitbeck LB, Chen X, Hoyt DR, Adams GW. Discrimination, historical loss and enculturation: culturally specific risk and resiliency factors for alcohol abuse among American Indians. *J Stud Alcohol.* 2004;65(4):409-418.
125. Paradies Y. Colonisation, racism and indigenous health. *J Popul Res.* 2016;33(1):83-96. doi:10.1007/s12546-016-9159-y
126. Lomawaima KT. Domesticity in the federal Indian schools: the power of authority over mind and body. *Am Ethnol.* 1993;20(2):227-240. doi:10.1525/ae.1993.20.2.02a00010
127. Elder GH. The Life Course as Developmental Theory. *Child Dev.* 1998;69(1):1-12. doi:10.1111/j.1467-8624.1998.tb06128.x
128. Hoffman DJ, Reynolds RM, Hardy DB. Developmental origins of health and disease: current knowledge and potential mechanisms. *Nutr Rev.* 2017;75(12):951-970. doi:10.1093/nutrit/nux053
129. Elder GH, Shanahan MJ. The Life Course and Human Development. In: *Theoretical Models of Human Development.* Vol 1. 6th ed. Wiley; 2006.
130. Darnton-Hill I, Nishida C, James W. A life course approach to diet, nutrition and the prevention of chronic diseases. *Public Health Nutr.* 2004;7(1a). doi:10.1079/PHN2003584
131. Pearlin LI, Schieman S, Fazio EM, Meersman SC. Stress, Health, and the Life Course: Some Conceptual Perspectives. *J Health Soc Behav.* 2005;46(2):205-219. doi:10.1177/002214650504600206
132. Ben-Shlomo Y. A life course approach to chronic disease epidemiology: conceptual models, empirical challenges and interdisciplinary perspectives. *Int J Epidemiol.* 2002;31(2):285-293. doi:10.1093/intjepid/31.2.285
133. Eriksson JG. Early growth and coronary heart disease in later life: longitudinal study. *BMJ.* 2001;322(7292):949-953. doi:10.1136/bmj.322.7292.949
134. Duijts L, Reiss IK, Brusselle G, de Jongste JC. Early origins of chronic obstructive lung diseases across the life course. *Eur J Epidemiol.* 2014;29(12):871-885. doi:10.1007/s10654-014-9981-5
135. Smith GD. Relation between infants' birth weight and mothers' mortality: prospective observational study. *BMJ.* 2000;320(7238):839-840. doi:10.1136/bmj.320.7238.839

136. Oré. American Indian and Alaska Native resilience along the life course and across generations: A literature review. *Am Indian Alsk Native Ment Health Res.* 2016;23(3):134-157. doi:10.5820/aian.2303.2016.134
137. Thayer Z, Gildner T. Developmental Origins of Health and Disease: Evidence, Proposed Mechanisms, and Ideas for Future Applications. In: *The Routledge Handbook of Anthropology and Reproduction.* Routledge; 2022:53-66.
138. West-Eberhard. Plasticity. In: *Developmental Plasticity and Evolution.* Oxford University Press; 2003:34-54.
139. Bateson P, Gluckman P, Hanson M. The biology of developmental plasticity and the Predictive Adaptive Response hypothesis: Developmental plasticity and the PAR response. *J Physiol.* 2014;592(11):2357-2368. doi:10.1113/jphysiol.2014.271460
140. Godfrey KM, Lillycrop KA, Burdge GC, Gluckman PD, Hanson MA. Epigenetic Mechanisms and the Mismatch Concept of the Developmental Origins of Health and Disease. *Pediatr Res.* 2007;61(5 Part 2):5R-10R. doi:10.1203/pdr.0b013e318045bedb
141. Barker D. *Mothers, Babies, and Disease in Later Life.* 1st ed. BMJ Publishing; 1994.
142. Weinstock M. The potential influence of maternal stress hormones on development and mental health of the offspring. *Brain Behav Immun.* 2005;19(4):296-308. doi:10.1016/j.bbi.2004.09.006
143. Ravelli A, van der Muelen J, Michels R, et al. Glucose tolerance in adults after prenatal exposure to famine. *Lancet.* 1998;351(9097):173-177.
144. Barker DJP, Osmond C, Winter P, Margetts B, Simmonds S. Weight in infancy and death from ischaemic heart disease. *The Lancet.* 1989;334(8663):577-580.
145. Clair DS, Xu M, Wang P, et al. Rates of Adult Schizophrenia Following Prenatal Exposure to the Chinese Famine of 1959-1961. :6.
146. Crookston BT, Dearden KA, Alder SC, et al. Impact of early and concurrent stunting on cognition: Impact of stunting on cognition. *Matern Child Nutr.* 2011;7(4):397-409. doi:10.1111/j.1740-8709.2010.00255.x
147. Crookston BT, Schott W, Cueto S, et al. Postinfancy growth, schooling, and cognitive achievement: Young Lives. *Am J Clin Nutr.* 2013;98(6):1555-1563. doi:10.3945/ajcn.113.067561
148. Crookston BT, Penny ME, Alder SC, et al. Children Who Recover from Early Stunting and Children Who Are Not Stunted Demonstrate Similar Levels of Cognition. *J Nutr.* 2010;140(11):1996-2001. doi:10.3945/jn.109.118927

149. Stein AD, Zybert PA, van der Pal-de Bruin K, Lumey LH. Exposure to famine during gestation, size at birth, and blood pressure at age 59 y: evidence from the dutch famine. *Eur J Epidemiol*. 2006;21(10):759-765. doi:10.1007/s10654-006-9065-2
150. Dyck RF, Karunanayake C, Pahwa P, Osgood ND. The hefty fetal phenotype hypothesis revisited: high birth weight, type 2 diabetes and gestational diabetes in a Saskatchewan cohort of First Nations and non-First Nations women. *J Dev Orig Health Dis*. 2019;10(1):48-54. doi:10.1017/S2040174417000988
151. Reynolds RM. Glucocorticoid excess and the developmental origins of disease: Two decades of testing the hypothesis – 2012 Curt Richter Award Winner. *Psychoneuroendocrinology*. 2013;38(1):1-11. doi:10.1016/j.psyneuen.2012.08.012
152. Lucas A, Fewtrell MS, Cole TJ. Fetal origins of adult disease---the hypothesis revisited. *BMJ*. 1999;319(7204):245-249. doi:10.1136/bmj.319.7204.245
153. Stein AD. Intrauterine famine exposure and body proportions at birth: the Dutch Hunger Winter. *Int J Epidemiol*. 2004;33(4):831-836. doi:10.1093/ije/dyh083
154. Dolan MS, Sorkin JD, Hoffman DJ. Birth Weight Is Inversely Associated With Central Adipose Tissue in Healthy Children and Adolescents. *Obesity*. 2007;15(6):1600-1608. doi:10.1038/oby.2007.189
155. Ylihärsilä H, Kajantie E, Osmond C, Forsén T, Barker DJP, Eriksson JG. Birth size, adult body composition and muscle strength in later life. *Int J Obes*. 2007;31(9):1392-1399. doi:10.1038/sj.ijo.0803612
156. te Velde SJ, Twisk JWR, van Mechelen W, Kemper HCG. Birth Weight, Adult Body Composition, and Subcutaneous Fat Distribution. *Obes Res*. 2003;11(2):202-208. doi:10.1038/oby.2003.32
157. Gunnarsdottir I, Birgisdottir BE, Benediktsson R, Gudnason V, Thorsdottir I. Association between size at birth, truncal fat and obesity in adult life and its contribution to blood pressure and coronary heart disease; study in a high birth weight population. *Eur J Clin Nutr*. 2004;58(5):812-818. doi:10.1038/sj.ejcn.1601881
158. Charalampopoulos D, McLoughlin A, Elks CE, Ong KK. Age at Menarche and Risks of All-Cause and Cardiovascular Death: A Systematic Review and Meta-Analysis. *Am J Epidemiol*. 2014;180(1):29-40. doi:10.1093/aje/kwu113
159. Lumpkins C, Saint Onge J. Reducing Low Birth Weight among African Americans in the Midwest: A Look at How Faith-Based Organizations Are Poised to Inform and Influence Health Communication on the Developmental Origins of Health and Disease (DOHaD). *Healthcare*. 2017;5(1):6. doi:10.3390/healthcare5010006
160. Thayer Z, Bécares L, Atatoa Carr P. Maternal experiences of ethnic discrimination and subsequent birth outcomes in Aotearoa New Zealand. *BMC Public Health*. 2019;19(1):1271. doi:10.1186/s12889-019-7598-z

161. Batchelor M, Brown SJ, Glover K, Gartland D. A Systematic Review of Child Health and Developmental Outcomes Associated with Low Birthweight and/or Small for Gestational Age in Indigenous Children from Australia, Canada and New Zealand. *Int J Environ Res Public Health*. 2021;18(23):12669. doi:10.3390/ijerph182312669
162. Phillips-Beck W, Sinclair S, Campbell R, et al. Early-life origins of disparities in chronic diseases among Indigenous youth: pathways to recovering health disparities from intergenerational trauma. *J Dev Orig Health Dis*. 2019;10(1):115-122. doi:10.1017/S2040174418000661
163. Cottrell EC. Prenatal stress, glucocorticoids and the programming of adult disease. *Front Behav Neurosci*. 2009;3. doi:10.3389/neuro.08.019.2009
164. Stirrat LI, O'Reilly JR, Barr SM, et al. Decreased maternal hypothalamic-pituitary-adrenal axis activity in very severely obese pregnancy: Associations with birthweight and gestation at delivery. *Psychoneuroendocrinology*. 2016;63:135-143. doi:10.1016/j.psyneuen.2015.09.019
165. Broholm C, Olsson AH, Perfilyev A, et al. Epigenetic programming of adipose-derived stem cells in low birthweight individuals. *Diabetologia*. 2016;59(12):2664-2673. doi:10.1007/s00125-016-4099-9
166. Ferland-McCollough D, Fernandez-Twinn DS, Cannell IG, et al. Programming of adipose tissue miR-483-3p and GDF-3 expression by maternal diet in type 2 diabetes. *Cell Death Differ*. 2012;19(6):1003-1012. doi:10.1038/cdd.2011.183
167. Yajnik C. Interactions of perturbations in intrauterine growth and growth during childhood on the risk of adult-onset disease. *Proc Nutr Soc*. 2000;59(2):257-265. doi:10.1017/S0029665100000288
168. Stiemsma LT, Michels KB. The Role of the Microbiome in the Developmental Origins of Health and Disease. *Pediatrics*. 2018;141(4):e20172437. doi:10.1542/peds.2017-2437
169. Thompson AL. Early gut microbiome: a good start in nutrition and growth may have lifelong lasting consequences. In: *How Fermented Foods Feed a Healthy Gut Microbiota*. Springer International Publishing; 2019.
170. Smith SM, Vale WW. The role of the hypothalamic-pituitary-adrenal axis in neuroendocrine responses to stress. *Dialogues Clin Neurosci*. 2006;8(4):383-395. doi:10.31887/DCNS.2006.8.4/ssmith
171. de Kloet ER, Joëls M, Holsboer F. Stress and the brain: from adaptation to disease. *Nat Rev Neurosci*. 2005;6(6):463-475. doi:10.1038/nrn1683
172. McCarty R, Horwatt K, Konarska M. Chronic stress and sympathetic-adrenal medullary responsiveness. *Soc Sci Med*. 1988;26(3):333-341. doi:10.1016/0277-9536(88)90398-X

173. Chrousos GP. The concepts of stress and stress system disorders. Overview of physical and behavioral homeostasis. *JAMA J Am Med Assoc.* 1992;267(9):1244-1252. doi:10.1001/jama.267.9.1244
174. Carrasco GA, Van de Kar LD. Neuroendocrine pharmacology of stress. *Eur J Pharmacol.* 2003;463(1-3):235-272. doi:10.1016/S0014-2999(03)01285-8
175. Sapolsky RM, Romero LM, Munck AU. How Do Glucocorticoids Influence Stress Responses? Integrating Permissive, Suppressive, Stimulatory, and Preparative Actions. 2000;21(1):35.
176. McEwen B, Gianaros P. Central role of the brain in stress and adaptation: links to socioeconomic status, health, and disease. *Ann N Y Acad Sci.* 2010;(1186):190-222.
177. Godoy LD, Rossignoli MT, Delfino-Pereira P, Garcia-Cairasco N, de Lima Umeoka EH. A Comprehensive Overview on Stress Neurobiology: Basic Concepts and Clinical Implications. *Front Behav Neurosci.* 2018;12:127. doi:10.3389/fnbeh.2018.00127
178. Cohen S, Janicki-Deverts D, Miller GE. Psychological Stress and Disease. *JAMA.* 2007;298(14):1685. doi:10.1001/jama.298.14.1685
179. Danese A, McEwen BS. Adverse childhood experiences, allostasis, allostatic load, and age-related disease. *Physiol Behav.* 2012;106(1):29-39. doi:10.1016/j.physbeh.2011.08.019
180. Rozanski A, Blumenthal JA, Kaplan J. Impact of Psychological Factors on the Pathogenesis of Cardiovascular Disease and Implications for Therapy. *Circulation.* 1999;99(16):2192-2217.
181. Hammen C. Stress and depression. *Annu Rev Clin Psychol.* 2005;1:293-319.
182. Mazure CM. Life stressors as risk factors in depression. *Clin Psychol Sci Pract.* 1998;5(3):291-313.
183. Mehta D, Binder EB. Gene  $\times$  environment vulnerability factors for PTSD: The HPA-axis. *Neuropharmacology.* 2012;62(2):654-662. doi:10.1016/j.neuropharm.2011.03.009
184. Antoni MH, Lutgendorf SK, Cole SW, et al. The influence of bio-behavioral factors on tumour biology: pathways and mechanisms. *Nat Rev Cancer.* 2006;6:240-248.
185. Cole SW, Nagaraja AS, Lutgendorf SK, Green PA, Sood AK. Sympathetic nervous system regulation of the tumour microenvironment. *Nat Rev Cancer.* 2015;15(9):563-572. doi:10.1038/nrc3978
186. Walls M, Sittner K, Aronson B, Forsberg A, Whitbeck L, al'Absi M. Stress Exposure and Physical, Mental, and Behavioral Health among American Indian Adults with Type 2 Diabetes. *Int J Environ Res Public Health.* 2017;14(9):1074. doi:10.3390/ijerph14091074

187. Jiang L, Beals J, Whitesell NR, Roubideaux Y, Manson SM, the AI-SUPERPPF Team. Stress Burden and Diabetes in Two American Indian Reservation Communities. *Diabetes Care*. 2008;31(3):427-429. doi:10.2337/dc07-2044
188. Widom CS, Horan J, Brzustowicz L. Childhood maltreatment predicts allostatic load in adulthood. *Child Abuse Negl*. 2015;47:59-69. doi:10.1016/j.chiabu.2015.01.016
189. Gustafsson PE, San Sebastian M, Janlert U, Theorell T, Westerlund H, Hammarström A. Life-Course Accumulation of Neighborhood Disadvantage and Allostatic Load: Empirical Integration of Three Social Determinants of Health Frameworks. *Am J Public Health*. 2014;104(5):904-910. doi:10.2105/AJPH.2013.301707
190. Geronimus AT. The weathering hypothesis and the health of African-American women and infants: evidence and speculations. *Ethn Dis*. 1992;2(3):207-221.
191. Geronimus AT, Hicken M, Keene D, Bound J. "Weathering" and Age Patterns of Allostatic Load Scores Among Blacks and Whites in the United States. *Am J Public Health*. 2006;96(5):826-833. doi:10.2105/AJPH.2004.060749
192. Riva M, Plusquellec P, Juster RP, et al. Household crowding is associated with higher allostatic load among the Inuit. *J Epidemiol Community Health*. 2014;68(4):363-369. doi:10.1136/jech-2013-203270
193. National Indian Child Welfare Association. *Time for Reform: A Matter of Justice for American Indian and Alaska Native Children*. The PEW Charitable Trust; 2007:1-20.
194. Brave Heart, Maria Yellow Horse, Chase, J. Historical Trauma Among Indigenous Peoples of the Americas: Concepts, Research, and Clinical Considerations.
195. King M, Smith A, Gracey M. Indigenous health part 2: the underlying causes of the health gap. *The Lancet*. 2009;374(9683):76-85. doi:10.1016/S0140-6736(09)60827-8
196. Haag AM. The Indian Boarding School Era and Its Continuing Impact on Tribal Families and the Provision of Government Services. *Tulsa Law Rev*. 2007;43:149-168.
197. Curcio A. Civil Claims for Uncivilized Acts: Filing Suit Against the Government for American Indian Boarding School Abuses. *Hastings Race Poverty Law J*. 2006;4:45-129.
198. Lajimodiere DK. A Healing Journey. *Wicaso Sa Rev*. 2012;27(2):5-19.
199. Wilbur RE, Corbett SM, Drisko JA. Tuberculosis morbidity at Haskell Institute, a Native American Youth Boarding School 1910-1940: Impacts of historical and existing social determinants of health. *Ann Anthropol Pract*. 2016;40(1):106-114. doi:10.1111/napa.12092
200. Trafzer CE, Keller JA, Sisquoc L, eds. *Boarding School Blues: Revisiting American Indian Educational Experiences*. University of Nebraska Press; 2006.

201. Berthrong DJ. Struggle for Power: The Impact of Southern Cheyenne and Arapaho “Schoolboys” on Tribal Politics. *Am Indian Q.* 1992;16(1):1. doi:10.2307/1185602
202. Szasz M. *Education and the American Indian: The Road to Self-Determination since 1928.* 3rd ed., rev.enl. University of New Mexico Press; 1999.
203. Hoxie FE, ed. *Talking Back to Civilization: Indian Voices from the Progressive Era.* Bedford / St. Martin’s; 2001.
204. Zephier Olson MD, Dombrowski K. A Systematic Review of Indian Boarding Schools and Attachment in the Context of Substance Use Studies of Native Americans. *J Racial Ethn Health Disparities.* 2020;7(1):62-71. doi:10.1007/s40615-019-00634-4
205. Riley J. *The Sixth Annual Report of the Superintendent of Indian Schools to the Secretary of the Interior for the Year 1887.* Bureau of Indian Affairs; 1887.
206. Brockie TN, Dana-Sacco G, Wallen G, Wilcox H, Campbell J. The Relationship of Adverse Childhood Experiences to PTSD, Depression, Poly-Drug Use and Suicide Attempt in Reservation-Based Native American Adolescents and Young Adults. *Am J Community Psychol.* 2015;55(3):411-421. doi:10.1007/s10464-015-9721-3
207. Nutton J, Fast E. Historical Trauma, Substance Use, and Indigenous Peoples: Seven Generations of Harm From a “Big Event.” *Subst Use Misuse.* 2015;50(7):839-847. doi:10.3109/10826084.2015.1018755
208. Bird SR, Held S, McCormick A, Hallett J, Martin C, Trottier C. The Impact of Historical and Current Loss on Chronic Illness: Perceptions of Crow (Apsáalooke) People. *Int J Indig Health Vic.* 2016;11(1):198-210. doi:http://dx.doi.org/10.18357/ijih111201614993
209. Cunneen C, Tauri JM. Indigenous Peoples, Criminology, and Criminal Justice. *Annu Rev Criminol.* 2019;2(1):359-381. doi:10.1146/annurev-criminol-011518-024630
210. Yuan N, Duran B, Walters K, Pearson C, Evans-Campbell T. Alcohol Misuse and Associations with Childhood Maltreatment and Out-of-Home Placement among Urban Two-Spirit American Indian and Alaska Native People. *Int J Environ Res Public Health.* 2014;11(10):10461-10479. doi:10.3390/ijerph111010461
211. Wu AW, Revicki DA, Jacobsen D, Malitz FE. Evidence for reliability, validity and usefulness of the medical outcomes study HIV health survey (MOS-HIV). *Qual Life Res.* 1997;6:481-493.
212. Hough M. Taking Responsibility for Intergenerational Harms: Indian Residential Schools Reparations in Canada. *North Rev.* 2020;(50). doi:10.22584/nr50.2020.006
213. Woolford A. The healing state?: Residential schools and reparations in Canada. In: *Reparation for Victims of Crimes Against Humanity: The Healing Role of Reparation.* Routledge; 2014:126-142.



214. Cross SL, Day AG, Byers LG. American Indian Grand Families: A Qualitative Study Conducted with Grandmothers and Grandfathers Who Provide Sole Care for Their Grandchildren. *J Cross-Cult Gerontol.* 2010;25(4):371-383. doi:10.1007/s10823-010-9127-5
215. Mooradian JK, Cross SL, Stutzky GR. Across Generations: Culture, History, and Policy in the Social Ecology of American Indian Grandparents Parenting Their Grandchildren. *J Fam Soc Work.* 2007;10(4):81-101. doi:10.1300/J039v10n04\_04
216. Taylor SE, Way BM, Seeman TE. Early adversity and adult health outcomes. *Dev Psychopathol.* 2011;23(3):939-954. doi:10.1017/S0954579411000411
217. McDade TW, Hoke M, Borja JB, Adair LS, Kuzawa C. Do environments in infancy moderate the association between stress and inflammation in adulthood? Initial evidence from a birth cohort in the Philippines. *Brain Behav Immun.* 2013;31:23-30. doi:10.1016/j.bbi.2012.08.010
218. Bear UR, Beals J, Kaufman CE, Manson SM, Team A the AS. Boarding School Attendance and Physical Health Status of Northern Plains Tribes. *Appl Res Qual Life.* Published online 2017:1-13. doi:10.1007/s11482-017-9549-0
219. Kaspar V. The Lifetime Effect of Residential School Attendance on Indigenous Health Status. *Am J Public Health.* 2013;104(11):2184-2190. doi:10.2105/AJPH.2013.301479
220. Ohrnberger J, Fichera E, Sutton M. The relationship between physical and mental health: A mediation analysis. *Soc Sci Med.* 2017;195:42-49. doi:10.1016/j.socscimed.2017.11.008
221. Kemp AH, Quintana DS. The relationship between mental and physical health: insights from the study of heart rate variability. *Int J Psychophysiol.* 2013;89(3):288-296.
222. Burrage RL, Momper SL, Gone JP. Beyond trauma: Decolonizing understandings of loss and healing in the Indian Residential School system of Canada. *J Soc Issues.* Published online June 5, 2021:josi.12455. doi:10.1111/josi.12455
223. McEwen BS. Stress, Adaptation, and Disease: Allostasis and Allostatic Load. *Ann N Y Acad Sci.* 1998;840(1):33-44. doi:10.1111/j.1749-6632.1998.tb09546.x
224. Gluckman PD, Hanson MA, Pinal C. The developmental origins of adult disease. *Matern Child Nutr.* Published online 2005:12.
225. Seeman TE, Crimmins E, Huang MH, et al. Cumulative biological risk and socio-economic differences in mortality: MacArthur Studies of Successful Aging. *Soc Sci Med.* 2004;58(10):1985-1997. doi:10.1016/S0277-9536(03)00402-7
226. Epstein LH, Perkins KA. Smoking, Stress, and Coronary Heart Disease. *J Consult Clin Psychol.* 1988;56(3):342-349.

227. Jacobsen LK, Southwick SM, Kosten TR. Substance Use Disorders in Patients With Posttraumatic Stress Disorder: A Review of the Literature. *Am J Psychiatry*. 2001;158(8):1184-1190. doi:10.1176/appi.ajp.158.8.1184
228. Kessler RC. THE EFFECTS OF STRESSFUL LIFE EVENTS ON DEPRESSION. *Annu Rev Psychol*. 1997;48(1):191-214. doi:10.1146/annurev.psych.48.1.191
229. Jackson JS, Knight KM, Rafferty JA. Race and Unhealthy Behaviors: Chronic Stress, the HPA Axis, and Physical and Mental Health Disparities Over the Life Course. *Am J Public Health*. 2010;100(5):933-939. doi:10.2105/AJPH.2008.143446
230. Soto C, Baezconde-Garbanati L, Schwartz SJ, Unger JB. Stressful life events, ethnic identity, historical trauma, and participation in cultural activities: Associations with smoking behaviors among American Indian adolescents in California. *Addict Behav*. 2015;50:64-69. doi:10.1016/j.addbeh.2015.06.005
231. Whitbeck LB, Walls ML, Johnson KD, Morrisseau AD, McDougall CM. Depressed Affect and Historical Loss Among North American Indigenous Adolescents. *Am Indian Alsk Native Ment Health Res Online*. 2009;16(3):16-41.
232. Boyce WT, Boyce JC. Acculturation and changes in health among Navajo boarding school students. *Soc Sci Med*. 1983;17(4):219-226. doi:10.1016/0277-9536(83)90119-3
233. Yehuda R, Halligan S, Grossman R. Childhood trauma and risk for PTSD: Relationship to intergenerational effects of trauma, parental PTSD, and cortisol excretion. *Dev Psychopathol*. 2001;13(3):733-753.
234. Jokinen J, Nordström P. HPA axis hyperactivity and cardiovascular mortality in mood disorder inpatients. *J Affect Disord*. 2009;116(1-2):88-92. doi:10.1016/j.jad.2008.10.025
235. *Profile: American Indian/Alaska Native*. U.S. Department of Health and Human Services, Office of Minority Health; 2022. <https://minorityhealth.hhs.gov/omh/browse.aspx?lvl=3&lvlid=62#:~:text=32.0%20percent%20of%20American%20Indians,percent%20of%20non%20Hispanic%20whites>.
236. Holm T. *The Great Confusion in Indian Affairs: Native Americans & Whites in the Progressive Era*. 1st ed. University of Texas Press; 2005.
237. Jean A. Keller, Lorene Sisquoc, Clifford E. Trafzer. *Boarding School Blues: Revisiting American Indian Educational Experiences*. University of Nebraska Press; 2006.
238. Lomawaima KT. *They Called It Prairie Light: The Story of Chilocco Indian School*. University of Nebraska Press; 1994.
239. Davis J. American Indian Boarding School Experiences: Recent Studies from Native Perspectives. *Organ Am Hist Mag Hist*. 2001;15(2):20-22.

240. Milk T. *Haskell Institute: 19th Century Stories of Sacrifice and Survival*. Mammoth Publications; 2007.
241. Weinfeld M. Long-Term Effects of the Holocaust on Selected Social Attitudes and Behaviors of Survivors: A Cautionary Note. *Oxf Univ Press*. 1981;60(1):1-19.
242. Matthews SG, Phillips DIW. Minireview: Transgenerational Inheritance of the Stress Response: A New Frontier in Stress Research. *Endocrinology*. 2010;151(1):7-13. doi:10.1210/en.2009-0916
243. Dubois M, Guaspere C. From cellular memory to the memory of trauma: Social epigenetics and its public circulation. *Soc Sci Inf*. 2020;59(1):144-183. doi:10.1177/0539018419897600
244. Shantz E, Elliott SJ. From social determinants to social epigenetics: Health geographies of chronic disease. *Health Place*. 2021;69:102561. doi:10.1016/j.healthplace.2021.102561
245. Dashorst P, Mooren TM, Kleber RJ, de Jong PJ, Huntjens RJC. Intergenerational consequences of the Holocaust on offspring mental health: a systematic review of associated factors and mechanisms. *Eur J Psychotraumatology*. 2019;10(1):1654065. doi:10.1080/20008198.2019.1654065
246. Morrisette PJ. The holocaust of first nation people: Residual effects on parenting and treatment implications. *Contemp Fam Ther*. 1994;16(5):381-392. doi:10.1007/BF02197900
247. Van Ijzendoorn MH. Intergenerational transmission of parenting: a review of studies in nonclinical populations. *Dev Rev*. 1992;12:76-99.
248. Bergmann MS, Jucovy ME. *Generations of the Holocaust*. Columbia University Press
249. Bowlby J. *Attachment and Loss: Attachment*. Vol 1. Basic Books; 1969.
250. Ainsworth MD, Blehar MC, Waters E, Wall SN. *Patterns of Attachment: A Psychological Study of the Strange Situation*. Erlbaum; 1978.
251. Chase JA. Native American elders' perceptions of the boarding school experience on Native American parenting: an exploratory study. Published online 2012.
252. Christensen M, Manson S. Adult attachment as a framework for understanding mental health and American Indian families: A study of three family cases. *Am Behav Sci*. 2001;44(9):1447-1465.
253. Unger S. *The Destruction of American Indian Families*. Association on American Indian Affairs, Inc; 1977.
254. Cross TL. Drawing on Cultural Tradition in Indian Child Welfare Practice. *Soc Casework*. 1986;67(5):283-289. doi:10.1177/104438948606700505

255. Ullrich JS. For the love of our children: an Indigenous connectedness framework. *Altern Int J Indig Peoples*. 2019;15(2):121-130. doi:10.1177/1177180119828114
256. Hill RB. Gaps in Research and Public Policies. *Child Welfare*. 2008;87(2):359-367.
257. Bombay A, McQuaid RJ, Young J, et al. Familial Attendance at Indian Residential School and Subsequent Involvement in the Child Welfare System Among Indigenous Adults Born During the Sixties Scoop Era. *First Peoples Child Fam Rev*. 2020;15(1):62-79. doi:10.7202/1068363ar
258. Myhra. "It Runs in the Family": Intergenerational Transmission of Historical Trauma among Urban American Indians and Alaska Natives in Culturally Specific Sobriety Maintenance Programs. *Am Indian Alsk Native Ment Health Res*. 2011;18(2):17-40. doi:10.5820/aian.1802.2011.17
259. Whitbeck LB. The Beginnings of Mental Health Disparities: Emergent Mental Disorders Among Indigenous Adolescents. In: Carlo G, Crockett LJ, Carranza MA, eds. *Health Disparities in Youth and Families*. Vol 57. Nebraska Symposium on Motivation. Springer New York; 2011:121-149. doi:10.1007/978-1-4419-7092-3\_6
260. Krieger N, Smith K, Naishadham D, Hartman C, Barbeau EM. Experiences of discrimination: Validity and reliability of a self-report measure for population health research on racism and health. *Soc Sci Med*. 2005;61(7):1576-1596. doi:10.1016/j.socscimed.2005.03.006
261. Flores E, Tschann JM, Dimas JM, Pasch LA, de Groat CL. Perceived racial/ethnic discrimination, posttraumatic stress symptoms, and health risk behaviors among Mexican American adolescents. *J Couns Psychol*. 2010;57(3):264-273. doi:10.1037/a0020026
262. Whitbeck LB, Hoyt DR, McMorris BJ, Chen X, Stubben JD. Perceived Discrimination and Early Substance Abuse among American Indian Children. *J Health Soc Behav*. 2001;42(4):405. doi:10.2307/3090187
263. Evans-Campbell T. Historical Trauma in American Indian/Native Alaska Communities: A Multilevel Framework for Exploring Impacts on Individuals, Families, and Communities. *J Interpers Violence*. 2008;23(3):316-338. doi:10.1177/0886260507312290
264. Brody GH, Chen YF, Kogan SM, Murry VM, Logan P, Luo Z. Linking Perceived Discrimination to Longitudinal Changes in African American Mothers' Parenting Practices. *J Marriage Fam*. 2008;70(2):319-331. doi:10.1111/j.1741-3737.2008.00484.x
265. Hou Y, Kim SY, Hazen N, Benner AD. Parents' Perceived Discrimination and Adolescent Adjustment in Chinese American Families: Mediating Family Processes. *Child Dev*. 2017;88(1):317-331. doi:10.1111/cdev.12603
266. Yasui M, Dishion TJ, Stormshak E, Ball A. Socialization of Culture and Coping with Discrimination Among American Indian Families: Examining Cultural Correlates of Youth Outcomes. *J Soc Soc Work Res*. 2015;6(3):317-341. doi:10.1086/682575

267. Woods TM, Zuniga R, David EJR. A Preliminary Report on the Relationships Between Collective Self-Esteem, Historical Trauma, and Mental Health among Alaska Native Peoples. Published online 2020. doi:10.26077/9YPC-5B89
268. David EJR. A colonial mentality model of depression for Filipino Americans. *Cultur Divers Ethnic Minor Psychol*. 2008;14(2):118-127. doi:10.1037/1099-9809.14.2.118
269. Stumblingbear-Riddle. Resilience among Urban American Indian Adolescents: Exploration into the Role of Culture, Self-esteem, Subjective Well-being, and Social Support. *Am Indian Alsk Native Ment Health Res*. 2012;19(2):1-19. doi:10.5820/aian.1902.2012.1
270. Cohen S, Wills TA. Stress, Social Support, and the Buffering Hypothesis. *Psychol Bull Am Psychol Assoc*. 1985;98(2):310-357.
271. Callaghan P, Morrissey J. Social support and health: a review. *J Adv Nurs*. 1993;18(2):203-210. doi:10.1046/j.1365-2648.1993.18020203.x
272. Ajrouch KJ, Reisine S, Lim S, Sohn W, Ismail A. Perceived everyday discrimination and psychological distress: does social support matter? *Ethn Health*. 2010;15(4):417-434. doi:10.1080/13557858.2010.484050
273. Roh S, Burnette CE, Lee KH, Lee YS, Easton SD, Lawler MJ. Risk and protective factors for depressive symptoms among American Indian older adults: Adverse childhood experiences and social support. *Aging Ment Health*. 2015;19(4):371-380. doi:10.1080/13607863.2014.938603
274. John-Henderson NA, Ginty AT. Historical trauma and social support as predictors of psychological stress responses in American Indian adults during the COVID-19 pandemic. *J Psychosom Res*. 2020;139:110263.
275. Green BL, Furrer C, McAllister C. How Do Relationships Support Parenting? Effects of Attachment Style and Social Support on Parenting Behavior in an At-Risk Population. *Am J Community Psychol*. 2007;40(1-2):96-108. doi:10.1007/s10464-007-9127-y
276. Maguire-Jack K, Wang X. Pathways from neighborhood to neglect: The mediating effects of social support and parenting stress. *Child Youth Serv Rev*. 2016;66:28-34. doi:10.1016/j.chidyouth.2016.04.017
277. Respler-Herman M, Mowder BA, Yasik AE, Shamah R. Parenting Beliefs, Parental Stress, and Social Support Relationships. *J Child Fam Stud*. 2012;21(2):190-198. doi:10.1007/s10826-011-9462-3
278. Bernstein DP, Stein JA, Newcomb MD, et al. Development and validation of a brief screening version of the Childhood Trauma Questionnaire. *Child Abuse Negl*. 2003;27(2):169-190. doi:10.1016/S0145-2134(02)00541-0
279. Rosenberg M. *Society and the Adolescent Self-Image*. Princeton University Press; 1965.

280. Sherbourne CD, Stewart AL. The MOS Social Support Survey. *Soc Sci Med*. 1991;32(6):705-714.
281. Shakespeare-Finch J, Obst PL. The Development of the 2-Way Social Support Scale: A Measure of Giving and Receiving Emotional and Instrumental Support. *J Pers Assess*. 2011;93(5):483-490. doi:10.1080/00223891.2011.594124
282. Kline RB. *Becoming a Behavioral Science Researcher: A Guide to Producing Research That Matters*. 2nd ed. The Guilford Press; 2020.
283. Leppink J, Winston K, O’Sullivan P. Statistical significance does not imply a real effect. *Perspect Med Educ*. 2016;5(2):122-124. doi:10.1007/s40037-016-0256-6
284. Pituch KA, Stevens JP. *Applied Multivariate Statistics for the Social Sciences*. 6th ed. Routledge Taylor & Francis Group; 2016.
285. Dion PA. Interpreting Structural Equation Modeling Results: A Reply to Martin and Cullen. *J Bus Ethics*. 2008;83(3):365-368. doi:10.1007/s10551-007-9634-7
286. Lewis M, Stremlau R, Walls M, et al. Psychosocial aspects of Historical and Cultural Learning: Historical Trauma and Resilience among Indigenous Young Adults. *J Health Care Poor Underserved*. 2021;32(2):987-1018. doi:10.1353/hpu.2021.0076
287. Fixico DL. *Indian Resilience and Rebuilding: Indigenous Nations in the Modern American West*. 1st ed. University of Arizona Press; 2013.
288. Kirmayer LJ, Sehdev M, Whitley R, Dandeneau SF, Isaac C. Community Resilience: Models, Metaphors and Measures. Published online 2009:57.
289. Visenor G. *Survivance: Narratives of Native Presence*. University of Nevada Press; 2008.
290. Neimeyer RA, Stewart AE. Trauma, healing, and the narrative emplotment of loss. *Fam Soc*. 1996;77(6):360-375.
291. Abramowitz SA. The poor have become rich, and the rich have become poor: collective trauma in the Guinean Languette. *Soc Sci Med*. 2005;61(10):2106-2118.
292. Chandler MJ, LaLonde C. Cultural continuity as a hedge against suicide in Canada’s First Nations. *Transcult Psychiatry*. 1998;35(2):191-219.
293. Brondolo E, Brady ver Halen N, Pencille M, Beatty D, Contrada RJ. Coping with racism: a selective review of the literature and a theoretical and methodological critique. *J Behav Med*. 2009;32(1):64-88. doi:10.1007/s10865-008-9193-0
294. Walters K L, Stately A, Evans-Campbell T, et al. “Indigenist” Collaborative Research Efforts in Native American Communities. In: *The Field Research Survival Guide*. Oxford University Press; 2009. doi:10.1093/acprof:oso/9780195325522.001.0001

295. *The Convention on the Prevention and Punishment of the Crime of Genocide (1948)*. United Nations Office on Genocide Prevention and the Responsibility to Protect; 2019:1-6.
296. Solomon TGA, Starks RRB, Attakai A, et al. The Generational Impact Of Racism On Health: Voices From American Indian Communities: Study examines the generational impact of racism on the health of American Indian communities and people. *Health Aff (Millwood)*. 2022;41(2):281-288. doi:10.1377/hlthaff.2021.01419
297. Warne D, Lajimodiere D. American Indian health disparities: psychosocial influences: American Indian health disparities. *Soc Personal Psychol Compass*. 2015;9(10):567-579. doi:10.1111/spc3.12198
298. Adakai M, Sandoval-Rosario M, Xu F, et al. *Health Disparities Among American Indians/Alaska Natives*. Centers for Disease Control and Prevention; 2018.
299. *Indian Health Disparities*. Indian Health Service; 2019.
300. Cheng TL, Johnson SB, Goodman E. Breaking the Intergenerational Cycle of Disadvantage: The Three Generation Approach. *Pediatrics*. 2016;137(6):e20152467. doi:10.1542/peds.2015-2467
301. Greenfield BL, Elm JHL, Hallgren KA. Understanding measures of racial discrimination and microaggressions among American Indian and Alaska Native college students in the Southwest United States. *BMC Public Health*. 2021;21(1):1099. doi:10.1186/s12889-021-11036-9
302. Benoit C, Carroll D, Chaudhry M. In search of a healing place: Aboriginal women in Vancouver's Downtown Eastside. *Soc Sci Med*. 2003;56(4):821-833.
303. Gone JP. Mental health services for Native Americans in the 21st century United States. *Prof Psychol Res Pract*. 2004;35(1):10-18.
304. Hodge DR, Limb GE, Cross TL. Moving from colonization towards balance and harmony: a Native American perspective on wellness. *Soc Work*. 2009;54(3):211-219.
305. McCabe G. Mind, body, emotions and spirit: reaching the ancestors. *Couns Psychol Q*. 2008;21(2):143-152.
306. Geana MV, Greiner KA, Cully A, Talawyma M, Daley CM. Improving Health Promotion to American Indians in the Midwest United States: Preferred Sources of Health Information and Its Use for the Medical Encounter. *J Community Health*. 2012;37(6):1253-1263. doi:10.1007/s10900-012-9564-x
307. Harding T, Oetzel J. Implementation effectiveness of health interventions for indigenous communities: a systematic review. *Implement Sci*. 2019;14(1):76. doi:10.1186/s13012-019-0920-4

308. Linklater R. *Decolonizing Trauma Work*. Fernwood Publishing; 2014.
309. Chino M, DeBruyn L. Building true capacity: Indigenous models for Indigenous communities. *Am J Public Health*. 96(4):596-599.
310. Carr T, Chartier B, Dadgostari T. "I'm not really healed ... I'm just bandaged up": Perceptions of Healing Among Former Students of Indian Residential Schools. *Int J Indig Health*. 2017;12(1):39-56. doi:10.18357/ijih121201716901
311. Beltran R, Schultz K, Fernandez AR, Walters KL, Duran B, Evans-Campbell T. From Ambivalence to Revitalization: Negotiating Cardiovascular Health Behaviors Related to Environmental and Historical Trauma in a Northwest American Indian Community. *Am Indian Alsk Native Ment Health Res*. 2018;25(2). doi:10.5820/aian.2502.2018.103
312. Lavalley L, Poole J. Beyond recovery: colonization, health and healing for Indigenous people in Canada. *Int J Ment Health Addict*. 2010;8(2):271-281. doi:10.1007/s11469-009-9239-8
313. Daehnke JD. A Heritage of Reciprocity. *Public Hist*. 2019;41(1):64-77. doi:10.1525/tph.2019.41.1.64
314. Burhansstipanov L. Urban Native American health issues. *Cancer*. 2000;88(S5):1207-1213. doi:10.1002/(SICI)1097-0142(20000301)88:5+<1207::AID-CNCR5>3.0.CO;2-T
315. West AE, Williams E, Suzukovich E, Strangeman K, Novins D. A Mental Health Needs Assessment of Urban American Indian Youth and Families. *Am J Community Psychol*. 2012;49(3-4):441-453. doi:10.1007/s10464-011-9474-6
316. Dickerson D, Venner K, Duran B, Annon J, Hale B, Funmaker G. Drum-assisted recovery therapy for Native Americans (DARTNA): results from a pretest and focus groups. *Am Indian Alsk Native Ment Health Res*. 2014;21(1):35-58.
317. Kading M, Hautala D, Palombi L, Aronson B, Smith R, Walls M. Flourishing: American Indian positive mental health. *Soc Ment Health*. 2015;5(3):203-217.
318. Cayir E, Burke M, Spencer M, Schure M, Goins R. Lifetime Trauma and Depressive Symptomatology Among Older American Indians: The Native Elder Care Study. *Community Ment Health J*. 2017; epub ahead of publication:1-8. doi:https://doi-org.libproxy.lib.unc.edu/10.1007/s10597-017-0179-7
319. Rasmus SM, Charles B, Mohatt GV. Creating Qungasvik (A Yup'ik intervention "toolbox"): case examples from a community-developed and culturally-driven intervention. *Am J Community Psychol*. 2014;54(1-2):140-152.
320. Shea H, Mosley-Howard S, Baldwin D, Ironstrack G, Rousmaniere K, Schroer JE. Cultural revitalization as a restorative process to combat racial and cultural trauma and promote living well. *Cultur Divers Ethnic Minor Psychol*. 2019;25(4):553-565.



321. McBride BA. Aspects of Community Healing: Experiences of the Sault Sainte Marie Tribe of Chippewa Indians. *Am Indian Alsk Native Ment Health Res Online Aurora*. 2003;11(1):67-83.
322. Crawford A. “The trauma experienced by generations past having an effect in their descendants”: narrative and historical trauma among Inuit in Nunavut, Canada. *Transcult Psychiatry*. 2014;51(3):339-369. doi:10.1177/1363461512467161
323. Gone JP. Redressing First Nations historical trauma: theorizing mechanisms for Indigenous culture as mental health treatment. *Transcult Psychiatry*. 2013;50(5):683-706.
324. Running Bear U, Thayer ZM, Croy CD, Kaufman CE, Manson SM, the AI-SUPERPPF Team. The Impact of Individual and Parental American Indian Boarding School Attendance on Chronic Physical Health of Northern Plains Tribes. *Fam Community Health*. 2019;42(1):1-7. doi:10.1097/FCH.0000000000000205
325. Horan J, Widom CS. From childhood maltreatment to allostatic load in adulthood: the role of social support. *Child Maltreat*. 2015;20(4):229-239.
326. Brooks KP, Gruenewald T, Karlamangla A, Hu P, Koretz B, Seeman TE. Social relationships and allostatic load in the MIDUS study. *Healthy Psychol*. 2014;33(11):1373-1381.
327. Goodkind JR, Gorman B, Hess JM, Parker DP, Hough RL. Reconsidering culturally competent approaches to American Indian healing and well-being. *Qual Health Res*. 2015;25(4):486-499.
328. Smith LT. *Decolonizing Methodologies: Research and Indigenous Peoples*. Palgrave Macmillan; 2012.
329. Wilson WA, Yellow Bird M. *For Indigenous Eyes Only: A Decolonization Handbook*. School of American Research Press; 2005.
330. Wilson S. *Research Is Ceremony: Indigenous Research Methods*. Fernwood Publishing; 2008.