AMERICAN INDIAN AND WHITE ADOPTEES: ARE THERE MENTAL HEALTH DIFFERENCES?

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Abstract: Adult adoptees are at increased risk for mental health problems compared to nonadoptees. However, little is known about subsets of adoptees that may be more or less vulnerable to mental health problems. The purpose of this study was to explore the presence of mental health problems of American Indian (AI) persons compared to White persons who were separated from their birth families during childhood by foster care and/or adoption. Family systems theory guided the study. AI adoptees reported higher percentages of problems than White adoptees on all mental health problems measures (e.g., substance abuse, mental health, self-injury, and suicide). Data analysis included a series of chi-square statistics and logistic regression models. AI adoptees were more likely to report mental health problems, including alcohol addiction, alcohol recovery, drug recovery, self-assessed eating disorder, eating disorder diagnosis, self-harm, and suicidal ideation than were Whites.

INTRODUCTION

Mental health is a critical component of overall health, as reflected by the Substance Abuse and Mental Health Services Administration's (2015) definition of *healthy* as "overcoming or managing one's disease[s] as well as living in a physically and emotionally healthy way" (p. 1). It is difficult, however, to assess the overall mental health of selected population groups because the literature often approaches the study of mental health by investigating discrete mental health problems, such as depression, suicidal ideation, or substance abuse, rather than taking an integrated approach. This study is grounded in a holistic theory (family systems theory), creating the space for studying a combination of mental health problems simultaneously. Using such a holistic theory allows for the study of mental health problems as a whole comprised

of varying individual parts (e.g., addiction, recovery, self-injury, suicidal ideation, and suicide attempt).

Mental health problems are a pressing public health issue affecting large numbers of people across the U.S. If left undiagnosed or untreated, mental health problems create cascading stress for individuals, family systems, and entire populations. Galson (2009) states that "mental illness can weave itself through all aspects of one's life: physical health, parenting, work, childbearing, finances, caregiving, and common daily activities" (p. 189). In beginning to paint the landscape of mental health problems in the U.S., 7.6% of Americans have reported experiencing depression (Pratt & Brody, 2014). Persons experiencing depression may also report comorbid conditions such as substance abuse, suicidal ideation, and suicide attempts. In the U.S., 9.4% of Americans reported illicit drug use within the preceding month, and 6.6% reported alcohol dependence or problems related to their alcohol use (National Institute on Drug Abuse, 2015). Persons experiencing substance abuse disorders are also at risk for suicidal ideation and attempt (Kessler, Borges, & Walters, 1999). Comparing these statistics of people with substance abuse disorders to those of the general population, 3.7% of American adults reported having suicidal thoughts, with 1% having planned suicide and 0.5% having actually attempted suicide (Centers for Disease Control and Prevention [CDC], 2012).

Gone and Trimble (2012) state, "although relatively little evidence is available, existing data suggest that [American Indian/Alaska Native] adults and youth suffer a disproportionate burden of mental health problems compared with other Americans. Specifically, clear disparities have emerged for [American Indian/Alaska Native] substance abuse, violence, posttraumatic stress, and suicide" (p. 131). Beals et al. (2005) found a greater presence of alcohol disorders in American Indians (AI) compared to other populations. In an assessment of health status and behavioral risks, Holm, Vogeltanz-Holm, Poltavski, and McDonald (2010) found that AI adults from rural reservations showed greater prevalence of alcohol use compared to national samples. Suicide is the second leading cause of death among AI/Alaska Native persons between the ages of 15 and 34 years (CDC, 2012).

Although mental health problems affect individuals across all ages, races and ethnicities, and genders, particular subgroups are adversely affected to a greater degree. For instance, adults who were separated from their parents in childhood, including adoptees, experience higher risks of mental illness and substance use compared to nonseparated persons (Cubito & Obremski

Brandon, 2000; Levy-Shiff, 2001; Pesonen et al., 2007; Räikkönen et al., 2011; Wierzbicki, 1993). Adult adoptees have significantly higher levels of psychological maladjustment compared to normative data (although despite their elevated scores, they do not approach levels typically found in an outpatient clinical population; Cubito & Obremski Brandon, 2000). Adoptees are also more likely to meet criteria for substance abuse or dependence than nonadoptees (Tieman, van der Ende & Verhulst, 2005), and they have increased risks compared to nonadoptees in suicidal ideation (Festinger & Jaccard, 2012) and suicide attempts (Keyes, Malone, Sharma, Iacono, & McGue, 2013; Slap, Goodman, & Huang, 2001; Von Borczyskowski, Hjern, Lindblad, & Vinnerljung, 2006). Adopted and/or fostered individuals who travel through the child welfare system (i.e., former child welfare clients) are more likely than their counterparts in the general population to have been hospitalized for a suicide attempt and to be at risk for depression (Vinnerljung, Hjern, & Lindblad, 2006).

Furthermore, little is known about subsets of adoptees that may be even more vulnerable to mental health problems, such as 1) White adoptees from the Baby Scoop Era, which began after World War II, continued into the 1970s, and was characterized by increased premarital pregnancies and higher rates of infant adoptions (Andrews, 2011); and 2) AI adults who have unique experiences of forced removal from their tribal communities and coerced adoption while they were children. Both adoptee subsets experienced adoption as forced as most often adoptees (especially infants and young children) do not have a choice in their own adoption. Lack of choice is a similar characteristic between AIs and Whites, but AIs have a number of unique experiences, such as being placed in White homes, that may distinctly affect their mental health. Cultural comparisons in studying adoptees are critical to disentangling the mental health problems that are unique to AI adoptees versus those that they share in common with Whites. Having an AI/White comparison sample creates the space for contributions to such questions as a) do mental health problems cut across both AI and White adoptee groups and b) are AI adoptees at greater risk for particular types of mental health problems?

It is believed that historical trauma contributes to the mental health problems of AIs (both adoptees and nonadoptees) and that such problems stem from loss of lives, land, and important aspects of AI cultures (Brave Heart & DeBruyn, 1998). Furthermore, the unique context of AI adoptees (e.g., historical losses, assimilation, systematic child removal) suggests their mental health outcomes might differ from adoptees of other races for a number of reasons. Between

1878 and 1930, AI children were forced to attend boarding schools based on the belief that their families were inferior; this action has been described as the first wave of child removal (Red Horse et al., 2000). Around the same time as the Baby Scoop Era, the U.S. federal government systematically removed AI children from their families and placed them into foster care, adoptive homes, or institutions through the Indian Adoption Project, a collaborative effort between the Bureau of Indian Affairs and Child Welfare League of America (Jacobs, 2013; Red Horse et al., 2000). Under the Indian Adoption Project, 395 AI children were adopted. However, the project set the precedent for other agencies. Many AI adoptees were placed in non-AI homes, making theirs an experience of transracial adoption despite remaining on national soil. National data collected from social service agencies and private adoption agencies suggest that 25-35% of AI children were placed in foster or adoptive homes in the 1960s and 1970s (Jacobs, 2013).

Across adoptee populations, treatment by caregivers within the foster care or adoptive environment affects the occurrence, exacerbation, or stabilization of mental health problems. Distinct types of abuse (e.g., physical, emotional, sexual, spiritual) are interdependent and, thus, have a cumulative effect on adoptees (Finkelhor, Ormrod, & Turner, 2007; Greeson et al., 2011; Sabina & Straus, 2008). Such poly-victimization creates a ripe environment for the onset of mental health problems, especially when experienced from a caregiver. For instance, poly-victimization is predictive of trauma symptoms (Finkelhor et al., 2007) and post-traumatic stress symptoms (Greeson et al., 2011; Sabina & Straus, 2008). It has been associated with higher rates of internalizing problems (Greeson et al., 2011), psychological distress (Richmond, Elliott, Pierce, Aspelmeier, & Alexander, 2008) and mental health maladjustment (Hooven, Nurius, Logan-Greene, & Thompson, 2012). Scholars have also explored the connection between poly-victimization and mental health problems outside of adoption literature. This study not only investigates the existence of mental health problems among adoptees but the effect of poly-victimization on the occurrence of mental health problems.

Family System Theory

A considerable amount of previous literature was devoted to examining individual mental health problems in selected groups of adoptees. Focusing on single classifications of mental health fails to reveal the presence of other forms of potentially comorbid problems (e.g., substance abuse, suicidal ideation, suicide attempt). A more holistic approach to studying the

mental health of adoptees is needed. Mental health status is not just a function of the internal working of an individual but also the family context in which they live and the interactions of the members within that family context. Family systems theory provides such a theoretical grounding not only of the family context of the adoptee but the institutional systems that interconnect with the adoptee and their adopted family. Considering the family context is important, as an adoptee's connection to and experiences in their foster and/or adoptive family also plays a role in shaping mental health.

Family systems theory grew out of general systems theory in the late 1960s (Gray, Duhl, & Rizzo, 1969). Family systems theory has been used across a variety of fields including family social science, sociology, and psychiatry (Whitchurch & Constantine, 1993). An assumption of family systems theory applied in this study is that a system must be understood as a whole rather than in components as the whole is greater than the sum of its parts (Whitchurch & Constantine, 1993). A person's mental health is a system in itself, comprised of smaller subsystems (e.g., depression, suicidal ideation, substance abuse) within a larger suprasystem (health) that coexists within the family context. Another assumption of family systems theory is that components of a system mutually influence each other; therefore, they are interdependent. Poly-victimization was important to explore because distinct types of abuse are interrelated.

Although studies of adoption are plentiful, few have explored the mental health problems of AI individuals displaced from their biological families by foster care and/or adoption. There is not a good overall picture of the mental health of AI adoptees. The purpose of this study is twofold: 1) to explore the presence of a variety of mental health problems among AIs compared to Whites who were separated from their birth families during childhood by foster care and/or adoption, and 2) to investigate the conditions that create a greater probability of mental health problems, including the unique experience of AI adoptees who have been forcibly removed from their families.

This study contributes to the literature in a number of ways. First, by investigating mental health problems of AI adult adoptees who were forcibly removed from their families as children, this study fills a void in both the mental health literature and the literature about the AI experience. Comparing AI adoptees to White adoptees provides a context from which to understand the impact of forced removal beyond the adoptee experience itself. The comparison provides additional contextual underpinnings in that the current literature on mental health

problems is based primarily within the White experience. Second, because adoption research, and specifically research with AI adoptees, historically has either focused on preadolescence or relied on parent or professional report, this study adds to the small body of research focused on the voices of adoptees (Carriere, 2005; Landers, Danes, & White Hawk, 2015; Peterson, 2002). Third, this study expands on previous atheoretical literature through its grounding in family systems theory that creates the space to approach the study of mental health problems in a more conceptually integrated way. Fourth, based on its family systems orientation, this study provides a more holistic picture of adoptee mental health by investigating a variety of mental health problems simultaneously. Fifth, this study incorporates poly-victimization, a key concept explored throughout mental health and child maltreatment literature. Lastly, most previous research focusing on AI adoptees is qualitative in its methodological approach (e.g., Carriere, 2005); this study's quantitative approach allows for more widespread generalization of the study findings.

Grounded in literature and family systems theory, the authors developed the following hypotheses:

Hypothesis 1: AI adoptees exhibit greater mental health problems and poly-victimization than White adoptees.

Hypothesis 2 is the same for each mental health problem so within brackets is the list of all the problems with an identifying letter for each problem.

Hypothesis 2: AI adoptees have a greater probability of experiencing a) alcohol addiction, b) alcohol recovery, c) drug addiction, d) drug recovery, e) eating disorder, f) eating disorder diagnosis, g) self-injury, h) suicidal ideation, and i) attempted suicide compared to White adoptees when controlling for demographics (age, gender, married/cohabitating, poverty, college degree) and poly-victimization.

METHODS

Sampling Procedures

Study data originated from the Experiences of Adopted and Fostered Individuals Project, which was developed through a community-based participatory research project with collaboration among First Nations Repatriation Institute (FNRI), Adoptees Have Answers

(AHA), and the University of Minnesota. Research questions were defined by community and academic partners; the academic partners then utilized their formalized research skills to execute data collection and analyses (University of Minnesota, 2015).

Data were collected from AI and White adults who self-identified as having experienced adoption and/or foster care during childhood, hereafter referred to as *adoptees*. Targeted purposive sampling was used to collect data. Study participants were recruited via two community agencies serving adoptees (FNRI, AHA) and online via listserv distribution and advertising. Recruitment also occurred via a closed Facebook group for Native American adoptees, the National Indian Child Welfare Association (NICWA) Facebook page, two tribal Facebook pages, print and media sources of popular adoption organizations such as Adoption Today (printed and electronic version), Evan B. Donelson enews, American Adoption Congress enews, Adopt Source enews, and the enews of local Native newspapers. In addition, 600 fliers were placed in conference packets at NICWA's annual conference in 2013. The survey was made available both in online and paper-pencil versions. Informed consent was obtained as a precursor to starting the survey. Respondents were told the survey would take 45-75 minutes to complete.

Sample Description

The total sample ($N = 336$) was reduced to 295 as we narrowed it to include only respondents who consistently identified themselves as either AI ($n = 129$) or White ($n = 166$); the 41 respondents who identified as African American, Latino, Asian American, or biracial, did not provide their race, or answered inconsistently across the two race questions were dropped. The AI respondents answered "Yes," "I suspect so," or "I don't know" to the question "Are you an American Indian / Native American?" and additionally identified themselves as AI in an open-ended race question. The two questions were used together to determine AI race status as a validity check. Approximately one third of the AI sample came from Ojibwe, Lakota, and Dakota Nations. The following other tribes were identified: Omaha, Cree, Cherokee, Ho-Chunk, Chickasaw, and Navajo. The White respondents answered "No" to the question "Are you an American Indian / Native American?" and identified themselves as White in an open-ended race question.

The sample of 295 was narrowed further to 233 as a result of missing data: 62 participants who were missing responses across all of the mental health questions, which was the main focus of this paper, were dropped. Missing data were addressed through listwise deletion. The final sample (n = 233) is comprised of 99 AI respondents and 134 White respondents. Participants with complete data were compared to participants who were dropped due to missing data using t-tests and chi-squared tests. No significant differences were found between participants with complete data and those that were dropped with regard to age, gender, income, or education.

Measures

Demographic Characteristics

This study included a series of demographic characteristics because such characteristics have commonly been included in previous adoption literature. These variables included age (Beals et al., 2005; Festinger & Jaccard, 2012; Holm et al.,2010; Keyes et al.,2013; Slap et al.,2001; Tieman et al., 2005; Von Borczyskowski et al.,2006; Wierzbick, 1993); gender (Cubito & Obremski Brandon, 2000; Levy-Shiff, 2001; Wierzbick, 1993; Tieman et al., 2005); socioeconomic status, income, or poverty (Beals et al., 2005; Slap et al., 2001; Tieman et al., 2005; Von Borczyskowski et al.,2006); education (Holm et al.,2010); and marital status (Beals et al., 2005; Holm et al.,2010). Although many of these demographic characteristics have not been significantly related to mental health problems, we suggest that with some of these demographics there is greater probability of having more stress, perhaps making a person more susceptible to mental health problems. Demographic characteristics were included in our study in order to verify if they were indeed not meaningful contributors to mental health problems. For instance, being poor, having low educational attainment, being female, or being a young adult or an elderly person might make persons more susceptible to stress.

Given the limited data available on the mental health problems of AI adoptees and the exploratory nature of this study, we aimed to provide a holistic picture of adoptee mental health problems by using self-report, single-item measures. These authors assumed that most participants would not self-report these problems if they had not experienced them. In addition, we asked not only about addictions to alcohol and drugs, but also whether participants went through recovery for those addictions, realizing that respondents might be at various stages

within the addiction/recovery process. Previous research suggests that "retrospective self-reports may yield biased estimates of disorder, typically, these are thought to be underestimates" (Beals et al., 2005, p. 107; Kessler, 2000). In essence, retrospective self-report tends to underreport problems.

Alcohol Addiction

Participants were asked, "Do you consider yourself addicted to alcohol?" The item was coded as 0 (*No)* and 1 (*Yes).*

Alcohol Recovery

Participants were asked, "Are you currently in recovery for alcoholism?" The item was coded as 0 (*No)* and 1 (*Yes).*

Drug Addiction

This question was posed to participants about their potential drug addiction: "Do you consider yourself addicted to any kind of drugs other than alcohol?" The item was coded as 0 (*No)* and 1 (*Yes).*

Drug Recovery

A recovery question was also asked of participants: "Are you currently in recovery for drug addiction?" The item was coded as 0 (*No)* and 1 (*Yes).*

Self-assessed Depression

Depression is characterized by a range of symptoms, including, but not limited to, loss of interest or pleasure, feeling sad or empty, loss of energy, and feeling worthless, as well as changes in appetite and sleep (American Psychiatric Association, 2013). Participants were asked: "Have you ever been depressed?" The item was coded as 0 (*No)* and 1 (*Yes).*

Depression Diagnosis

Participants were also asked if they had had a diagnosis of depression: "Have you ever been diagnosed as depressed?" The item was coded as 0 (*No)* and 1 (*Yes).*

Self-assessed Eating Disorder

Participants were asked if they had an eating disorder: "Do you consider yourself to have an eating disorder?" The item was coded as 0 (*No)* and 1 (*Yes).*

Eating Disorder Diagnosis

Participants were also asked if they had an eating disorder diagnosis: "Have you ever been diagnosed as having an eating disorder?" The item was coded as 0 (*No)* and 1 (*Yes).*

Self-injury

Self-injury without suicidal intention was investigated with this question: "Have you ever injured yourself on purpose but without suicidal intention?" The item was coded as 0 (*No)* and 1 (*Yes).*

Suicidal Ideation

Suicidal ideation was captured by this question: "Have you ever contemplated or planned suicide?" The item was coded as 0 (*No)* and 1 (*Yes).*

Suicide Attempt

Suicide attempts were discovered through asking this question: "Have you ever attempted suicide?" The item was coded as 0 (*No)* and 1 (*Yes).*

Poly-victimization

Poly-victimization represents the experience of multiple abuse types and the accumulation of their effect within the interpersonal relationship with the adoptive/foster caregiver. Definitions of physical, emotional, and sexual abuse were drawn from the National Child Abuse and Neglect Data System. First, respondents who experienced foster care were asked, "Did you experience abuse in any foster home?" For each type of abuse (physical, emotional, sexual, spiritual), response options were: *none*, *single incident*, *several times*, and *long-term*. Second, respondents who experienced adoption were asked, "Did you experience abuse in your adoptive home?" For each type of abuse, response options were: *none*, *single incident*, *several times*, and *long-term*. These items were dichotomized to create dummy variables representing whether respondents had experienced the particular type of abuse in either context. If the participant reported none, then the variable was 0; anything other than a report of 0 the variable was 1. The dichotomized variables were then summed representing the total experience of victimization (Finkelhor et al., 2007). Questions about abuse are retrospective, asking participants to remember experiences from their time in foster care and adoptive home environments. Of the various types of retrospective questions, episodic events using personal recollection of a particular event (abuse) from an individual's past are the most reliable of autobiographical memory forms (Herrmann, 1994).

Data Analysis

Analyses were performed using SPSS Version 22. Chi-square analyses were used to test Hypothesis 1 and logistic regression was used to test Hypothesis 2. The plan for statistical power was .80, and our sample size was large enough to detect a medium size effect ($p = .05$; Cohen, 1992). Nine different logistic regression models were conducted to assess whether the seven predictor variables—age, gender, married or cohabitating, poverty, college degree, poly-victimization, and being AI—significantly predicted whether the adopted and/or fostered individual reported the following outcomes: alcohol addiction, alcohol recovery, drug addiction, drug recovery, eating disorder, eating disorder diagnosis, self-injury, suicidal ideation, and suicide attempt. These nine models were run based on significant differences revealed in the preliminary analyses (*t*-tests and chi-squares). Mental health problems where there were not initially significant differences (self-assessed depression, depression diagnosis, and hospitalization for mental health) were not explored in the logistic regression analyses.

RESULTS

The majority (56.2%) of the sample experienced both foster care and adoption; the remaining experienced only foster care or only adoption. The mean age of respondents was 48.96 years ($SD = 10.79$), and 81% were female. Approximately half of the respondents (56.5%) were married or cohabitating. Personal annual incomes from all sources ranged from less than $10,000 to $55,000 or more (median = $35,000-54,999). The range of the respondents' highest completed education ranged from less than high school to more than a bachelor's degree, with 48.4% of respondents holding a bachelor's degree or higher.

In comparing the White and AI adoptees, the Whites had greater income (47.4% had an income of $55,000 or more, compared to 24.5% for the AI adoptees). The AI adoptees were also more likely to receive Social Security Disability income (15.5% compared to 2.2%). In addition, AI adoptees were more likely to have a college degree and to be married or cohabitating.

Results of Hypothesis Testing

Hypothesis 1

To investigate whether AI and White adoptees differed on substance abuse problems (e.g., alcohol addiction and drug addiction), recovery (alcohol recovery and drug recovery), mental health problems (e.g., depression, depression diagnosis, self-assessed eating disorder, eating disorder diagnosis), self-harm, suicidal ideation, and suicide attempt, chi-square statistics were conducted. Table 1 shows the Pearson chi-square results and indicates that AI and White adoptees were significantly different on alcohol addiction ($X^2 = 18.536$, $df = 1$, $N = 226$, $p = .001$), alcohol recovery ($X^2 = 18.977$, $df = 1$, $N = 227$, $p = .001$), drug addiction ($X^2 = 3.898$, $df = 1$, $N = 228$, $p = .048$), drug recovery ($X^2 = 8.708$, $df = 1$, $N = 229$, $p = .003$), self-assessed eating disorder ($X^2 = 7.532$, $df = 1$, $N = 228$, $p = .006$), eating disorder diagnosis ($X^2 = 5.125$, $df = 1$, $N = 230$, $p = .024$), self-harm ($X^2 = 7.968$, $df = 1$, $N = 228$, $p = .005$), suicidal ideation ($X^2 = 8.236$, $df = 1$, $N = 228$, $p = .004$), and suicide attempt ($X^2 = 3.997$, $df = 1$, $N = 232$, $p = .046$). AI adoptees were more likely than expected under the null hypothesis to self-report alcohol addiction, alcohol recovery, drug addiction, drug recovery, self-assessed eating disorder, eating disorder diagnosis, self-harm, suicidal ideation, and attempted suicide than Whites. There were no significant differences for depression and depression diagnosis.

Table 1
Chi-square of Adopted and/or Fostered Individuals

	American Indian (n = 99)		White (n = 134)				
	M	SD	M	SD	n		p
Self-assessed Substance Abuse							
Alcohol Addiction	0.28	0.45	0.07	0.25	226	18.536	**0.001**
Alcohol Recovery	0.21	0.41	0.03	0.17	227	18.977	**0.001**
Drug Addiction [a]	0.14	0.35	0.06	0.24	228	3.898	**0.048**
Drug Recovery [b]	0.10	0.31	0.02	0.12	229	8.708	**0.003**
Mental Health							
Depression (Self-assessed)	0.88	0.33	0.82	0.39	230	1.368	0.242
Depression Diagnosis	0.53	0.50	0.53	0.50	228	0.000	0.989
Hospitalized for Mental Health Condition	0.21	0.41	0.14	0.34	231	2.506	0.113
Eating Disorder (Self-assessed)	0.31	0.47	0.16	0.37	228	7.532	**0.006**
Eating Disorder Diagnosis	0.15	0.36	0.06	0.24	230	5.125	**0.024**

Table 1, Continued
Chi-square of Adopted and/or Fostered Individuals

	American Indian (n = 99)		White (n = 134)				
	M	*SD*	*M*	*SD*	*n*		*p*
Self-harm and Suicide							
Self-injury Without Suicidal Intention	0.36	0.48	0.20	0.40	228	7.968	**0.005**
Contemplated Suicide	0.59	0.49	0.40	0.49	228	8.236	**0.004**
Attempted Suicide	0.28	0.45	0.17	0.38	232	3.997	**0.046**

[a] Addicted to any kind of drug other than alcohol
[b] In recovery from any kind of drug other than alcohol

Hypothesis 2a: Alcohol Addiction

In the logistic model for alcohol addiction, when all seven predictor variables (demographic characteristics, poly-victimization, and AI) were controlled, they significantly predicted whether the person reported alcohol addiction, $X^2 = 41.852$, $df = 7$, $N = 224$, $p < .001$. Table 2 presents the odds ratios, which suggest that the odds of alcohol addiction increased for males and AIs.

Hypothesis 2b: Alcohol Recovery

In the alcohol recovery model, when all seven predictor variables were controlled, they significantly predicted whether the person was in alcohol recovery, $X^2 = 36.848$, $df = 7$, $N = 225$, $p < .001$. The odds ratio indicates that the experience of alcohol recovery increased with age and for males, those in poverty, and AIs.

Hypothesis 2c: Drug Addiction

In the logistic model for drug addiction, when all seven predictor variables were controlled, they significantly predicted whether the person reported drug addiction, $X^2 = 17.877$, $df = 7$, $N = 227$, $p < .013$. Table 2 also presents the odds ratios, which suggest that the odds of drug addiction decreased with age and increased for males.

Hypothesis 2d: Drug Recovery

In the model for drug recovery, when all seven predictor variables were controlled, they significantly predicted whether the person was in drug recovery, $X^2 = 23.267$, $df = 7$, $N = 227$, $p < .002$. Table 2 also presents the odds ratios, which suggest that the odds of drug recovery increased for those in poverty and AIs.

Hypothesis 2e: Eating Disorder

In the logistic model for eating disorders, when all seven predictor variables were controlled, they significantly predicted whether the person reported having an eating disorder, X^2 = 17.365, df = 7, N = 227, p < .015. Table 2 indicates that the odds of experiencing an eating disorder increased for AIs.

Hypothesis 2f: Eating Disorder Diagnosis

In the model for a diagnosed eating disorder, when all seven predictor variables were controlled, they significantly predicted whether the person reported an eating disorder diagnosis, X^2 = 15.981, df = 7, N = 228, p < .026. Table 2 presents the odds ratios, which suggest that the odds of experiencing an eating disorder diagnosis increased with poly-victimization and for AIs.

Table 2
Regression Models Predicting Alcohol Addiction, Alcohol Recovery, Drug Addiction, Drug Recovery, Eating Disorder, and Eating Disorder Diagnosis of Adopted and/or Fostered Individuals

	B	SE	Odds ratio	p	B	SE	Odds ratio	p
	Alcohol Addiction (*n* = 224)				Alcohol Recovery (*n* = 225)			
Age	0.042	0.022	1.043	0.056	0.080	0.029	1.083	**0.007**
Gender (0 males)	-1.805	0.462	0.164	**0.001**	-1.387	0.556	0.250	**0.013**
Married/Cohabitating	-0.511	0.433	0.600	0.239	-6.330	0.526	0.531	0.229
Poverty	0.519	0.623	1.680	0.405	1.364	0.682	3.912	**0.046**
College Degree	0.101	0.441	1.107	0.818	0.529	0.531	1.697	0.319
Poly-victimization	0.219	0.144	1.245	0.127	0.027	0.173	1.027	0.877
American Indian	1.360	0.462	3.897	**0.003**	1.920	0.617	6.824	**0.002**
	Drug Addiction (*n* = 227)				Drug Recovery (*n* = 227)			
Age	-0.046	0.023	0.955	**0.048**	0.042	0.036	1.043	0.237
Gender (0 males)	-1.232	0.550	0.292	**0.025**	-1.042	1.661	0.353	0.197
Married/Cohabitating	0.209	0.530	1.233	0.693	1.250	2.898	3.491	0.089
Poverty	0.737	0.666	2.090	0.268	2.443	9.283	11.508	**0.002**
College Degree	-0.971	0.570	0.379	0.089	-0.462	0.426	0.630	0.514
Poly-victimization	-0.150	0.164	0.860	0.361	-0.401	2.542	0.670	0.111
American Indian	1.014	0.539	2.756	0.060	2.403	7.398	11.055	**0.007**
	Eating Disorder (*n* = 226)				Eating Disorder Diagnosis (*n* = 228)			
Age	0.015	0.016	1.015	0.343	-0.038	0.023	0.963	0.105
Gender (0 males)	0.664	0.497	1.942	0.182	-0.090	0.613	0.914	0.884
Married/Cohabitating	0.145	0.348	1.157	0.676	-0.250	0.467	0.779	0.592
Poverty	0.771	0.472	2.163	0.102	0.654	0.595	1.922	0.272
College Degree	-0.272	0.345	0.762	0.430	0.951	0.498	2.587	0.056
Poly-victimization	0.159	0.112	1.173	0.156	0.323	0.163	1.381	**0.048**
American Indian	0.773	0.350	2.167	**0.027**	1.052	0.500	2.864	**0.035**

Hypothesis 2g: Self-injury

In the logistic model for self-injury, when all seven predictor variables were controlled, they significantly predicted whether the person reported self-injury, X^2 = 39.997, df = 7, N = 226, p < .001. Table 3 presents the odds ratios, which suggest that the odds of self-injury decreased with age and increased with poly-victimization and for AIs.

Hypothesis 2h: Suicidal Ideation

In the model for suicidal ideation, when all seven predictor variables were controlled, they significantly predicted whether the person reported suicidal ideation, X^2 = 42.708, df = 7, N = 226, p < .001. Table 3 presents the odds ratios, which suggest that the odds of suicidal ideation decreased with age and increased with poverty, poly-victimization, and for AIs.

Hypothesis 2i: Suicide Attempt

In the suicide attempt model, when all seven predictor variables were controlled, they significantly predicted whether the person reported a suicide attempt, X^2 = 28.760, df = 7, N = 230, p < .001. Table 3 indicates that the odds of experiencing a suicide attempt increased with poverty and when the adoptee experienced poly-victimization.

Table 3
Regression Model Predicting Self-injury, Suicidal Ideation, and Suicide Attempts of Adopted and/or Fostered Individuals

	Self-injury (*n* = 226)				Suicidal Ideation (*n* = 226)				Suicide Attempt (*n* = 230)			
	B	*SE*	*Odds ratio*	*p*	*B*	*SE*	*Odds ratio*	*p*	*B*	*SE*	*Odds ratio*	*p*
Age	-0.067	0.017	0.935	**0.001**	-0.017	0.014	0.983	0.208	-0.025	0.017	0.975	0.137
Gender (0 males)	-0.031	0.435	0.969	0.943	-0.852	0.390	0.426	**0.029**	-0.177	0.457	0.838	0.698
Married/ Cohabitating	-0.461	0.342	0.631	0.177	0.109	0.308	1.115	0.724	0.412	0.359	1.510	0.251
Poverty	0.451	0.476	1.570	0.343	1.476	0.555	4.373	**0.008**	1.022	0.463	2.779	**0.027**
College Degree	0.337	0.348	1.401	0.333	0.373	0.307	1.452	0.224	0.160	0.358	1.174	0.654
Poly-victimization	0.368	0.113	1.445	**0.001**	0.429	0.102	1.536	**0.001**	0.423	0.121	1.526	**0.001**
American Indian	0.848	0.355	2.335	**0.017**	0.647	0.315	1.910	**0.040**	0.523	0.363	1.688	0.150

DISCUSSION

This study's purpose was to investigate the mental health problems of AI and White adoptees and to investigate the conditions that create a greater probability of mental health problems, including the experience of poly-victimization. The study was not an investigation of an individual mental health outcome (e.g., depression), but rather of mental health problems composed of self-assessed substance abuse, mental health variables (e.g., depression, hospitalization for a mental health condition, eating disorders), and self-injury and suicide. Family systems theory guided all aspects of this study. Data analysis included a series of chi-square statistics and logistic regression models.

Previous studies have suggested that adult adoptees are at increased risk for mental health problems. Our analysis comparing the mental health problems of AI adoptees to White adoptees, underscores the vulnerabilities not only of adoptees, but those particularly reported by AI adoptees. It appears that AI adoptees are even more vulnerable to mental health problems within the adoptee population. AI adoptees compared to White adoptees were more likely to report alcohol addiction, alcohol recovery, drug addiction, drug recovery, self-assessed eating disorder, eating disorder diagnosis, self-injury, suicidal ideation, and suicide attempt. However, no significant differences were found in preliminary analyses exploring differences between AI and White adoptees with regard to self-assessed depression or diagnosed depression. This finding suggests that it doesn't matter if an adoptee is AI or White, adoptees in general experience depression.

In terms of the probability of various mental health problems occurring in adult adoptees based on certain contextual characteristics, variation occurred by mental health problem. For suicide, being in poverty had a higher odds ratio than that of being an AI; the odds ratio for experiencing poly-victimization and being AI was about the same in predicting suicidal ideation or suicide attempt. However, for alcohol addiction, being AI had a higher odds ratio than either being in poverty or experiencing poly-victimization when predicting alcohol addiction. In predicting drug addiction or an eating disorder, the odds ratio of being in poverty and being AI was similar and poly-victimization was half of their ratio in predicting each disorder. We cannot, however, surmise from this analysis the pile-up or multiplier effect of these contextual characteristics on the prediction of these mental health disorders. This multiplier effect is something that needs to be pursued in future research efforts.

This study builds upon previous atheoretical research through the integration of family systems theory. Family systems theory offers a holistic orientation in that it assumes that a system (the mental health of the adoptee in this study) must be understood as a whole rather than in its component parts. This study investigated the odds of experiencing a number of mental health problems. Doing so provided a picture of the total mental health status of these adoptees after controlling for individual and contextual factors. This approach contrasts to other studies that explore mental health outcomes individually, which can obscure other problems.

Ours is one of the first quantitative studies about AI adoptees. By providing a comparison of White and AI adoptees, this study filled a gap within the literature related to the mental health problems of AI adoptees. Findings from the present study suggest that, although all adoptees are vulnerable to mental health problems, AI adoptees are particularly vulnerable. It appears that AI adoptees have a unique experience. One way of understanding the differences for AIs is through application of the concept of historical trauma. Although this study did not specifically explore historical trauma, we suggest that the historical trauma of AI adoptees contributes to their increased mental health problems, asserting that such problems stem from historical loss of lives, land, and important aspects of AI culture (Brave Heart & DeBruyn, 1998).

Historical trauma is believed to be inherited through one's ancestors. Applied to this study, it is the notion that AI adoptees experience trauma through their lived experiences of being separated from their families and culture, a phenomenon referred to as "blood memory." The past is highly relevant in AI culture; therefore, the mere acknowledgement of what has occurred (historical trauma, blood memory) is a first step in the healing process. Knowledge of the phenomenon of blood memory may be particularly beneficial to AI adoptees as they search to understand their health in relationship to their ancestors. The idea of blood memory may also aid in reducing the stigma and shame tied to experiences of mental health problems, as it helps place those problems in both familial and historical contexts. Furthermore, since storytelling is a major activity in AI culture, having adoptees seek the stories of their own ancestors begins to fill the "hole" created by being torn from their families of origin. AI adoptees sharing their own stories gives relevance to their history and elicits more healing.

In addition to race, other variables explored in our study appear to increase the probability of experiencing certain mental health problems. Poverty is one such variable; it was significantly associated with recovery from both alcohol and drugs and with suicidal ideation and

having attempted suicide. Poverty appears to increase adoptees' vulnerability to mental health problems because of the additional stress it places on the individual. In our analyses, although poverty mattered in predicting alcohol and drug recovery, it was not significantly associated with current alcohol or drug addiction. It may be that adoptees living in poverty are able to access greater services through the welfare system, which allows them to enter into recovery.

Another variable that increased the probability of experiencing mental health problems was poly-victimization. Poly-victimization was significantly associated with having an eating disorder diagnosis, self-injury, suicidal ideation, and having attempted suicide. This finding makes sense when considering stress pile-up (i.e., the pile-up of multiple stressors), as poly-victimization represents the cumulative and interconnected components of victimization. Adoptees exposed to multiple types of victimization may be at even greater risk for mental health problems.

CONCLUSIONS AND LIMITATIONS

Although this research provided an overall glimpse into the mental health problems of AI adoptees, it is not without limitations. First, given that this is the first attempt at exploring mental health problems for AI adoptees, our findings are exploratory in nature. Second, our study did not determine the causes of increased mental health problems in AI adoptees as no causal relationships can be inferred using cross-sectional design. Third, we used a purposive sampling strategy; therefore, the findings cannot be generalized to all adoptees. Future research should expand upon this research through the use of validated measures of various classifications of mental illnesses (e.g., depression). Fourth, the measurement of constructs included in this study pose constraints. Scholars have criticized the use of retrospective self-report. Although previous research suggests that "retrospective self-reports may yield biased estimates of disorder; typically, these are thought to be underestimates" (Beals et al., 2005, p. 107; Kessler, 2000). Given that other authors have said that self-report measures are underestimates, future research should be done to more accurately capture the presence of these mental health problems. Lastly, future research might explore how the race of the foster/adoptive family, and/or how racially congruent foster/adoptive homes, may shape adoptee mental health.

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