LIFE SKILLS AT A TRIBAL COLLEGE: EFFECTS OF A CULTURALLY RELEVANT EDUCATIONAL INTERVENTION ON COLLEGE RETENTION & SELF-EFFICACY FOR HEALTHY CHOICES AMONG AMERICAN INDIAN TRIBAL COLLEGE STUDENTS

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Jill Fabricius Keith

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Life Skills at a Tribal College: Effects of a Culturally Relevant Educational Intervention on College Retention & Self-Efficacy for Healthy Choices among American Indian Tribal College Students

By

Jill Fabricius Keith

The Supervisory Committee certifies that this ***disquisition*** complies with North Dakota State University's regulations and meets the accepted standards for the degree of

DOCTOR OF PHILOSOPHY

SUPERVISORY COMMITTEE:

Dr. Sherri N. Stastny
Chair

Dr. Ardith Brunt

Dr. Bradford Strand

Dr. Elizabeth Blodgett-Salafia

Approved:

12/8/2015
Date

Dr. Yeong Rhee
Department Chair

ABSTRACT

American Indians and Alaskan Natives (AIAN) have the lowest rates of college retention and graduation in the U.S. Additionally, AIAN face health disparities including higher rates of obesity/overweight and Type 2 diabetes. The study purpose was to explore the effects of a culturally relevant life skills curriculum delivered in a family-style environment on self-efficacy, healthy choices, and college retention in tribal college students over four separate semesters. A non-experimental cohort design using mixed methods (quantitative and qualitative) was utilized for the study. Participants in the study (full study completion, n=9; initial participants, n=26) were purposively sampled newly enrolled, academically under-prepared tribal college students. Participant demographics included various tribal affiliations, ages, and number of dependents. Research instruments included pre- and post-questionnaires and pre- and post-telephone interviews. General self-efficacy did not increase significantly, nutrition knowledge increased but not significantly, and nutrition attitudes and beliefs were not different between pre- and post-intervention. Dietary analysis reflected improved intake of healthy choices, however none of the participants met dietary recommendations for any food group. Eating behaviors such as eating in front of the TV decreased. Retention of students within-semester was lower among participants than overall students at the tribal college. However, semester-to-semester retention rates of Life Skills at a Tribal College participants who completed the course were significantly higher than those participants who did not complete the course and significantly higher than overall semester-to-semester retention rates at the tribal college. Qualitative analysis revealed a variety of barriers and strategies for making healthy food choices. Addressing self-efficacy and perception of capabilities regarding making healthy food choices can help AIAN students feel more capable of success and impact the quality of their diet. However, challenges remain to college retention and improving dietary intake to meet recommendations.

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American Indians/Alaska Natives (AIAN)	used to represent Native Americans, American Indian/Alaska Natives, First People.
Emerging adulthood	transition from adolescence to adulthood during the period between 18-to-25 years (Arnett, 2000; Rodriguez, Schwartz, & Whitborne, 2010). While the demographics of tribal college students may not match this specific age group, several criterion of emerging adulthood are present in tribal college students. These may include identity exploration, moving residences often, self-focused, efforts to become self-sufficient, and levels of thinking that precede adulthood (Arnett & Tanner, 2005).
Healthy choices	dietary choices related to the USDA Dietary Guidelines for Americans 2010 including general nutrition knowledge of food groups to consume, particularly nutritionally-dense foods such as fruits and vegetables, whole grains, lean protein, nuts, seeds, dry beans; number of fruit and vegetable choices per day; understanding the relationship between food and health is important; dining practices that promote health such as family-meal style.
Life skills	behaviors used to manage personal affairs. For the purposes of this study, life skills include the ability to plan, prepare, and cook for self and family; make healthy choices compared to dietary guidelines; budget and manage money; communicate and manage emotions in a healthy way.

United Tribes Technical College (UTTC) .....located in Bismarck, ND. UTTC is a "close-knit" educational community serving students from over 75 tribal nations. UTTC offers 22 associate's degrees, 3 bachelor's degrees, 6 online degree programs, and 2 online certificate programs.

CHAPTER 1: INTRODUCTION

There are nearly 600 federally recognized American Indian and Alaska Native (AIAN) tribes in the United States (U.S.) (National Conference of State Legislators, 2013). American Indians and Alaska Natives currently make up 0.9% of the U.S. population with an additional 0.7% identifying as AIAN in combination with one or more races (Norris, Vines, & Hoeffel, 2012; U.S. Census Bureau, 2010). The largest percentage of AIAN are between the ages of 16 and 64 years (64%) with an additional 28.1% less than 16 years (U.S. Department of the Interior – Indian Affairs, 2014). In addition, AIAN alone or in combination with one or more races have experienced the highest rate of growth in population, increasing 18.4% and 39.0% respectively, since 2000 (Norris et al., 2012; U.S. Census Bureau, 2010). American Indian and Alaska Native individuals, tribes, and communities possess a wealth of culturally-rich experiences and traditions that are passed on from generation to generation.

In particular, AIAN students enrolled in colleges across the U.S. bring a variety of cultural experiences, values, and strengths to the learning environment and AIAN college graduates provide needed diversity in a variety of employment capacities. Unfortunately, AIAN students have a significantly lower college enrollment rate than other ethnic groups in the U.S. and dropout rates continue to rise (Freeman & Fox, 2005; Hunt & Harrington, 2010; U.S. Department of Education, 2008). Current estimates indicate AIAN students represent 0.9% of total college and university enrollment (National Center for Education Statistics [NCES], 2013). In addition, AIAN students have the lowest retention rates for the first, second, and third year of college (Consortium for Student Retention Data Exchange, 2007). For first-time post-secondary students who begin college full-time, graduation rates (within six years) at four-year institutions for AIAN students were 39.4% while White students had a graduation rate of 61.5%,

Asian/Pacific Islander students 68.7%, Black students 39.5%, and Hispanic students 50.1% (NCES, 2011). Graduation rates of AIAN students at two-year institutions were 25.6%, however if those two-year institutions were public institutions, graduation rates fell to 17.4% (NCES, 2011).

According to fall 2010 enrollment data, 8.7% (about 30,000) AIAN students were enrolled at one of the 36 accredited Tribal College & Universities (TCUs). The percentage of AIAN students enrolled at TCUs continues to rise with a 23% increase shown between 2001 and 2006 (U.S. Department of Education, 2013). Graduation rates at tribal colleges vary from 7.4% to 52.6% with most falling between 12-23% (Johnson, 2013).

The challenge of college retention and graduation is of particular importance; research shows only 15% of AIAN have bachelor's degrees compared to 52% of Asian/Pacific Islander adults, 33% of White adults, and 20% of Black adults (Aud, Fox, & KewalRamani, 2010). College degree completion contributes to more stable careers and jobs and higher income in adults compared to those without post-secondary degrees (Aud et al., 2010; Kingston, Hubbard, & Lapp, 2003). The poverty rate for those with bachelor's degrees was 4%, compared to 7% (associate degree), 9% (some college, no degree), 12% (high school graduate), and 26% (without a high school degree) (College Board Advocacy & Policy, 2008).

Many factors have been identified as challenges for AIAN students in pursuit of higher education including under-preparation, adjustment difficulties to the academic community, problems with family and self, cultural differences, social isolation, and monetary complications (Hoover & Jacobs, 1992; Hunt & Harrington, 2010; Vermillion, 2012; Wells, 1989). Meanwhile, few studies explore the positive qualities and cultural strengths of AIAN students and how they contribute to college success. It appears that AIAN are essentially the minority among minorities

and continue to face challenges that other groups have begun to overcome (Jackson, Smith, & Hill, 2003; Okagaki, Helling, & Bingham, 2009). The need to identify strategies to assist AIAN students in educational achievement is imperative.

Because of life and educational challenges that AIAN students bring with them to the tribal college environment, they also face obstacles to making healthy food choices. Healthy food choices play a primary role in the prevention and treatment of a variety of chronic diseases. Unfortunately, AIAN experience disproportionate levels of chronic health conditions that are influenced by dietary patterns and food choices such as type 2 diabetes as well as overweight and obesity (CDC, 2009a, 2009b, 2015a; Zephier, Himes, & Story, 1999, 2006). Building skills such as cooking and preparing food, along with meal planning are essential life skills that can positively influence food choices (Fordyce-Voorham, 2011; Krieger, 2013; Larson et al., 2006). In addition, self-efficacy for making healthy dietary choices can increase the likelihood of choosing healthy foods for both self and family (Adams et al., 2012; Bandura, 1997).

American Indians and Alaska Natives face a variety of challenges and barriers to health and wellness including health disparities, poverty, access to care, bias and discrimination, availability of culturally competent health services, and underfunding of health programs (U.S. Commission on Civil Rights, 2004; Warne, 2006, 2015). Because income and education level are predictors of health status, the lowest per capita income and educational levels of AIAN in the U.S. are of particular concern (Deaton, 2002; Warne, 2006, 2015).

While traditional research regarding AIAN often focuses on challenges and utilizes a deficit perspective, it is important to maintain a positive perspective of honoring and incorporating the knowledge, experiences, abilities and successes of AIAN as a way of promoting academic success and overall health and wellness. Traditional research and theory do

not always focus on the cultural knowledge, skills, and abilities of AIAN (as well as other socially marginalized groups and Communities of Color). In addition to traditional practices that may be incorporated, it may also be due to lack of reporting/sharing. With a focused lens of community cultural wealth, the unique and valuable perspectives of AIAN are included and addressed (Yosso, 2005). Research regarding ethnic minority students that comes from a deficit perspective, focused on those who fail, can contribute to negative and prejudicial attitudes and lowered expectations among faculty, staff, and administrators as well as eliminate the voices of those students (Hunt & Harrington, 2010; Yosso, 2005). For these reasons, the direction and focus of this review of literature and resultant research intervention moves from recognizing challenges for AIAN students to identifying tools and strategies for success, many of which are related to the unique cultural experiences and values inherent to AIAN students.

Purpose of the Literature Review

The purpose of this review of literature is to evaluate existing research related to two separate challenges among AIAN students. Literature was reviewed to evaluate influences on college graduation and retention in AIAN students, and their impact on educational goals and achievement. In addition, existing research related to influences on dietary intake, barriers to wellness and self-efficacy in AIAN students, and their impact on healthy food choices was reviewed.

CHAPTER 2: LITERATURE REVIEW[1]

Data and Methodology

In the completion of reviewing the literature relevant to the topic of education and healthy food choices among AIAN, both context and content of literature were included. Research from both mainstream as well as culturally specific publications was reviewed.

Databases

Primary electronic search engines utilized include Web of Science, ProQuest, and Google Scholar. Federal databases including the American Indian Higher Education Consortium, Bureau of Indian Affairs, Census Bureau, Centers for Disease Control & Prevention (CDC), Indian Health Services (IHS), National Center for Educational Statistics, U.S. Commission on Civil Rights, U.S. Department of Education, and U.S. Department of Health and Human Services were consulted. State databases included in the review were the North Dakota Department of Career and Technical Education, Diabetes Prevention & Control Program, and the North Dakota Indian Affairs Commission. These databases were reviewed through summer, 2015 for relevant literature that included a focus on at least one of the key search terms.

Search terms

This literature review focuses on college retention and graduation, life skills, dietary choices, and self-efficacy among AIAN students. Therefore, search terms were identified that met two constructs for college retention and graduation and two constructs for life skills, dietary choices, and self-efficacy. The two constructs for college graduation and retention included: population name and college retention and graduation. The two constructs for healthy food choices included: population name and life skills, dietary choices, and self-efficacy. For the

[1] Portions of this literature review have been accepted for publication by the Journal of College Student Development.

population, key search terms included “American Indians”, “Native Americans”, “indigenous people”, “American Indian youth”, and “American Indian young adults”. Search terms and phrases for the college retention and graduation focus included: “college retention”, “college graduation”, “college persistence”, “barriers to college success”, “self-efficacy”, “academic self-efficacy”, and “tribal colleges”. The combination of the population and college retention and graduation constructs yielded 5x7 = 35 different search terms utilized in the review. Search terms and phrases for the life skills, dietary choices, and self-efficacy focus included: “self-efficacy”, “life skills”, “tribal community interventions”, “diet”, “nutrition”, “nutrient intake”, “nutrition interventions”, “cooking” and “wellness”. The combination of the population and life skills, dietary choices, and self-efficacy constructs yielded 5x9 = 45 different search terms that were utilized in the review. These search terms assisted in the identification of potential articles for inclusion in the literature review.

Inclusion criteria

Literature specific to college retention and life skills, dietary choices, and self-efficacy among AIAN students is limited. Therefore, inclusion criteria were kept liberal. Studies included descriptive studies, qualitative/quantitative studies, and case studies. There were no restrictions on sample sizes. Peer-reviewed journals as well as publications specific to AIAN learning and education as well as AIAN health were included. While the population focus of the review was AIAN, other publications with AIAN of various age groups and other cultural or ethnic groups were evaluated for their relevance in relation to self-efficacy, college graduation and retention influences, as well as factors influencing life skills, dietary choices, and self-efficacy.

Exclusion criteria

Few criteria were identified for exclusion due to the limited nature of literature specific to AIAN students. Only articles not addressing at least one of the key search terms were excluded.

College Retention and Graduation among American Indians and Alaska Natives

Barriers and strategies for success

A variety of factors were identified in the literature that impact the academic experience and college retention and graduation among AIAN students. In order to organize and evaluate the impact of these factors, a conceptual model was developed (Figure 1).

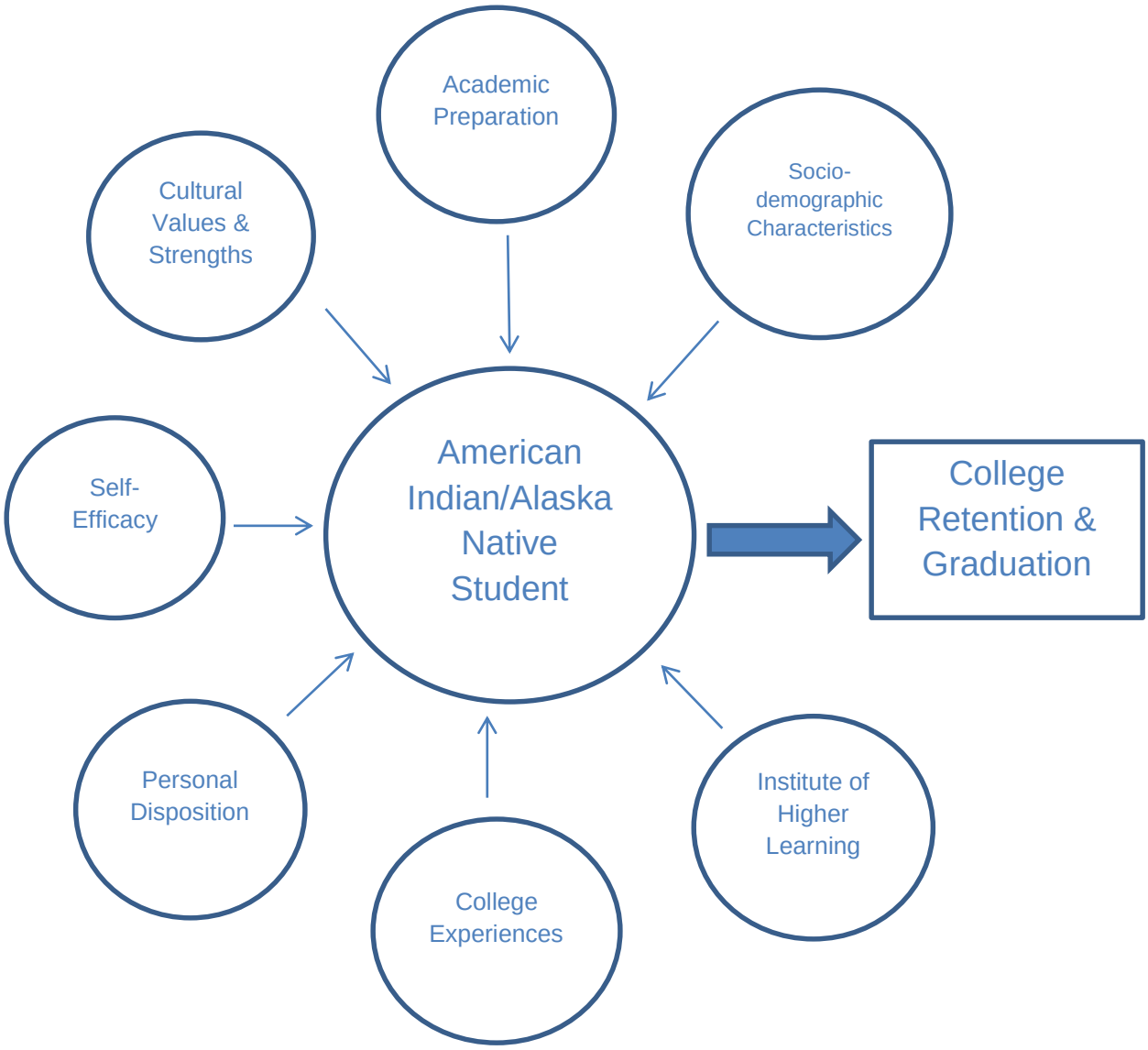

Figure 1. Conceptual model of factors influencing college retention and graduation among AIAN students.

Sociodemographic characteristics of AIAN students. Demographics of AIAN students may differ from the typical student profile at four-year institutions. On average, AIAN students are older than the traditional college student with more than one third over age 30 and are also more likely to be female (Hunt & Harrington, 2010). Adult students (≥25 years) may require additional family support and desire a deeper understanding of their educational experience and role as a student (Lundberg, McIntire, & Creasman, 2008). In addition, AIAN students are more likely to have children, be single parents, and have strong ties to their family and extended family (Freeman & Fox, 2005; Hunt & Harrington, 2010).

In many reservation communities, homes and family structures may differ from those common to the traditional non-Native family (Maxwell, 2001). Because of challenges related to socioeconomics, historical oppression, and a culture of poverty attributed to historical oppression and relocation, AIAN family structures and home environments do not always promote education, lifelong skills, and health (Vermillion, 2012; Warne, 2006, 2015). American Indian and Alaska Native children are less likely to have married parents in the home and are twice as likely to have a female head of household without a husband as White and Asian/Pacific Islander families (Freeman & Fox, 2005). Challenges such as family or personal history of substance abuse, broken homes, tragic loss of loved ones, domestic violence, and poverty are more common to AIAN students. They are more likely to live in inadequate and unhealthy housing, suffer higher numbers of motor vehicle deaths, binge drink, smoke, and combat a higher suicide rate than other ethnic groups in the U.S. (CDC, 2011). Witnessing traumatic events, experiencing trauma to loved ones, and being victimized by physical attacks are experienced at higher rates in AIAN youth than in the overall U.S. population (Manson et al., 1996). Poverty rates among AIAN adults are the highest in the U.S. at 27% compared to 9.9% in White individuals

(Gunderson, 2008; Macartney, Bishaw, & Fontenot, 2013). When considering female-only heads of household with children under age 18, the poverty rate is 48% (Freeman & Fox, 2005).

These life challenges and sociodemographic characteristics of AIAN students can influence their interaction and commitment to the college academic environment. Hunt and Harrington (2010) attempted to identify and explain issues and challenges regarding the retention and graduation of AIAN college students. Education was identified as one significant aspect of assisting with poverty levels and the achievement of self-sufficiency (Hunt & Harrington, 2010). Disparities in income level and education level were compared between the general U.S. population and AIAN individuals aged 25 and older. Including all education levels, AIAN had an average income of $22,856 compared to $35,187 for the overall U.S. population. With a bachelor's degree or higher, AIAN average income was $45,214 compared to $57,330 for U.S. adults overall (U.S. Census Bureau, 2006). Barriers to educational achievement related to sociodemographic characteristics included: fewer students graduating high school, adjustment between high school and college learning environments, monetary issues, and the idea that choosing a vocation (and major course of study to achieve it) is based on the amount of money that can potentially be made (Hunt & Harrington, 2010). Strategies or factors associated with sociodemographic factors that assisted AIAN students with retention and ultimately commencement were family relationships and support, and the ability to still connect with their home area and culture. In addition, AIAN and "minority" college faculty have been identified as valuable in educational environments to support, mentor, and advise "minority" students.

Academic preparation. In addition to challenges related to sociodemographic characteristics, many AIAN students are under-prepared for college and need additional preparatory coursework. American College Testing (ACT) scores for AIAN students were

significantly lower overall than their White counterparts with average overall scores of 18.0 compared to 22.2, respectively (ACT, 2013). Reading, mathematics, and English scores for AIAN students were 16.6, 18.2, and 18.3 compared to 21.8, 21.9, and 22.6 among White students. College Readiness Benchmark scores defined by ACT are 18 (reading), 22 (math), and 22 (English). State specific scores for AIAN students as well as national level scores were below college readiness standards defined by ACT as predictive of student success in college (ACT, 2013).

American Indian and Alaska Native students included as participants in efforts to address college retention often recognize the challenge of being academically unprepared to a successful college education experience (Huffman, 2003; Hunt & Harrington, 2010). Improved academic preparedness for AIAN students has also been recognized at the institutional level as a positive influence on retention (Guillory, 2009). The personal college experience of AIAN students (who grew up either on the reservation or in a non-reservation community) were compared by Huffman (2003). Students (n=101) were surveyed to measure perceived barriers including academic, financial, and personal/social difficulties as well as students' college experience and its effect on their AIAN heritage. Significant positive relationships between a reservation background and difficulties with academics (r=.183, p<.05) and the transition to college (r=.293, p<.05) were noted. Financial difficulty was significantly correlated with a number of other variables (for both groups of students) including GPA (r=-.215, p<.05) and difficulty transitioning to college (r=.222, p<.05). In addition, students who were raised on a reservation were more likely to identify a greater appreciation of their AIAN heritage due to their college experience. While these results indicate a negative association between being raised on a reservation and academic success, having a greater appreciation of their heritage may provide an

opportunity to learn from and connect students with their higher education environment. Future research should explore how students' greater appreciation of their AIAN heritage affects motivation to succeed in the academic, non-reservation environment. These findings, especially the difference between students transitioning from a reservation or non-reservation home provide insight into the barriers to academic success but are limited in their contribution to clarifying the personal attitudes and view of the college experience as well as the measures the campus environment can incorporate to better serve AIAN students from both on- and off-reservation communities.

Efforts to understand AIAN student perceptions of barriers to college success were also explored by Hoover & Jacobs (1992) via a survey to assess student impressions of their college instruction, feelings about attending college, and view of their abilities to study. Respondents to the survey (n=257) were AIAN students from a variety of U.S. colleges attending the annual American Indian Science and Engineering Society (AISES) conference. The majority of students were science and engineering majors, less than 25 years old, attended an off-reservation public high school, and were not first-generation college students. Results indicated students felt positively toward their academic preparation in high school but expressed concern for career guidance and counseling prior to attending college. They also held a slightly positive opinion about college instruction and personal feelings about attending college but a significantly lower opinion regarding their own study skills. Because participants were active members in a science and engineering society (as well as not first-generation college students), responses regarding feelings about college may be less comparable to students with various demographics attending other colleges and not active members of AISES. Additionally, the majority of the students received their secondary education in an off-reservation public high school which may impact

their perception of academic preparation for college. Further research with AIAN students from a variety of secondary educational backgrounds could yield insights for successful strategies to promote academic success and preparedness for the college learning environment.

Cultural values and strengths of AIAN students. While it is important to study and understand the barriers facing AIAN students, it is essential to focus on the successful students and identify their motivation and tools for success. Huffman (2001) attempted to answer the question of why some culturally traditional AIAN college students were successful at reaching their academic goals and others were not. Huffman described two common theoretical frameworks for AIAN education. Cultural discontinuity hypothesis focuses on the different and opposing micro-level cultural elements including communication, social values, and interpersonal behaviors (Hymes, 1974). The second hypothesis of macrostructural explanations focused on social/structural forces beyond the student but impacting their community or ethnic group (Ogbu, 1985). In-depth interviews of 69 AIAN college students consisted of questions regarding their college experience. The students were designated as assimilated, marginal, estranged, or transcultured. Assimilated students identified with the college "mainstream" culture and struggled with fewer cultural difficulties while in college. Marginal students had some assimilation qualities but also desired more identification and affiliation with their traditional AIAN cultural practices. Estranged students strongly identified with AIAN culture and practices and were more aggressively trying to avoid assimilation. Transcultured students had strong cultural values and rejected assimilation but were able to use their cultural values as a source of strength and confidence.

Huffman's study focused on those students that were estranged and transcultured in order to describe college experiences and challenges as both groups highly identified with their culture.

Through his research he suggested two alternative theoretical frameworks to account for differences among students. One theoretical framework is resistance theory (Erickson, 1987) which describes many aspects of education as working against ethnic minority cultures with those students as active participants "resisting" assimilation (Huffman, 2001). Students within this framework chose to leave the institution due to difficulties with the aspects of education that clashed with their view of their identity and culture. The other theoretical framework of transculturation (Lewin, 1948) showed ethnic minority students using their cultural values to their advantage such as an emotional anchor, internal strength, and recognition of the ability to engage in two different cultural settings (Huffman, 2001). The students falling within this framework were able to successfully navigate the academic environment. From Huffman's interviews with AIAN students, several recommended practices for educators and future research were suggested. These included the need to celebrate AIAN ethnicity (e.g. cultural events, displays of American Indian art and literature, recognition of AIAN alumni), encourage positive interactions with academic professionals, and employ culturally appropriate counseling, ideally pairing students with highly trained, culturally sensitive AIAN counselors (as this may be difficult, ensure culturally sensitive and competent counselors). The identification of successful students and the focus on qualities the students were able to draw upon related to their Native culture is a key strength of Huffman's research. Further research focusing on the strengths of AIAN students and their ability to draw on those strengths and apply them could provide valuable insights and successful advising strategies for educators.

As mentioned, AIAN college students are more likely to have strong ties to their family and extended family. College students who spend more time fulfilling family demands have displayed lower levels of academic achievement (Tseng, 2004). While family demands can

hinder academic achievement, many AIAN students come from an environment where family is highly regarded and prioritized and find strength in family connections (Light & Martin, 1996; Martin, 2005; Maxwell, 2001; White Shield, 2009). White Shield (2009) qualitatively explored how AIAN women (n=8) identify and understand the cultural and spiritual aspects of their life that assisted them in achieving their academic goals through written and oral interviews. White Shield (2009) based her research on Huffman's resistance theory and transculturation hypothesis (Huffman, 2001; Lewin, 1948) and utilized a unique methodology (Medicine Wheel Culturally Intrinsic Research Paradigm Model) intended to be consistent with AIAN realities, worldviews, traditional value systems, and spiritual experiences. Participants indicated they found strength in spirituality, viewing the educational experience through traditional cultural practices (e.g. stories, images, metaphors), and their sense of identity as a traditional Native woman. They also found strength and purpose through their loyalty to family. Consistent throughout participant responses was giving of oneself for their tribe and trying to share what had helped them with other AIAN students in order to help them be successful. This study was gender-specific and qualitative in nature which limits the ability to generalize to other AIAN students however the depth of experiences shared by participants is key to understanding and appreciating the strengths and values AIAN students may bring to the educational environment. While White Shield's findings are consistent with Huffman's (2001) in that transcultured students were able to utilize their inner strength and cultural values to be successful in higher education, further descriptions of how and to what extent the students were able to draw on their personal strengths could assist those working in the educational field with students from a variety of cultural backgrounds.

Guillory (2009) also identified family and tribal connections as factors that assist AIAN students with staying in school. These factors were identified through qualitative interviews with

30 AIAN students at land-grant universities in Washington, Idaho, and Montana. In addition to interviews with AIAN students, individual interviews were conducted with the president and three faculty members from each university in order to gain insight from those having power to influence the culture of the institution. While institutional level respondents indicated financial factors as the primary reason AIAN students struggled to stay in school, students identified a commitment to family and their tribal community as the major factor in persistence. This perspective offered a reflection of an indigenous value of putting the tribe or community above the individual (Guillory, 2009). In addition, from an institutional perspective, strong academic programs were a driving force in retaining AIAN students but this factor was not mentioned by the students. Students indicated the need for social support on campus as a critical component to persistence. Major strategies for success voiced by the students included assisting in maintaining connections to family and tribal community through programs such as the Family Education Model (FEM) utilized at five institutions in Montana (HeavyRunner & DeCelles, 2002). Another strategy was providing assistance with academics via peer mentoring through programs such as RAIN (Retaining American Indians Now) at the University of Oklahoma (RAIN, 2008). Finally, providing and connecting students with services for their children and families (such as a Family Specialist who is utilized in the FEM program) and unique financial assistance for single parents and students such as those offered through the American Indian College Fund were additional strategies to promote success identified by students. Guillory's (2009) research offered the unique aspect of comparing AIAN students' views of retention with those of the institutional representatives. In addition, key strategies with accompanying examples of existing programs at colleges and universities, rare in the literature, were shared.

Self-efficacy. Perceived self-efficacy is a perception of capability (Bandura, 2006). Helping students identify their own capabilities in order to set goals for achievement can contribute to academic success. The student's level of self-efficacy plays an important role in determining their educational achievement, those that experience a higher degree of self-efficacy generally set goals that are higher, continue attempts at difficult tasks longer, and experience more academic success than those with lower self-efficacy levels (Bandura, 1993; Zimmerman, Bandura, & Martinez-Pons, 1992). Confidence of AIAN students' in their ability to succeed in the academic environment relates positively with academic success, resilience, and persistence (Jackson et al., 2003; Rindone, 1988). Students with greater self-efficacy for tasks and behaviors that are important to college success have an increased likelihood for success in their academic environment (DeWitz, Woolsey, & Walsh, 2009). In addition, students with determination and higher levels of coping efficacy related to educational and cultural differences were also shown to have increased college persistence (Dodd, Garcia, Meccage, & Nelson, 1995; Thompson, Johnson-Jennings, & Nitzarim, 2013). Fortunately, perceptions of self-efficacy can change (via time or perceived success/failure) so the inclusion of factors that address self-efficacy in the learning environment can be a tool to influence student success (Bandura & Locke, 2003).

Strong associations have been seen with academic self-efficacy and GPA as well as organization and attention to study (Krumrei-Mancuso, Newton, Kim, & Wilcox, 2013). Academic self-efficacy is students' beliefs about abilities to reach their goals and successfully complete school related tasks. If a student feels efficacious in academic tasks, it may lead to increased effort and persistence through challenges and higher academic achievement (Bandura, 1977). Krumrei-Mancuso et al.'s (2013) findings point to the need to address academic self-efficacy and organization and attention to study early in a student's college experience.

Academic self-efficacy's role in college persistence among AIAN students was explored by Thompson et al. (2013). Utilizing a psychosociocultural model of student persistence, Thompson and colleagues surveyed AIAN undergraduate students (n=156) representing over 64 different tribes. Multiple scales including the Native American Collective Orientation and Pursuits in Education (NACOPE), Collective Self-Esteem (CSE), Coping with Barriers (CWB), Primary Caregiver Support (PCS), and Persistence/Voluntary Dropout Decisions Scale (PVDD) were utilized to assess student experiences in higher education. The NACOPE was a new scale developed for this study in an effort to improve understanding of AIAN students' experience in the college learning environment. Content reviewers (n=6) including counseling psychologists and AIAN women enrolled in institutions of higher education as well as exploratory factor analysis (EFA) indicated NACOPE may be useful in future research with AIAN students. Overall results of the measures indicated two of the psychological variables, collective self-esteem and self-efficacy, were positively related to PVDD (r= .45, r = .33, p<.01, respectively) and two of the social dimension variables, primary caregiver support and community connections, were positively related to persistence (r= .26, r= .31, p<.01, respectively). In addition, "separation and alienation" as college experiences were negatively related to "persistence intentions" (r= -.40, p<.01). Thompson et al.'s (2013) results point to the significance of "coping efficacy", "community connections", and "fitting in" with the academic community in the retention of AIAN students. A key strength of Thompson et al.'s research was the utilization of a variety of measurements to build understanding of student intentions including a new scale specific to AIAN students (NACOPE). NACOPE could be utilized in a variety of educational settings to gain insight. As the study was cross-sectional, further research which measures actual retention rates and GPAs (rather than intentions) would be beneficial.

Personal disposition. Limited data is available on AIAN student disposition and the impact on college retention and graduation. However, student disposition has been shown to directly connect with persistence in college (ACT, 2004; Braxton et al., 2004; House, 1992; Robbins, Lauver, Le, Davis, Langley, & Carlstrom, 2004; Tross, Harper, Osher, & Kneidinger, 2000). Also, factors related to personal disposition that negatively affect persistence such as vague or ill-conceived educational goals and those that may positively affect persistence and academic performance such as identification of personal and strategic goals and motivation of the student have been identified by AIAN and other ethnic minority students (Dennis, Phinney, & Chuateco, 2005; Hunt & Harrington, 2010; Morisano, Hirsh, Peterson, Pihl, & Shore, 2010).

Okagaki, Helling, and Bingham (2009) explored the aspect of personal disposition to identify and compare the ethnic identity and beliefs about education of AIAN students compared to their European American (EA) counterparts. Both AIAN (n=67) and EA (n=95) college students from one state university and two tribal colleges completed questionnaires measuring students' educational and cultural beliefs, attitudes, and impression of their parents' beliefs and attitudes. American Indian and Alaska Native students believed more strongly in the instrumental importance of education than EA ($F(1,159)=12.57$, $p<.001$) and viewed doing well in school as important to their identity similar to their EA counterparts. All students indicated their parents valued education and encouraged them to succeed in school with a significant main effect for ethnic group ($F(2,157)=4.42$, $p=.01$). Finally, AIAN students were more affirming of their ethnic identity, felt more connected to their ethnic group, and were more open to other cultural groups than their EA peers. While Okagaki et al.'s (2009) study had a small sample size, the findings are consistent with others (Gloria & Robinson-Kurpius, 2001; Huffman, 2003; Thompson et al., 2013). The attributes of AIAN students may influence student success

programs and assist in identifying ways to support academic achievement. Further exploration into finding strength in their ethnic identity while succeeding when faced with challenges of campus life (bicultural efficacy) as well as the inclusion of a wider variety of AIAN students in both secondary and post-secondary educational settings may provide additional insights into beliefs about education and the potential effect on retention.

Further inquiry by qualitative methods into the meanings of career and career choices among AIAN yields additional knowledge relating to the role of personal disposition in academic success. Juntunen et al. (2001) interviewed 18 AIAN participants (61% female, 39% male) between 21 and 59 years old with various education levels (10^{th} grade, high school, some college, associate's degree, baccalaureate degree, some graduate work). Six open-ended questions relating to the definitions and meaning of career and career choices, personal meaning of success, and "living in two worlds" (i.e. the separation between Native and White culture) were included in the interviews (Juntunen et al., 2001). Participants viewed career as a lifelong process that included commitment (beyond what is necessary for a job) and a link to promoting "traditional ways". In addition, success was defined not only personally but by an ability to contribute to the well-being of others (including their own family, children, and the next generations) and several participants discussed a desire to return to their home communities after achieving a degree in order to benefit others. Supportive factors identified by those with post-secondary education included family and sobriety. Obstacles included lack of support from significant others, discrimination, and alienation (both within the dominant culture as well as when returning to the reservation after leaving to pursue their goals). The concept of living in two worlds was significantly different for participants who had attended college. These participants described moving between two worlds, "take what they need from the White world

and use it to help the Native world", and finding a more holistic, third world in which they maintain their own culture yet are able to integrate aspects of the majority culture (Juntunen et al., 2001). The results of this qualitative study indicate that a complex variety of factors influence career and educational choices of AIAN. While participants were not necessarily enrolled in college, results indicate similar barriers and sources of support found by other researchers (Huffman, 2001; Hunt & Harrington, 2010; White Shield, 2009). In addition, the unique aspect of moving between two worlds and identification of a solution-oriented third world addresses the positive effect of bicultural efficacy and the potential effect on career success.

College experiences. Structured first-year programs, the development of relationships with individuals (such as peer and faculty mentors), classrooms that incorporate education for diverse learning styles, and social connections are all aspects of the college experience that have been indicated as strategies for promoting academic success for AIAN students (Gloria & Robinson-Kurpius, 2001; Guillory, 2009; Hunt & Harrington, 2010; Thompson et al., 2013). Alternatively, negative experiences in a college setting such as discrimination, dealing with racism, separation and alienation, and difficulty transitioning to the academic environment can be challenges for academic success (Hunt & Harrington, 2000; Thompson et al., 2013).

Gloria and Robinson-Kurpius (2001) explored aspects of the college experience including self-beliefs, social support, and comfort in the university environment for AIAN undergraduate students. The majority of participants (n=83) were female (80.7%) and ranged in age from 17 to 43 years. Students were surveyed with 10 instruments measuring self-beliefs, social support, comfort in the university environment and non-persistence decisions. Self-beliefs were measured using the College Self-Efficacy Inventory (CSEI) which includes measures for course and social efficacy, the Educational Degree Behavior Self-Efficacy Scale, and the Rosenberg Self-Esteem

Scale. Social support was measured using the Perceived Social Support Inventory-Family and -Friends as well as the Mentoring Scale. Comfort in the university environment utilized three scales: University Environment Scale, Cultural Congruity Scale, and College Environment Stress Index-Modified. Finally, non-persistence decisions were measured using the Persistence/Voluntary Dropout Decisions Scale (P/VDD). Negative perceptions of social support (from family and friends) and university comfort predicted academic non-persistence. Lower numbers of non-persistence decisions were correlated with perceptions of being mentored (r= -.47, p<.01), greater cultural congruity (r= -.28, p<.05), positive perception of the university environment (r= -.36, p<.01), higher self-esteem (r= -.40, p<.01), and higher self-efficacy (r= -.40, p<.01). Interestingly, perceived faculty/staff mentoring had the strongest relationship with persistence. Gloria and Robinson-Kurpius' (2001) findings show that mentoring increases persistence and persistence was positively correlated with self-efficacy. Positive interactions with faculty/staff, both informally and formally, should be promoted as a means to retain AIAN students. In addition, these results point to the importance of self-efficacy as essential for adjusting, coping, and succeeding in an academic environment. While Gloria and Robinson-Kurpius (2001) did not include specific examples or a measure of coping strategies and cultural strengths of the students, the importance of culturally-specific coping strategies or strong self-efficacy for overcoming barriers was found to be key to retention of AIAN students. An additional limitation, the small sample size of this cross-sectional survey design, limits the statistical power and potential inference of the results. Further research of how to promote effective, culturally appropriate coping strategies and potential effects on self-efficacy and retention could yield additional tools for use in the academic environment.

Qualitative methods of inquiry into aspects of the college experience and how those impact AIAN students can enhance the meaning of or interpretation of information identified quantitatively. Jackson, Smith, and Hill (2003) interviewed 15 successful AIAN students (mean age 25.6) in order to increase understanding of factors that facilitate and detract from the path to college graduation. Participants were recruited through multicultural student support offices at 5 different four-year colleges in the Southwestern U.S. Interestingly, students meeting the study criteria (i.e. grew up on a reservation, both parents identified as AIAN, seniors in good academic standing, and enrolled in college <7 years) were all known personally by personnel in the multicultural offices. Students were between 20-32 years old from 4 different tribes – Navajo/Dine', Paiute, Pueblo, and Ute. Results indicated main themes of family support, structured social support and participation (e.g. multicultural offices, Native American clubs), perceived faculty and staff warmth, previous exposure or experience with the college environment and potential vocations, developing independence and assertiveness, dependence on spiritual resources, and cultural strength (Jackson et al., 2003). In addition, deeper themes were identified such as "dealing with racism", not taking a linear path to academic success (along with a perception that graduating in a timely manner was "somehow better" than taking longer), and pressure to be successful as well as maintain their identity in their home (reservation) community. Educators need to address "institutionalized racism", engage AIAN students in advisement early and often and address loneliness and negative peer pressure, participate in mentoring relationships, and actively connect students with organizations on campus to promote student success (Jackson et al. 2003).

While qualitative analysis is not intended for generalization, many of the insights gathered by Jackson et al. (2003) are applicable in a variety of educational settings to promote

AIAN student success. A key strength of Jackson et al. (2003) was the involvement of AIAN students that were successful college students (i.e. seniors in good academic standing and enrolled in college <7 years). Making peer connections with successful students provides quality insights into the experiences, challenges, and strengths of AIAN college students and provides an opportunity to focus on positive attributes (instead of a deficit perspective).

Institute of higher learning. Limited literature is available that addresses retention of AIAN students from an institutional perspective. From the AIAN student perspective in published literature, institutional factors that function as barriers to academic success include little administrative support, assumptions and stereotyping by faculty and staff, and college institutions with poor relations with students (Hunt & Harrington, 2010; Thompson et al., 2013). Factors that assist with successful academic and college experiences include instructors and staff that are supportive of the student, commitment and support from the educational institution, staff and faculty mentoring, connection with peer mentors, support programs for families and children, and connection with financial support specific to single parents and AIAN students (Huffman, 2001; Hunt & Harrington, 2010; Gloria & Robinson-Kurpius, 2001; Guillory, 2009; Thompson et al., 2013). Higher education institutions may assist in identifying specific coping strategies for AIAN students, work at creating an inclusive and welcoming environment for students who may feel alienated (via increased awareness of AIAN students as a unique cultural group, providing opportunities for student interaction with faculty and staff, and developing mentoring programs), and increase connections between the institution and tribal communities.

Role of tribal colleges and universities. While much of the literature focuses on four-year colleges and universities, addressing the role of tribal colleges is critical to understanding academic successes of AIAN students. Tribal colleges and universities (TCUs) promote student

learning in culturally-rich environments where AIAN students can bring cultural values and creative potential (Cajete, 1994). Often closer in vicinity to students' home communities, TCU's are actively involved in community efforts, and offer family support and counseling services that are vital to AIAN student success (AICF, 2003; Martin, 2005). Recent literature revealed TCU's face low retention and graduate rates similar if not lower than other colleges and universities (Johnson, 2013). However, while students may struggle with retention and graduation at TCUs as well as other higher education institutions, the persistence rates at mainstream institutions of AIAN students that first attended a TCU are four times the rate of those AIAN students that did not attend a TCU (AICF, 2003).

Food Choices among American Indians and Alaska Natives

Barriers to healthy food choices

Health risks for AIAN can be increased by poor dietary patterns and lack of physical activity (CDC, 2015b; Going et al., 2003; Hatcher & Scarpa, 2002). American Indians and Alaska Natives have experienced a transition from healthier traditional foods to more processed, energy-dense convenience foods which has contributed to a pattern of higher fat and saturated fat intake and lower fruit and vegetable intake (Compher, 2006; Warne, 2006, 2015). While making healthy life choices in relation to food procurement and preparation positively contributes to overall health and wellness, these healthy choices can be challenging and require extra time and effort. In addition to the nutrition transition experienced by many AIAN tribes, factors which become barriers to making healthy food choices take many forms, including time, finances, access to food, cooking skills, habits, parental and family influences, community, and personal choice (Cunningham-Sabo et al., 2008; Davis, Befort, Steiger, Simpson, & Mijares, 2012;

Macartney et al., 2013). A key step to addressing barriers to healthy choices is identification and understanding the foundation of these barriers and taking steps to overcome them.

Diet and nutrition. Many Americans have poor eating habits that negatively contribute to their lifelong health. While National Health and Nutrition Examination Survey (NHANES) and Behavioral Risk Factor Surveillance System (BRFSS) reported data often do not provide dietary information specific to AIAN, dietary practices nationwide indicate most adults (77.5%) fail to meet recommendations for 5 or more servings of fruits and vegetables with 39.2% consuming fruit and 23.1% consuming vegetables less than once per day (BRFSS, 2009; BRFSS, 2013). Studies targeting nutrient intake in AIAN have pointed to a higher amount of added sugar in diets of AIAN women, less than recommended levels of fruits, vegetables, and fiber in both men and women, and excessive intake of total fat, saturated fat, and trans fat (Berg et al., 2012; Eilat-Adar et al., 2013; Harnack, Story, & Holy Rock, 1999a; Thompson et al., 2009). Commonly consumed foods include soda, coffee and tea, and convenience foods (Taylor, Keim, Gilmore, Parker, & Delinder, 2006). Additionally, a diet evaluation of AIAN men and women in 10 different tribes across North Dakota, South Dakota, Arizona, and Oklahoma indicated diets were higher in fat and cholesterol compared to NHANES data for all participants (White and African-American) in the U.S. (Zephier et al., 1997). Also, the perception among AIAN of foods as healthier is not always reflected through consumption of those foods (Taylor et al., 2006).

Studies evaluating nutrient intake in AIAN often involve survey methodology. In an attempt to identify factors contributing to overweight among youth living in urban areas DeLong et al. (2008) surveyed AIAN adolescent participants in the Project EAT (Eating Among Teens) program. Prevalence of overweight among the participants was 40.6%. Behaviors such as watching more hours of TV, participating in weight control behaviors (either healthy or

unhealthy), snacking less, and a low interest in fitness were found to contribute to overweight (DeLong et al., 2008). In addition, Hodge & Nandy (2011) utilized survey methodology to gather information regarding overall wellness characteristics among AIAN adults (over age 18) living in rural reservation communities. Wellness characteristics included general health status, Body Mass Index (calculated from self-reported height and weight), wellness (feeling good and taking care of self physically, emotionally, mentally, and spiritually), high-risk behaviors (smoking, sexual practices, suicide ideation), psycho-social characteristics, and cultural factors (speaking their tribal language, participating in AIAN practices, connection to the community). Researchers were interested in participant's view of their own wellness. Results indicated a larger portion of participants who reported poor wellness also reported negatively on measures for general health (using participant responses to a single question to rate their own health), weight, and days of poor mental and physical health (Hodge & Nandy, 2011). In addition, those who indicated good wellness were more likely to maintain connections to their culture. These findings reaffirm the connection between health and a healthy weight with overall wellness as well as the benefits of maintaining and supporting cultural connections. Finally, Berg et al. (2012) surveyed AIAN adult residents in Kansas to determine levels of physical activity and fruit and vegetable intake. The majority of participants did not meet recommendations for physical activity (55%) or fruit and vegetable intake (63%). Those who did meet recommendations for physical activity were more likely to be younger, male, not have children, aware of current physical activity recommendations, and meet fruit and vegetable recommendations ($p<.001$). Those that met fruit and vegetable recommendations were more likely to meet physical activity guidelines and were aware of recommended daily servings of fruits and vegetables ($p<.001$).

Intervention approaches have contributed further information to risk factors for overweight and obesity in AIAN. Weaver and Jackson (2010) developed a wellness curriculum that targeted risk factors for cancer including unhealthy dietary practices and lack of physical activity in urban AIAN youth. The curriculum was implemented using a summer day camp format. Negative dietary practices including skipping meals and eating unhealthy meals (not containing three or more of the recommended food groups and including high levels of fat, sodium and sugar) were reported at pre-test. Post-test results indicated participants responded positively to the curriculum with a decrease in skipped meals as well as unhealthy meals and a decrease in sedentary behaviors (watching TV, playing video games). While the curriculum targeted a young age group (9-13 years old), the implications of a curriculum that is culturally grounded show the potential value of this type of educational method.

Qualitative methods have also been utilized to identify common barriers to making nutritious food choices and assisting in identifying culturally relevant nutrition education strategies. Cunningham-Sabo et al. (2008) held focus group interviews with Navajo parents of young children. Understanding factors that influence nutrition in young families can provide insight for factors that influence tribal college students as many have young children in their home environment (Freeman & Fox, 2005; Hunt & Harrington, 2010). Barriers to healthful eating identified by parents included availability/cost, control/parenting, preferences/habits, time/pressures, and knowledge/education (Cunningham-Sabo et al., 2008). Parents identified helpful tools for healthy eating as schools/education and support/modeling. Recommendations for nutrition education that would assist parents in making healthful diet choices included community and in-home cooking classes as well as an accessible expert to ask questions. Harnack et al. (1999a) completed personal interviews with Lakota adults living in reservation

communities in South Dakota regarding dietary practices, physical activity patterns, and perceived barriers. In addition to lack of fruit and vegetables as part of meeting daily recommendations, participants also reported a higher intake of higher-fat foods and regular consumption of soda and sugar-sweetened beverages. Also, 55.5% of participants identified as overweight via height and weight measurements. Participants identified poor quality, availability, and cost of fruits/vegetables as barriers to consumption. In addition, taste preference for high-fat foods, difficulty in changing eating habits, and lack of knowledge regarding identification of high fat foods were cited as reasons for eating less healthfully. In another report, Harnack et al. (1999b), worked with the same group of Lakota adults to determine nutrition knowledge and beliefs, weight loss practices, and weight loss program preferences. The majority were able to identify the connection between obesity, diabetes, heart disease, and hypertension with dietary factors however a smaller number of participants identified the connection between diet and cancer. In addition, most Lakota adults believed they had control over their weight and several unhealthy dietary practices were frequently utilized such as skipping meals and going without food for a full day (Harnack et al., 1999b).

Overweight and obesity. Overweight and obesity contribute negatively to chronic disease risk and overall health and wellness (CDC, 2015b; Daniels et al., 2005). Both overweight and obesity are defined by abnormal or excessive fat accumulation that may negatively impact health and are classified using body mass index (BMI) of 25 or above (overweight) and 30 or above (obese) (World Health Organization, 2013). Overweight and obesity increase risk for health issues including chronic diseases such as osteoarthritis, type 2 diabetes, sleep apnea, hypertension, dyslipidemia, and also contribute to social discrimination (Daniels et al., 2005). Type 2 diabetes is of special concern as prevalence is higher among AIAN adults than any other

ethnic group with prevalence rates of 16.1% compared to 5.9% (White), 9.3% (Black), and 6.5% (Asian) (CDC, 2009b, 2014). Diabetes is often a precursor for loss of vision, mobility, and ability to care for oneself, if left untreated (American Diabetes Association, 2013).

American Indian and Alaska Native adults have the highest overweight and obesity rates in the country. Average obesity rates among AIAN adults in the U.S. are 46.2% in men and 45.5% in women (CDC, 2015c). Average overall obesity rates in comparison populations in the U.S. are 28.6% (men) and 26.0% (women) (CDC, 2015c). Approximately 17% of youth between 2-19 years of age are obese in the U.S. (CDC, 2015d). A study of AIAN youth in the Aberdeen Area Health Service showed that almost 40% of youth were overweight or obese and rates continue to increase (Zephier et al., 1999; 2006).

Several factors are hypothesized as being associated with overweight in individuals, particularly among AIAN, including low fruit and vegetable intake, high soda and candy consumption, low levels of physical activity, and watching television more than two hours per day (LaRowe, Wubben, Cronin, Vannatter, & Adams, 2007). Several barriers to AIAN wellness have also been identified including time, availability and accessibility of food, cost/financial difficulties, and personal choice (Cunningham-Sabo et al., 2008; Gittelsohn & Sharma, 2009).

Motivations for food selection

Family dynamics and traditions can play a significant role in dietary behaviors of adults. Among AIAN young adults, the experience of changing food patterns has also provided an influence on typical dietary patterns (Compher, 2006). These factors come into play more significantly when young adults leave their home environment and either move to a college academic environment or elsewhere and play a more central role in their own food choices (Klempel, Kim, Wilson, & Annunziato, 2013).While parents/caregivers are the primary

providers of food and dining practices in childhood and adolescence, emerging adults begin to make more independent decisions for food procurement and preparation (Klempel, Kim, Wilson, & Annunziato, 2013). Food selection is impacted by factors such as financial status, living environment, and time management (Larson et al., 2006). In addition, positive parenting behaviors are related to healthier outcomes for young adults (Donnelly, Renk, & McKinney, 2013).

Family meals. A positive parenting behavior related to health may be identified as promotion of regular family meals as a deterrent to unhealthy dietary practices (Burgess-Champoux, Larson, Neumark-Sztainer, Hannah, & Story, 2009; Franko, Thompson, Affenito, Barton, & Striege-Moore, 2008). Frequency of family meals has been shown to positively correlate with healthier eating practices including higher fruit and vegetable intake as well as key nutrients. Participation in family meals also contributes to lower intake of soft drinks and saturated fat (Gillman et al., 2000; Neumark-Sztainer et al, 2003).

In an attempt to examine the effects of family meals on a diverse group of adolescents, Neumark-Sztainer et al. (2003) surveyed 4,746 adolescents with a variety of racial/ethnic backgrounds including AIAN as part of the Project EAT (Eating Among Teens). Survey measures included demographics, a question regarding frequency of family meals, and the Youth and Adolescent Food Frequency Questionnaire. As expected, frequency of family meals lessened after middle school and was highest among youth whose mothers were not employed outside of the home. In addition, frequency of family meals was positively associated with socio-economic status. Those youth with an increased number of family meals had higher intakes of fruits, vegetables, grains, and calcium-rich foods and lower intake of soft drinks (Neumark-Sztainer et al., 2003). In regard to individual nutrients, strong positive associations were identified between

family meals and lower energy, percent of calories from protein, calcium, iron, vitamins A/C/E/B-6, folate, and fiber. These same "higher family meals frequency" participants were evaluated 5 years later and found to have better eating habits including regular meals, higher consumption of vegetables, and higher amounts of key vitamins and minerals (Burgess-Champoux et al., 2009). The strong positive association between family meals and higher quality diets suggests the value of family meals and the potential improvement to youth and family meal patterns if regular family meals are included in meal planning. The connection between socioeconomic status (SES) and frequency of family meals may be of concern for AIAN families as a higher percentage live at a lower SES than other ethnic/racial groups.

Addressing parental influences among AIAN youth in regard to health and support behaviors that influence childhood weight, activity, and diet quality is lacking in academic literature. One study was identified by Ricci et al. (2012) which attempted to compare AIAN parent reports of their own diet and physical activity patterns as well as their support of their child's healthy behaviors with their child's weight. Parents (n=33 pairs of parents and youth) completed surveys measuring demographics, physical activity behaviors (using the Modifiable Activity Questionnaire), dietary behaviors (using Block Food Frequency Questionnaire, 2000), and Social Support for Exercise/Social Support for Diet. In addition, child height and weight were measured to calculate BMI. Surprisingly, results indicated the higher parental support for healthy behaviors of diet and physical activity, the higher the likelihood the child would be overweight/obese. Researchers hypothesized this may be due to over reporting of parents as they may feel responsibility for a child that is overweight or obese or there may be more support of these behaviors because of the child's overweight or obesity. These results could also be indicative of parents being supportive but not necessarily knowing how to implement healthy

behaviors. In any case, emphasis on involving parents in educational efforts to promote healthy weight in both children and adults should still be addressed in AIAN communities (Ricci et al., 2012).

Identifying adult and parent eating habits and patterns are important as they influence child eating habits however, other significant adult figures in children's daily interactions may also influence their food choices. Sharma et al. (2013) collected information from Head Start teachers as they teach nutrition education curriculum in the classroom environment as well as encourage healthy eating behaviors in low-income and ethnic minority students. The Teacher Health Behavior Survey was adapted from the School Physical Activity and Nutrition survey and included questions regarding dietary behaviors, nutrition knowledge, nutrition attitudes and beliefs, and weight-related behaviors. Of the participants (n=173, 72% African American, 21% Hispanic), 24% were overweight, and 55% were obese. Results indicated only 10% of participants correctly identified which food group should be consumed most, only 4 teachers (3%) were able to answer at least 4 nutrition-related knowledge questions correctly, approximately 25% of teachers reported not eating fruits or vegetables, 52% had eaten French fries, and 44% had at least 1 regular soda during the previous day. While AIAN were not the target audience, the study provides relevant insight into additional challenges for achieving a healthy diet among AIAN families as Head Start is a program targeting children from low-income families (>1.1 million children enrolled in 2012) including many AIAN children (Kids Count, 2012). In addition, the Teacher Health Behavior Survey was a valuable tool that could be utilized among other population groups and AIAN adults in order to assess dietary behavior, nutrition knowledge, nutrition attitudes and beliefs, and weight-related behaviors.

Psychosocial determinants. Family meal patterns and previous experiences with food, including nutrition education, play a role in food selection and preparation; however, as emerging adults, additional determinants have an effect on dietary patterns as well. American adults spend more money eating meals out, less time preparing meals at home, and eat larger portions (Guthrie, Lin, & Frazao, 2002). Food purchases by families of lower SES differ from those of higher SES, typically in a more negative fashion with increased purchases of foods higher in fat and sugar and lower amounts of meats, fish, seafood, fruits, and vegetables (Kaufman, MacDonald, Lutz, & Smallwood, 1997; Drewnowski & Specter, 2004). Among AIAN households, consumption of higher fat, more energy dense foods is common and may negatively contribute to overall health as well as overweight and obesity (Archer, Greenlund, Valdez et al., 2004; Gittelsohn, Wolever, Harris et al., 1998; Ho et al., 2008).

The determinants and patterns of food purchasing and preparation in AIAN households were the focus of Gittelsohn, Anliker, Sharma, Vastine, Caballero, and Ethelbah (2006). Participants (n=300) from households on two reservations in eastern Arizona completed the Customer Impact Questionnaire (CIQ) which included measurements of food knowledge, label-reading knowledge, food self-efficacy scale, food intentions, healthy food purchasing frequency, healthy food preparation, pre-prepared food purchasing, material style of life (MSL; proxy for SES), and ethnic identification. The food self-efficacy scale required participant responses to questions regarding their confidence in making healthy food selections, using preparation methods promoted by the intervention, and using food labels to make healthy choices. The majority of household respondents were unmarried women, unemployed, and had at least one family member (in the household) on some kind of food assistance. Overall, food patterns indicated more frequent purchasing of higher-fat/higher-sugar foods, high use of pre-prepared

foods, and the most common preparation method was frying. Participants with more years of education and higher MSL were more likely to have increased food knowledge as well as ability to accurately read food labels. Higher food self-efficacy scores were associated with higher food knowledge ($p<.001$). In addition, the strongest predictor for higher food intentions was food self-efficacy ($\beta= .594$, $p<.001$). Higher food intentions score was the strongest predictor for healthy food behaviors (purchasing $\beta= .217$, $p= .0006$; healthy cooking methods $\beta= .330$, $p<.001$). These findings point to the need for educational strategies that address food purchasing and preparation, especially in a culturally-appropriate context.

Further investigation into food purchasing and preparation was attempted by Ho et al. (2008) in a study designed to determine dietary risk factors, food preparation and acquisition patterns, and diet-related behaviors in eight AIAN tribal communities. Similar measurements to Gittelsohn et al. (2006) were used including 24-hour dietary recall and risk factor survey, which addressed food knowledge, healthy food self-efficacy, healthy food outcome expectations, healthy food intentions, healthy food acquisition frequency, healthy preparation of food, and material style of life (MSL). Dietary patterns indicated high fat and sugar as well as low fiber intake in both male and females. In addition, 47.7% of the participants were obese and another 32.6% were overweight (i.e. >80% were either obese or overweight). Local grocery stores were the primary source of food with many of the participants living in remote communities supplementing those store-bought foods by hunting or fishing. Healthy food self-efficacy was positively associated with expectations for healthy food outcomes however, statistical evidence of an effect of knowledge, self-efficacy, and outcome expectations on actual behaviors was not found. While the value and benefit of healthy foods and food preparation may have been perceived by participants, they did not necessarily feel confident about or engage in these healthy

behaviors. Increased knowledge regarding food purchasing, preparation, and diet-related behaviors is important for planning education and intervention strategies. These results point to the need to focus on increasing knowledge and self-efficacy while simultaneously promoting actual behavior change in AIAN tribal communities.

Food choices and access. Responsibilities for food procurement and preparation generally increase when young adults move away from home. Many young people transitioning to young adulthood (i.e. emerging adults) lack basic skills for food preparation (Fordyce-Voorham, 2011; Krieger, 2013). Those young adults that have skills related to food preparation, cooking, and resources have been shown to have better diet quality including less fast food intake and meeting dietary goals for fat, calcium, fruit, vegetables, and whole grains (Larson et al., 2006). The biggest barrier for food preparation is often identified by young adults as lack of time (Larson et al., 2006). These results point to the need to promote hands-on skills in young adults to improve perception of skills and increase the amount of time spent on food preparation.

Especially among AIAN communities, often rural, food availability and the food environment are key factors influencing food choices for preparing (Gittelsohn & Sharma, 2009; Gittelsohn & Rowan, 2011). Many tribal communities fall within federally-designated "food deserts" which are defined as areas with limited access to affordable fruits, vegetables, whole grains, low fat milk, and other nutrient-dense foods (CDC, 2012; Echo Hawk Consulting, 2015). Building skills for preparing healthy foods can increase the availability and accessibility of healthy, affordable food (Lichtenstein & Ludwig, 2010). An intervention targeting grocery stores for promoting healthy choices among AIAN by increasing access to healthy foods and to promote those foods resulted in healthier food intentions, food preparation methods, and body mass index (weight-to-height ratio) (Gittelsohn, Kim, He, & Pardilla, 2013).

Data regarding diets of AIAN is limited with even fewer studies addressing the change in food patterns and selection for AIAN transitioning into adulthood. Determining the influencing factors on dietary patterns and nutrition in AIAN emerging adults can provide insight into educational interventions targeted to AIAN young adults as well as young families as many often have extended family or young children in their home environment (Freeman & Fox, 2005; Hunt & Harrington, 2010).

Self-efficacy and healthy food choices

People who have a higher perception of their ability to complete a task (such as choose a healthier food, exercise more, etc.) are more likely to employ those behaviors than those that have a low perception (Bandura, 1997). Those that perceive a higher ability have a higher level of self-efficacy to make healthier choices. Within social cognitive theory, self-efficacy is predicted to influence behavior and is key to behavior change (Bandura, 1997). The general self-efficacy scale (GSE) was created with the purpose of assessing perceived self-efficacy in order to predict coping skills and adaptation after experiencing stressful life events (Schwarzer & Jerusalem, 1995). The scale has been translated into 33 different languages and validated for use with multicultural populations although none were identified specific to AIAN (Luszczynska, Scholz, & Schwarzer, 2005). Other scales for self-efficacy specific to behavior (e.g. physical activity and health) have been developed to fit the need for specific survey use (Schwarzer & Fuchs, 1996).

Self-efficacy has been measured in relation to health, diet, and physical activity factors (Adams et al., 2012; Glynn & Ruderman, 1986; Poddar, Hosig, Anderson, Nickols-Richardson, & Duncan, 2010). Interventions that address healthy choices in terms of diet and nutrition often include a focus on self-efficacy and confidence in relation to feelings of capability for making

those choices. Self-efficacy and family support factors along with nutrition and physical activity patterns are essential in sustaining a healthy lifestyle (Adams et al., 2012). In regard to making healthy choices, a higher level of self-efficacy for choosing healthy foods, especially when combined with self-regulatory behaviors (such as goal-setting, planning and tracking eating, and identifying strategies to increase healthy foods) would lead to improved dietary intake (Anderson, Winett, & Wojak, 2007).

Literature focused on self-efficacy in AIAN emerging adults is limited. Only one study with indigenous participants was identified addressing diet, food knowledge, and self-efficacy. The Sandy Lake Diabetes Prevention Curriculum was utilized in a school intervention which focused on knowledge and skills related to healthy eating, physical activity, and diabetes education in Native Canadian grade-school children and caregivers (Saksvig et al., 2005). Third and fifth graders received weekly lessons (teacher-led) while parents and family members received regular communication regarding topics of the lessons via community radio, information booths, and letters. Measures included anthropometrics (height, weight, and percent body fat), 24-hour diet recall, health knowledge and behavior questionnaire (developed from the CATCH Health Behaviors Questionnaire), and parent questionnaire (Saksvig et al., 2005). Results indicated those students and families that were exposed to the intervention had higher scores for dietary self-efficacy (measured using the health knowledge and behavior questionnaire pre- and post-intervention) at follow-up. In addition, increased exposure to the intervention was significantly associated with children (ages 7-14) meeting age recommendations for fiber and families increased mean purchases of foods lower in fat and sugar and foods higher in fiber ($p<.001$) (Saksvig et al., 2005).

While AIAN were not specifically targeted as participants in a study by Poddar et al. (2010) on the effect of a nutrition education intervention on self-efficacy and self-regulation related to dairy intake, this study is an example of self-efficacy in food choices among young adults. A web-based nutrition education intervention including an independent online course addressing one topic per week for five weeks was designed with topics including self-efficacy, outcome expectations, and self-regulation of dairy intake. Measures included a pre- and post- 7-day food record (to assess dairy intake), food beliefs survey, questionnaire with items related to outcome expectations of dairy intake, self-efficacy for choosing dairy foods and low-fat dairy foods, and social support for consuming dairy products. Participants in the intervention consumed well below the recommended servings of dairy both pre- and post- intervention although most felt additional daily servings would be healthy and were confident in their ability to meet recommended levels of dairy. Self-efficacy for dairy foods increased significantly but not for low-fat dairy foods. Participants did not set goals, plan, or track their daily dairy consumption and were relatively neutral on social support for increased dairy intake. The results showed an increase in self-efficacy without resultant changes in behavior; these results may have been more positive had they combined goal-setting with their intervention.

While self-efficacy has been included as a measure of healthy choices in a variety of populations, little literature exists on self-efficacy and healthy food choices among AIAN and no literature was identified specifically measuring self-efficacy and tribal college students. Self-efficacy and perceptions of capabilities regarding making healthy food choices can impact the quality of AIAN students' diet and the food choices they make on a daily basis. This translates into a need for activities and discussions relating to self-efficacy to be incorporated into the educational environment of AIAN students in order to improve decisions regarding healthy food.

Life skills

Interventions that focus on life skills (such as cooking, meal planning, budgeting) are rare in academic literature and were not identified in a tribal college environment specifically addressing AIAN adults. Life skills related to food preparation are necessary for healthy food preparation, consumption, and for taking care of others (Condrasky & Hegler, 2010; Krieger, 2013). When preparing meals at home, knowledge and learned skills about food preparation can increase fruit and vegetable, whole grain, fiber, folate, vitamin A, and calcium consumption (Gillman et al., 2000; Larson, Perry, Story, & Neumark-Sztainer, 2006; Neumark-Sztainer, Hannan, Story, Croll, & Perry, 2003).

An intervention for life skills, although focused on suicide prevention, in AIAN youth demonstrated the benefit of culturally-relevant, community-based interventions (LaFromboise & Lewis, 2008). The Zuni Life Skills Development Program was designed to address high school suicide prevention by involving the community and the school district in providing intervention strategies that match cultural and community strengths of the Zuni tribe. The intervention emphasized life skills development as well as peer interaction and support and involved small group work, role modeling, and community gate keeping. These methods addressed self-esteem, identification of emotions and stress, communication and problem-solving skills, recognition and elimination of self-destructive behavior, increased knowledge of suicide rates and risk factors across tribes, and required participants to engage in suicide crisis intervention training, and set individual as well as collective goals. Each lesson incorporated small group work including experiential activities, role-playing and other behavior rehearsal for learned skills, feedback to refine learned skills, and adult guest speakers. Results indicated participants experienced a reduction in suicidal thoughts, behaviors, and feelings of hopelessness (self-reported) as well as

an increase in problem-solving skills and suicide intervention skills (measured using behavior observation evaluated on a Likert scale). In addition, suicide rates within the Zuni tribe decreased during the intervention.

While the Zuni Life Skills curriculum addressed suicide prevention, the incorporation of life skills and specific methods of intervention including small group work (via experiential learning and hands-on activities) and role modeling (utilizing adult speakers from the community) can be incorporated into interventions addressing additional aspects of health. Interventions that incorporate culinary skills as well as nutrition education can increase knowledge, attitudes, and self-efficacy for healthy behaviors (Nelson, Corbin, & Nickols-Richardson, 2013). As noted by Larson et al. (2006), those young adults that have food preparation abilities show improved dietary intake. Thus the lack of skills necessary for basic, food-related preparation can negatively impact healthy dietary patterns. Building skills for preparing healthy foods can increase the availability and accessibility of healthy, affordable food as well as contribute to heath and obesity-prevention for participants in hands-on culinary skills training interventions (Lichtenstein & Ludwig, 2010). Allowing students to learn from instructors/mentors by observation, then experiential learning, can enhance self-efficacy above and beyond the kitchen and also incorporates traditional AIAN learning styles (Cajete, 1994; Nelson et al., 2013). Incorporating traditional methods of learning among AIAN that have been shown to be more effective, such as story-telling, family activities (e.g. sharing around the table), lesson reflection, and goal setting may more positively contribute to successful intervention outcomes (LaRowe et al., 2007; Schanche, Pasqua, Marquez, & Geishirt-Cantrell, 2002; Stang, 2009).

Implications for Future Research and Practice

College retention and graduation

Strategies or factors that may assist AIAN students and TCUs with retention and ultimately completion of their academic program of choice should focus on those identified in the literature. Identified factors, especially among AIAN students, include family relationships and support, supportive instructors and staff and peers, commitment and support from the educational institution, assistance with identifying personal goals, guidance with study skills, and encouragement to remain connected with their home and cultural practices. These factors can be incorporated into the educational environment to promote academic success.

Addressing self-efficacy in an educational environment can assist in helping AIAN students feel more capable of success. Perception of their capabilities to be a successful student and overcome obstacles can have a significant impact on their academic outcomes. The literature consistently identifies self-efficacy as a factor influencing academic success. This translates into a need for activities and discussions relating to self-efficacy to be incorporated into the educational environment of AIAN students in order to improve college success measures.

Many factors identified in the literature that support AIAN student success are strengths of TCUs. Mainstream institutions may be able to learn from the tribal college model regarding support services, instructor and staff relationships, and commitment from the institution to AIAN student success. TCUs offer experiences that honor cultural values and strengths which are encouraged for students as well as faculty and staff. Working with students, staff, and faculty at TCUs can provide opportunities to address strategies to improve retention and graduation among AIAN students.

While the literature review provided a (limited) variety of research identifying challenges and strategies to succeed in the academic environment, research focused on specific programs or describing coordinated efforts in higher education and the resulting outcomes was lacking. Future research should include programming specific to retention strategies and the resulting outcome variables (especially retention and graduation rates of participating AIAN students).

Food choices among American Indians and Alaska Natives

Research addressing the change in food patterns and selection for AIAN transitioning into adulthood is limited. Determining the influencing factors on dietary patterns and nutrition in AIAN emerging adults can provide insight into educational interventions targeted to AIAN young adults as well as young families. Literature that was identified with AIAN participants showed the value of education (especially when traditional methods of learning among AIAN were incorporated) to address dietary behaviors including a focus on improving self-efficacy for making healthy choices.

Hands-on experiential learning to assist in acquiring nutrition knowledge was also identified and indicates the importance of self-efficacy and confidence in one's capabilities and the positive effect this may have on food intentions related to purchasing and preparation. Self-efficacy and perceptions of capabilities regarding making healthy food choices can impact the quality of AIAN emerging adult's dietary intake. This translates into a need for curricular activities and discussions relating to self-efficacy in order to improve decisions regarding healthy food.

The identification of common barriers to making healthy food choices among AIAN community residents can assist in working with tribal communities in order to improve health. Focusing education and prevention programs to include discussions and initiatives to address

common barriers helps contribute to positive changes within the community. While knowledge of and identification of less healthy foods may not always represent a barrier, translating this into actual healthier food behaviors requires attention.

Research Questions

Working within a non-ideal environment, including lifestyle challenges, achievement of an advanced education, in addition to healthy daily living activities among AIAN emerging adults such as caring for themselves and their families takes commitment, hard work, and dedication on behalf of the student as well as the educational institution. In an effort to incorporate the recommendations and strategies, as well as gaps, identified in the literature, researchers developed a life skills course, utilizing a culturally-relevant home-economic curriculum. The Life Skills at a Tribal College curriculum was delivered in a family-oriented environment in order to build individual value. Researchers aimed to build self-efficacy among participating students in order to promote educational achievement and healthy choices.

In order to measure outcomes and the effects of the curriculum, research questions that addressed the primary goals of improving participant's general self-efficacy, healthy food choices, and college retention rates were developed.

1. Can a life skills course increase self-efficacy related to making healthy choices and improve nutrient intake in American Indian tribal college students? [Quantitative]
2. Can a learning environment intervention with focused discussion and planned activities around the kitchen table increase student retention at a tribal college? [Quantitative]
3. What barriers and strategies for making healthy food choices are identified by American Indian tribal college students? [Qualitative]

CHAPTER 3: METHODS

Researchers explored the effects of a culturally relevant life skills curriculum delivered in a family-style environment on self-efficacy, healthy choices, and college retention among AIAN tribal college students.

Participants

Participants in the study were purposively sampled newly enrolled United Tribes Technical College (UTTC) students whose ACT test scores indicated necessity for preparatory math, reading, or English. Purposive sampling was utilized as the intent was to select participants who were information-rich cases to best address the research questions and purpose of the curriculum (Hays & Singh, 2012). The sample, similar to UTTC student demographics, included students with various tribal affiliations, ages, and number of dependents. Students enrolled in the Life Skills at a Tribal College course were not required to be first-generation college students. Returning UTTC students and those that tested above preparatory levels on the ACT test were excluded from the study. Because of the nature of the curriculum for the Life Skills at a Tribal College class and the research intent, a sample size of 10 was estimated for each semester. The mixed methods approach (using both quantitative and qualitative measurements) and the lack of intent to generalize to other populations made a smaller sample size appropriate for the project (Creswell, 2006; Hays & Singh, 2012).

Recruitment

Students identified as enrolled in preparatory math, reading, or English due to low ACT scores through the Nutrition & Foodservice vocation (NUT) at UTTC were personally invited to participate in the Life Skills at a Tribal College class by the department chair. Since a full class of participants (minimum n=10) was not recruited from the NUT vocation each semester, staff from the Land Grant department contacted department chairs of other UTTC vocations to

acquire permission to contact and invite students from other departments. Recruitment methods included individual oral invitations and e-mail invitations for the pilot first semester. New methods of recruitment were utilized for the subsequent semesters of the Life Skills at a Tribal College course due to the challenge of recruiting students during the first semester. UTTC students were invited to participate in the course during orientation and remedial classes and research team members met with housing officers and campus recruiters to promote the program.

Institutional Review Board Approval

Institutional Review Board (IRB) approval was granted from both educational institutions (NDSU and UTTC). Incentive for participation in the project was provided by federal grant support. Students who were enrolled in the Life Skills at a Tribal College class received a stipend. Information collected via questionnaires was anonymous and collected by the on-site instructor who assigned numbers to each participant. Questionnaires with participant numbers were sent to the NDSU researcher for analysis. The UTTC instructor noted participants, assigned numbers, and kept records in a locked cabinet. NDSU researchers were not aware of any personal information for participants. During telephone interviews, participants were identified by number. Informed consent was provided to students upon invitation to participate in the class. IRB approval and informed consent documents are available in Appendix A and B, respectively.

Experimental Design

A non-experimental cohort design using a mixed methods approach was utilized for the study. A phenomenological approach to qualitative data was incorporated as the intent was to describe and build understanding of tribal college student experiences with barriers and strategies to making healthy dietary choices (Hays & Singh, 2012).

Intervention

The intervention was a semester-long Life Skills at a Tribal College curriculum implemented four different semesters. A variety of life skills-specific topics centered on learning objectives were addressed including nutrition, budgeting, meal planning, meal preparation, gardening, and communication skills. The curriculum utilized the ND Family & Consumer Science standards (2008) and was adapted for cultural relevance by utilizing Native Science philosophies, learning styles, and traditions.

Adaptations and enhancements for cultural relevancy included the use of Cajete's (1994) "Learning from Native Science" Model (Figure 2) and a "humanistic" approach to learning instead of a traditional learning environment. A "humanistic" approach values interdependence between students as well as between students and teachers, allows students to inform the direction of education, and promotes participation and relationship building in the learning environment (Cajete, 1999). In addition, a "grandmother-figure" was the primary instructor for the course. The "grandmother-figure" incorporated a matriarchal model and a common indigenous value of learning from and respect for elders (Cajete, 1994; Calsoyas, 2006; Varcoe, Botorff, Carey, Sullivan, & Williams, 2010).

The intent of the humanistic approach, "Learning from Native Science" Model, and incorporation of a "grandmother-figure" was to promote feelings of security, safety, and belonging as methods to increase value and acceptance. Course topics were outlined but allowed for student input and direction. Students and the instructor discussed food gathering (grocery and gardens), food preparation, food consumption, Land Tenure, relationship/partner selection, etiquette, humor, household management, touch, music, sewing, household repair, family health, child development, spiritual connection, sacred (sustainable/local) food study, employment goals, money management, word use, and various Tribal histories based on timelines.

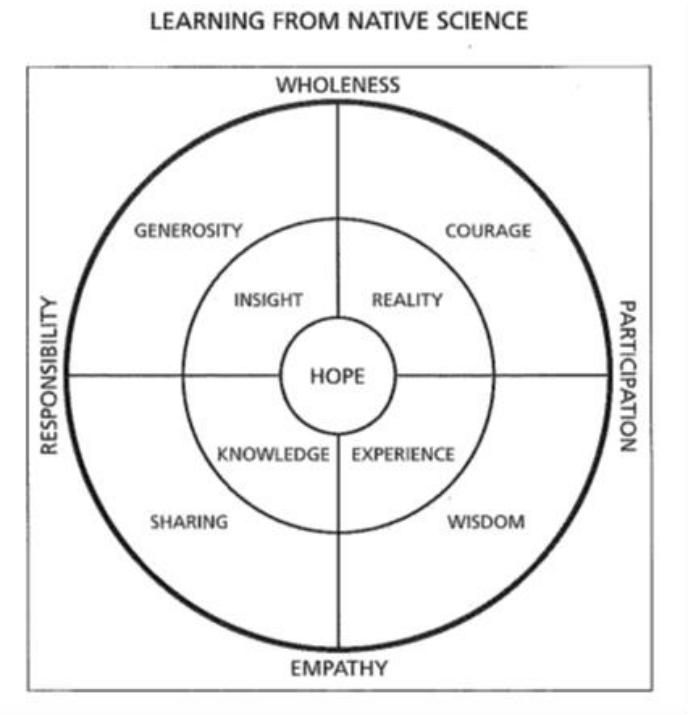

Figure 2. Native Science Model (Cajete, 1994).

In addition to the use of the "Learning from Native Science" model as a method of adapting the curriculum, other resources were incorporated. The promotion of an environment with relaxed communication between and among learners was incorporated based on Gilliland's (1995) education delivery among AIAN adult learners. Teaching and learning strategies that incorporate traditional styles of learning and promote education among AIAN were incorporated into the curriculum including experiential learning, storytelling, tutoring, rituals and ceremonies, observation, and open conversation between teacher and learner (Bowman, 1994; Cajete, 1994; Castagna & Brayboy, 2008; Gay, 2000; Hooker, 2011; Ingalls, Hammond, Dupous, & Baeza, 2006; Swisher, 1991). Class time during each session was devoted to incorporating these strategies through activities such as regular class rituals, writing assignments, discussion time, hands-on experience (especially in food preparation), small group interaction, and storytelling opportunities, often around the table.

Students enrolled in the course received a stipend provided by federal grant funding. Course stipends were used for educational purposes including as teaching tools and goal achievement activities. Activities included budgeting, creating bank and savings accounts, evaluating childcare and healthcare costs, and paying college expenses.

The Life Skills at a Tribal College class was delivered on the UTTC campus in Bismarck, ND, during four different semesters including fall 2013, spring 2014, fall 2014, and spring 2015. Each term, enrolled students met as a class two times a week for the full semester. Each class was scheduled from 8 a.m. to 12 noon on Tuesdays and Thursdays. During the final semester, class meeting time was changed to 8:30 a.m. to 12:30 p.m. based on student feedback. The class was held in a home-like setting on UTTC campus and included cooking facilities and a round dining table.

Questionnaires were administered to students enrolled in the Life Skills at a Tribal College course during the first day of class and the last week of class. Data from completed questionnaires was coded, entered, and analyzed by a blinded researcher. Individual telephone interviews were conducted by a blinded interviewer during the second week of the course and during the final week of the course. Telephone interviews were held in a private office in close proximity to the classroom for ease of participation. An audio recorder and field journals were employed to accurately record responses and observations.

Instrumentation

The research instruments included a pre- and post-questionnaire as well as pre- and post-telephone interview. The questionnaire included the general self-efficacy scale; a validated scale utilized in over 33 different languages and tested for validity with multicultural populations (Schwarzer & Jerusalem, 1995). During the first semester of the Life Skills at a Tribal College class (Fall 2013), the questions were based on a 4-point scale per the general self-efficacy scale

(Schwarzer & Jerusalem, 1995). However, for spring 2014 post-questionnaires, the scale was expanded to a 10-point scale to increase sensitivity and reliability (Bandura, 2006). The 4-point scale was converted using 1= 1, 2; 2=3, 4, 5; 3=6, 7, 8; and 4=9, 10. For the remaining 2 semesters of the Life Skills at a Tribal College class, a 10-point scale was utilized. To evaluate general self-efficacy, participant responses were summed for a total self-efficacy score and compared between pre- and post-life skills class.

The Health Behavior Survey included on the questionnaire was adapted from the School Physical Activity and Nutrition (SPAN) survey with questions regarding dietary behaviors, nutrition knowledge, nutrition attitudes and beliefs, and weight-related behaviors (Sharma et al., 2013). Foods specified in the food frequency questionnaire as part of the student survey are included in Table 1.

Table 1

Food frequency questionnaire utilized on the participant survey. Adapted from Sharma et al., 2013.

Yesterday, how many times did you:						
Eat vegetables	None	1	2	3	4	5 or more
Eat fruit	None	1	2	3	4	5 or more
Drink 100% fruit juice	None	1	2	3	4	5 or more
Eat whole wheat bread	None	1	2	3	4	5 or more
Eat fried meat	None	1	2	3	4	5 or more
Eat French fries or chips	None	1	2	3	4	5 or more
Eat frozen dessert	None	1	2	3	4	5 or more
Eat a doughnut, cookie, brownie	None	1	2	3	4	5 or more
Eat candy	None	1	2	3	4	5 or more
Drink fruit flavored drink	None	1	2	3	4	5 or more
Drink soda pop	None	1	2	3	4	5 or more
Drink milk	None	1	2	3	4	5 or more
Eat restaurant food	None	1	2	3	4	5 or more
Eat a meal	None	1	2	3	4	5 or more

Qualitative telephone interview questions were written by the researcher with oversight and approval by the research team. Questions were pilot tested during a qualitative methods class and with initial participants in the Life Skills at a Tribal College class during fall, 2013. Interview questions are presented in Table 2 and the written questionnaire in Appendix C.

Table 2

Life Skills at a Tribal College qualitative telephone interview questions.

1. On a scale of 1 to 10 with 1 being easy and 10 being difficult, how capable do you feel when making healthy food choices?
   - What part is easy?
   - What part is a struggle?
2. Think about where you grew up and who prepared food in your family. Describe how your family made the meal, how they gathered, and how the person who prepared the meal decided what to prepare.
3. Is there any time of year or special events when your family has special traditions?
4. Do you feel you have had positive role models for food choices?
5. Think about where you live now and your family eating habits. Think about yesterday. Thinking about after you woke up in the morning – what was the first thing you ate? About what time was that? What did you have next?
   - What made you choose the foods you did?
6. What things prevent you from making healthy food choices?
7. How could you deal with _____{things they mentioned as barriers}?
8. What are 2 or 3 things that would help you most in making healthy food choices?
9. Describe a time you learned something about making food choices that really stuck with you.
10. Where (or from whom) did you learn it?
11. When it comes to learning in a school environment, how would you prefer to learn?
12. What do you think of when I say "life skills"?
13. How would healthy choices relate to life skills?
14. Now that you are in college, you may learn some "non-school" skills that could help you in life. Are there any skills you hope to learn while you are here?
15. Any questions or things you'd like to add?

Data Analysis

Quantitative data related to the general self-efficacy scale and nutrition-related knowledge, attitudes, and behavior was analyzed using non-parametric statistics due to the small sample size and use of nominal and ranked data. Wilcoxon Signed-Rank tests were utilized for

matched pair analysis to compare pre- and post- questionnaire responses by participants. Descriptive statistics were used to determine retention data and explain changes in dietary behaviors. SPSS 22.0 computer software was used for the analysis, with a significance value of 0.05.

Qualitative data was audio recorded, transcribed, and analyzed for themes and patterns by the researcher. As a phenomenological approach was utilized in this study, pre-data analysis included identification of researcher bias and assumptions (i.e. bracketing). After data was transcribed, initial analysis involved identifying large domains or categories of transcribed text. Each expression needed to meet two criteria: containing a moment of the experience that is necessary for understanding the phenomenon and being able to abstract and label it. If so, the expression was a horizon of the experience. Following horizontalization, the data was sorted into categories identifying meaning and depth (i.e. textural description). Further analysis using structural description assisted with identification of multiple potential meanings within the textural description (Hayes & Singh, 2012).

CHAPTER 4: RESULTS

Results – Quantitative Analysis

Participants in the Life Skills at a Tribal College class tested below college-readiness for English, reading, or math. Demographic information is presented in Table 3 for all participants who filled out a pre-questionnaire (n=26), those who completed telephone interviews and were included in qualitative analysis (n=20), and those who completed the Life Skills at a Tribal College class (n=9).

The majority of participants in the Life Skills at a Tribal College class were female, 22 years or older, and had children. In addition, more than half were single parents and almost all lived on campus. Of those that completed the Life Skills at a Tribal College class, all lived on campus. These demographics are consistent with other institutions primarily serving AIAN students (AICF, 2002; Freeman & Fox, 2005; NCES, 2008). United Tribes Technical College serves students from over 75 tribal nations. Participants in the Life Skills at a Tribal College class represented nine different tribal nations including Cheyenne River Sioux, Oglala Lakota/Sioux, Omaha, Rosebud Sioux, Santee, Sisseton Wahpeton Oyate, Standing Rock Sioux, Turtle Mountain Band of Chippewa, and Yankton Sioux.

Table 3

Life Skills at a Tribal College participant demographics.

Characteristic	Category	Initial Surveys (n=26)	Telephone Interviews (n=20)	Completed Life Skills (n=9)
Gender	Male	9	7	3
	Female	17	12	6
Age	18-19	4	2	1
	20-21	6	3	0
	22-24	9	8	5
	25-29	1	1	1
	30-34	2	1	1
	35-39	2	2	0
	40-49	1	1	0
	50-64	1	1	1
Tribal Affiliation	Cheyenne River Sioux Tribe	5	5	2
	Oglala Sioux	5	4	2
	Omaha Tribe	1	1	0
	Rosebud Sioux	3	3	2
	Santee	1	1	0
	Sisseton Wahpeton Oyate Tribe	2	1	1
	Standing Rock Sioux Tribe	5	3	2
	Turtle Mountain Band of Chippewa	1	0	0
	Yankton Sioux	2	1	0
Number of Children	None	13	8	3
	1-2	5	4	3
	3-4	2	2	1
	5+	5	4	2
Single Parent	Yes	12	9	5
	No	11	8	3
1st to attend college	Yes	10	8	3
	No	15	10	6
Living situation	On-campus	22	17	9
	Off-campus	4	2	0

Self-Efficacy

Students completed a measure of general self-efficacy at the beginning and the end of the Life Skills at a Tribal College course. Participants completing the Life Skills at a Tribal College class over the 4 different semesters (n=9) reported non-significant changes to general self-efficacy. Three students reported an increase in general self-efficacy. Six students reported a decrease in general self-efficacy.

In addition to the general self-efficacy scale included in the participant questionnaire, telephone interviews addressed perception of participant capability when making healthy food choices. The majority of participants reported a higher perception of their own capability (self-efficacy) when making healthy choices at the end of the Life Skills at a Tribal College class although the difference was not statistically significant.

Nutrition Knowledge

Participants responded to four questions related to nutrition knowledge including foods that should be eaten most often, least often, recommended servings of fruits and vegetables, and the macronutrient that provides the most calories per gram. The correct answer responses were summed for a pre- and post-score. Participants completing the Life Skills at a Tribal College class (n=9) reported non-significant changes to their level of nutrition knowledge ($p>0.05$). Overall average scores both pre- and post-life skills were statistically identical.

Interestingly, of all participants completing the questionnaire at the beginning of the Life Skills at a Tribal College class (n=26), only two were able to correctly identify the food group which should be consumed the most. The majority of participants indicated meat, poultry, and beans should be consumed most. Conversely, the food group which should be consumed the fewest (fats, oils, and sweets) was correctly identified by the majority of participants.

Nutrition Attitudes and Beliefs

Three questions on the Health Behavior Survey addressed nutrition attitudes and beliefs. All participants except one agreed pre-life skills class that learning about the relationship between food and health is important and people who are overweight have a higher risk of health problems. At the end of the class, all participants (n=9) agreed on the importance of the relationship between food and health and that overweight contributes to the risk of health problems.

Pre-life skills, the majority (8 of 9) did not view their diet as healthy and identified their diets as in need of change. Post-life skills, most participants (7 of 9) still viewed the foods and beverages they consumed as in need of change.

Interestingly, those students that began the Life Skills at a Tribal College course but did not complete also identified the importance of the relationship between food and health as well as the contribution of overweight to the risk of health problems. In addition, none identified their diet as healthy; all indicated their diet could be improved.

Dietary Behavior

Nutrient intake in participants was measured using food frequency of specific foods included in the Health Behavior Survey and 24-hour recall via telephone interviews as seen in Table 1. Information from the dietary behavior measures was compared to serving recommendations from the USDA dietary guidelines including whole grains (half of daily intake of 6 to 8 oz), fruit (1.5 to 2 cups), vegetables (2.5 to 3 cups), dairy (3 cups), and meat/beans (5.5 to 6 oz) (USDA, 2015). In addition, the Health Behavior Survey addressed other dietary behaviors such as eating alone, eating in front of the TV, and self-preparation of meals.

Food frequency questionnaire. Foods specified in the food frequency questionnaire are included in Table 1. Changes related to dietary behavior were inconsistent between participants.

For example, one participant showed improved dietary intake for vegetables, fruit, and dairy intake and decreased intake of fried meat, French fries/chips, desserts, donuts, candy, fruit-flavored drinks, soda, and eating out. However, another participant reported decreased intake of fruits and vegetables and an increase in consumption of fried meats, French fries/chips, and candy. Over half of the participants who completed the Life Skills at a Tribal College class increased their fruit intake to 2 or more servings per day and milk intake from no intake to 1 or more servings per day. Also, seven of nine participants consumed regular meals at the end of the class as compared to five at the beginning. In addition, many participants did not consume any soda and those who did decreased their intake over the semester. One participant went from drinking 3 sodas per day to none. Intake of fruit-flavored drinks was also decreased in the majority of participants. Finally, frequency of eating at a restaurant was low for the majority of participants at the beginning of the Life Skills at a Tribal College course and those who did dine out regularly reported rarely eating out at the end of the class.

24-hour diet recall. Three students completed the 24-hour diet recall via telephone interview at the beginning of the fall 2013 semester. None met daily recommendations for servings from each food group which include fruits, vegetables, grains, protein, and dairy. In addition, two of three participants reported skipping breakfast and all three reported consumption of sugar-sweetened beverages (including soda). Two students completed the 24-hour diet recall at the end of the fall 2013 semester. Both reported no soda intake with one participant reporting decaffeinated tea (instead of coffee) and water (instead of soda). In addition, breakfast (and other regular meals) was consumed by participants.

Five students completed the 24-hour diet recall via telephone interview pre- and post-life skills class during the spring semester, 2014. Three reported increased servings of fruits and

vegetables. Other improvements included not skipping meals and switching from soda and coffee to water or 100% juice. Four of the five participants indicated little to no dietary consumption between meals.

Two students completed the 24-hour recall both pre- and post-life skills class during the fall semester 2014. None met daily food group recommendations for all food groups. Both participants were significantly lacking fruit and vegetable servings as well as healthy snacks. In addition, both reported consumption of sugar-sweetened beverages. Post-life skills class, one participant increased fruit, vegetable, and dairy intake. Both reported improved beverage choices (water instead of lemonade or Kool-Aid) and snacks. Overall, the 24-hour recall displayed intake from a variety of food groups but less than recommended servings for whole grains and dairy.

Only one student completed the 24-hour diet recall both pre- and post-life skills during the spring semester, 2015. This student reported a variety of intake from all of the food groups including healthy snacks at the beginning of the Life Skills at a Tribal College class. However, information from the 24-hour diet recall at the end of the Life Skills at a Tribal College class indicated poor food choices such as skipping breakfast, increased intake of sugar-sweetened beverages, decreased fruit and vegetable intake, and no healthy snacks. Dairy intake did not meet recommendations pre-life skills and was not consumed at all during the post-life skills 24-hour recall.

Other dietary behaviors. Other dietary behaviors included in the questionnaire included eating alone or with others, eating in front of the TV, and cooking for self or others. Most participants identified eating with family at least 1 time/week or more with four students reporting an increase throughout the semester. The majority (7 of 9) ate with their family often which reflected an increase over the duration of the Life Skills at a Tribal College course. Three

participants increased the amount of time they ate alone while three decreased the number of times they ate alone. Six of nine participants reported decreased TV watching during mealtimes from the beginning of the Life Skills at a Tribal College class to the end. Those that did not decrease TV watching reported watching TV during mealtimes "not very often" (less than 1x/week). Six of nine participants also reported cooking a meal for themselves or family often (at least 2 times/week) which was increased from the initiation of the Life Skills at a Tribal College class.

The majority of the participants (7 of 9) ranked a source other than the grocery store as the location they get the majority of their food from at the initiation of the Life Skills at a Tribal College class. The most common sources were food distribution programs, gas stations, and fast food or restaurants. However, at the end of the semester, 6 of 9 indicated the grocery store as their main source of food procurement. Similarly, the majority of participants who only completed the pre-questionnaire also identified sources other than the grocery store as their primary food source.

Retention

Retention information for all four semesters, including fall 2013, spring 2014, fall 2014, and spring 2015 is presented in Table 4. Retention rates reported include within-semester as well as semester-to-semester rates for UTTC overall as well as rates specific to Life Skills at a Tribal College participants.

Table 4

Retention rates among students at UTTC and Life Skills at a Tribal College participants.

	Within Semester Retention Rates		Semester-to-Semester Retention Rates	
Semester	UTTC	Life Skills	UTTC	Life Skills*
Fall 2013	74%	29%	57%	100%
Spring 2014	70%	42%	76%	60%
Fall 2014	92%	100%	72%	100%
Spring 2015	66%	20%	61%	100%

*Participants who did not complete the Life Skills at a Tribal college course had retention rates of 33% (fall 2013 to spring 2014), 20% (spring 2014 to fall 2014), and 0% (fall 2014 to spring 2015).

Fall 2013. The student retention rate at UTTC during the fall semester of 2013 was 74%. Of the 498 students that began the semester at UTTC, 129 did not persist to the end of the semester. Seven students were registered for the Life Skills at a Tribal College class at the beginning of the fall semester 2013 and completed written questionnaires during the first week of class. Of those seven, five remained in the class past the first week and were present the second week of class for telephone interviews. At the conclusion of the Life Skills at a Tribal College class in December 2013, students received certificates of completion and were recognized with a celebratory meal. Two students persisted until the end of the Life Skills at a Tribal College course and received their certificate. Retention in the Life Skills at a Tribal College class for fall 2013 was 29%.

An additional measure of student retention is the evaluation of the enrollment of eligible students the following semester. Of 463 possible returning students at the end of the fall semester at UTTC, 267 returned for the spring semester 2014. The retention rate from fall 2013 to spring 2014 for UTTC was 57%. Of those enrolled in the Life Skills at a Tribal College class, there were two possible returning students for spring 2014. While the Life Skills at a Tribal College class had a retention rate of 29% for the fall 2013 semester, the two students who completed the

course both returned and enrolled as full-time students in the spring semester of 2014 for a retention rate from fall 2013 to spring 2014 of 100%. This was an improvement over the 33% semester-to-semester rate for those students that were enrolled but did not complete the Life Skills at a Tribal College class.

Spring 2014. The student retention rate at UTTC during the spring semester of 2014 was 70% (of 424 students, 296 remained at the end of the semester). Twelve students enrolled and completed written questionnaires during the first week of the Life Skills at a Tribal College class in January 2014. Ten students were present for telephone interviews during the second week of class. Five students received certifications of completion for the Life Skills at a Tribal College class in May 2014. Retention in the class for spring 2014 was 42%.

The spring to fall 2014 retention rate at UTTC was 76%. Of 347 students (from spring and summer semester) eligible to return during the fall 2014 semester, 263 returned. Of the five Life Skills at a Tribal College participants who completed the class, three returned as full-time students for fall 2014. This resulted in a semester-to-semester retention rate of 60%. While this was lower than the semester-to-semester rate at UTTC, it was higher than the 20% rate reflected for those Life Skills at a Tribal College participants who did not complete the class.

Fall 2014. The student retention rate at UTTC during the fall semester of 2014 was the highest of the measured semesters during the research project at 92%. Of the 430 enrolled at the onset of the semester, 394 persisted to completion of the semester. Comparatively, the within-semester retention rate of Life Skills at a Tribal College participants was 100%. Two participants completed the paper/pencil questionnaire and telephone interviews at the beginning and end of the semester. Both students persisted until the end of the Life Skills at a Tribal College class and received certificates of completion.

The retention of students from fall 2014 to spring 2015 at UTTC was 72%. Of 398 eligible students from the fall semester, 298 returned for the spring semester. Of the Life Skills at a Tribal College participants, both that were eligible returned for the spring semester. This resulted in a semester-to-semester retention rate of 100%.

Spring 2015. The student retention rate at UTTC during the spring semester of 2015 was 66%. Of the 374 students enrolled at the beginning of the semester, 248 persisted until the end of the semester. Five students completed questionnaires and telephone interviews in the Life Skills at a Tribal College class at the beginning of the spring 2015 semester. Of those five students, one persisted until the end of the semester for a within-semester retention rate of 20%. This student completed the final questionnaire and telephone interview and received a certificate of completion.

The semester-to-semester retention rate at UTTC for spring 2015 to fall 2015 was 61%. Of 269 students that were eligible to return for the fall semester from spring/summer session, 163 returned. Comparatively, the Life Skills at a Tribal College participant that completed the course during the spring 2015 semester returned in the fall which reflected a semester-to-semester retention rate of 100%. Of those participants who did not complete the Life Skills at a Tribal College course (n=4), none returned as full-time students for the fall semester, 2015.

Results – Qualitative Analysis

The intent of participant interviews was to identify and describe barriers and strategies for making healthy food choices and build understanding of student experiences among AIAN tribal college students. A small number of participants completed pre- and post-course telephone interviews during each semester of the Life Skills at a Tribal College course (n=2, n=4, n=2, n=1, respectively). Additional participants completed a telephone interview at the beginning of each Life Skills at a Tribal College course (n=11). Because of the small number of participants

and the intent of building understanding, not determining cause/effect or the impact of the Life Skills at a Tribal College class, responses to the interview questions were combined for the fall 2013, spring and fall 2014, and spring 2015 classes for qualitative analysis (n=20).

Five primary themes emerged from qualitative analysis of participant interviews and are presented in Table 5. Included in the identified themes: taste is both a barrier and a strategy for healthy eating, the process of food gathering and preparation involves a variety of barriers, defining healthy choices can be difficult, AIAN cultural traditions and practices influence healthy eating patterns and perceptions, and personal motivation factors play a role among AIAN tribal college students when making healthy food choices. These primary themes and additional sub-themes of each were grouped into two categories in regard to healthy eating as identified by participant responses: barriers and strategies to making healthy food choices.

Table 5

Barriers and strategies for making healthy food choices identified by Life Skills at a Tribal College participants.

Barriers	Strategies
Taste	Taste
Food Gathering and Preparation	AIAN Cultural Traditions and Practices
Difficulty Clarifying Healthy Food Choices and Life Skills	Personal Motivation Factors

Barrier Themes

Taste. Taste functioned as both a barrier and a strategy for healthy eating patterns. Eating foods participants like makes food choices easy. Foods that are healthy that participants found tasty were easier to include in their regular eating pattern. However, often the foods participants identified as cravings and struggled with avoiding were those with lower nutrient value or defined by participants as junk food or fast food.

"Those type of foods [potato chips] are better to eat. I mean, they taste better than regular foods. That makes it a struggle for me"

"Probably my only issue is probably fast food. When I am around it, I give into it very easily."

"I crave just chips, I guess. In the morning with the chips, there's a vending machine so then I go for the sun chips and those are low calorie. I know it's still bad but those are just something in the morning that I crave."

Participant responses indicated the struggle of avoiding some of their favorite foods. Taste is a significant factor in the selection of foods, especially when relating to particular food choices or "cravings". While participants were able to identify these particular cravings for less nutrient dense food options, a clear advantage to addressing their inclusion in dietary patterns, making an alternative or healthier food choice was still a challenge and created a barrier for healthy eating patterns.

Food gathering and preparation. Gathering the ingredients and foods for preparing a healthy meal were a challenge for many of the participants. The process of identifying foods to prepare, actually acquiring those foods, preparing them, and serving them to themselves or family provided a variety of barriers. Several components of food gathering were mentioned including grocery shopping, meal planning, identifying ingredients needed and on hand, transportation to local food sources, and having access to healthful food options. Three participants specifically mentioned the lack of accessibility to healthy foods in their home communities. While the local community surrounding UTTC offers a variety of options including supermarkets, warehouse/discount stores, and gas stations, these options can be challenging if transportation is a barrier.

"I don't have transportation of my own and I have to catch the bus or a ride from here and then I just kind of throw whatever in my car."

Some participants also voiced challenges such as acquiring healthy food on a limited budget. This was especially true of those participants with families and young children in their home environment.

"Sometimes the prices on foods [is a struggle]. The healthier foods. The budget aspect of it for sure."

"Usually, because I am a single parent with [several] kids, there is a lot of programs during the week that serve free suppers so I will go to those."

In addition to food gathering, participants identified a significant barrier of time to actually prepare healthy meals (or any meals, healthy or otherwise). Eight participants identified their busy schedule as a barrier to preparing healthy meals at home.

"Even when I go in the store now I just want to hurry, get in there, do my shopping, and get out. When I could be using, I know there's some organic aisles but I'm just so used to what you know, I'm so busy in my life, it's hard to go in there and just browse around the aisles and check out labels and what's good and then to bring it home and prepare it into a meal."

"Managing my time at home [would help with making healthy food choices]. When I'm cooking, instead of just trying to get it done really quick since everybody's hungry and just throwing whatever together, I notice that if I have more time on my hands I cook better than if I'm trying to be in a rush."

The multitude of barriers that result from the process of planning, acquiring, preparing,

and serving healthy foods highlights the variety of challenges faced by participants and the need for multi-faceted and individualized approaches to promoting healthy food intake. Participants were often able to recognize the challenges that influenced the process of food gathering and preparation but needed a variety of tools to assist with overcoming those barriers. Understanding and identifying healthy food choices is one step but translating knowledge into the ability to acquire and prepare those foods when faced with significant barriers requires tools and strategies for families and individuals.

Lack of experience and positive role models for food choices. An additional theme, or sub-theme, to the variety of barriers that were identified in the process of food gathering and preparation was lack of experience in preparing and planning meals and limited influence by positive role models for healthy food choices. Participants reported little involvement with shopping for food and ingredients, planning meals and menus, and cooking or preparing food for their family. Only three of 20 participants mentioned helping cook or being taught how to cook while growing up. In addition, most identified not being part of the food preparation process at family celebrations and holidays as well. Extended family (primarily grandmothers and mothers) were involved in meal preparation and mealtimes but they did not necessarily sit down together to eat a meal (nine of 20 participants reported never eating meals together as a family).

> "My mom was a single parent and she worked all day. So [meals] were just whatever she picked out for us. My family was never very healthy. There was always a lot of fatty stuff and stuff that could be made quick."
>
> "Me and my older sister would just grab our stuff and either go into our rooms or [eat] sitting in the living room. And the same way with my mom, she would just grab her plate and go into her room."

Many participants could not identify a positive role model for food choices or had difficulty defining what characteristics that role model would possess. Seven of the 20 participants voiced a lack of positive role models for food choices.

> "I don't think [I've had a positive role model for food choices]. Maybe, I don't know it's kind of hard to tell. There were hardly vegetables on the table. There was mostly meat on the table so I don't know if that's healthy or not."

Several participants identified a single parent home, blended home, and/or living in an environment where children were being raised by grandmothers. In addition, while being raised by their grandparents was not always clearly stated, eight reported their grandmother regularly prepared meals for the family. While this wasn't necessarily reflected as a negative influence, participants typically reported having little knowledge or experience in the cooking process.

> "My grandma made up the meals, whatever she wanted to cook. And we just ate it. It was like, a lot of slow greasy foods. She cooked a lot of fat and oils and stuff."

> "[My grandma] just cooked it up and served it. I don't know how to describe it and put it in detail. I don't know how that process goes."

Lack of experience and involvement in tasks related to food gathering and preparation could impact other barriers reported by participants. Having experience or the ability to observe and practice behaviors that assist with acquiring and consuming healthy food for themselves or family could provide strategies and the ability to utilize previous knowledge and experience as a way to overcome barriers.

Difficulty clarifying healthy food choices and life skills.

Food choices. Uncertainty about healthy food choices and how they contribute to life skills and health was consistent among the participants. Students discussed foods they enjoyed eating but were not always sure whether these choices were healthy.

> "Vegetables like corn taste good too. And vegetables I like, tomatoes with salt on it but I don't know if that's healthy or not."

> "I don't really make healthy food choices. I don't even know what [healthy food choices] really means. I just, whatever food I see I eat it. I don't know if it's healthy or not. As long as I get filled up."

Some participants identified positive role models for food choices but listed characteristics separate from healthy food choices (such as physical activity, avoiding bad behavior, etc). Other participants denied having a positive role model for healthy food choices but spoke of a family member or adult that prepared regular meals for them and tried to include most of the food groups (including fruits and vegetables). Despite characteristics of providers that spoke to healthy food practices such as regular meal times, home-cooked meals, and inclusion of food groups especially fruits and vegetables, many participants identified these providers and meals as not very healthy or not good role models.

> "My grandma was the main one that cooked for me. And her meals were always good because she always made sure that she had vegetables with any meal that she had. It wasn't really healthy food though. I don't think so. We always had to sit down at a certain time. And she would usually ask us what we wanted to eat."

> "[Food and meals growing up] was very humble. Served good food. Wasn't really healthy. I mean, it was enough to fill me up but provided vegetables, meats, grains."

If students identified positive role models for healthy food choices, characteristics usually involved more than food. These characteristics included regular physical activity, tracking daily intake, competitive sport performance, supplement use, and weight management. Some participants specifically mentioned relatives or significant others in their life that encouraged them to "get active, get out of the house", ran races, or consumed "natural foods" such as vitamin and mineral supplements. Others mentioned family, friends, or even middle/high school teachers that modeled healthy behavior such as participating in sports, staying committed to eating healthy, and trying to prevent weight gain. Participants also mentioned care and discipline, high expectations and standards for school performance as important from their positive role models.

Life skills. The relationship between life skills and healthy choices was a challenge for participants to verbalize. Most required clarification on the question as well as time to contemplate. The majority voiced general skills or choices such as "choosing the healthy right way to live life, in life" or "being smart about one thing will help you try to be smart about something else in your life". Those that completed the Life Skills at a Tribal College class were more likely to mention healthy food choices and cooking skills positively relating to life skills but did not necessarily identify specific skills and how they relate. Only three of 20 participants identified specific life skills such as "cooking, learning how to fix on a car, computers, stuff like that" or budgeting, meal planning, and parenting. Although most participants did not describe specific skills they needed, they indicated having life skills was a good thing and that healthy choices could contribute to a longer, or better, life.

Strategy Themes

Taste. In addition to its role as a barrier in making healthy food choices, taste was also a strategy for healthy eating patterns. Foods that are healthy that participants found tasty were

easier to include in their regular eating pattern. If the participants identified enjoying fruits and vegetables, they found those foods easier to eat more often.

> "[It's easy for me to make healthy food choices] because I really like eating vegetables and stuff like that. I like fruit, I never really like sweets."

> "When I eat a radish, it should taste like a radish. When I eat a cucumber, it should taste like a cucumber. When I was 4 or 5 years old and I ate that stuff out of the garden, I can remember to this day, right now you and me talking, I remember what it tasted like."

Since taste plays a role as both barrier and strategy, it is easy to see the significant influence of flavor and personal preference. Interestingly, an additional theme, or sub-theme, was identified that provided some insight into actually influencing personal preference or perception of the flavor and taste of food. As such, taste can be a factor in education and interventions that aim to increase consumption of healthy foods.

Exposure to flavorful, healthy foods can impact taste and perception of healthy food choices. The Life Skills at a Tribal College class included hands-on activities such as cooking as well as education about healthier cooking methods and food choices. Recipes utilized in the class included both novel foods as well as new preparation methods for many participants. Through these activities participants were able to taste healthy foods and gain insight into flavors and healthy cooking methods that influence taste. This was verbalized by some students that completed the entire semester and some students that were interviewed at the beginning of the Life Skills at a Tribal College class but dropped out before the end of the semester.

> "[I learned that] you never know it tastes like unless you try it. There was an experience here in class, they made something and it had all these colorful vegetables and I was

dead-set on not trying it. So, I don't know, I helped cook it so I tried a little bit of it and I actually really liked it."

"This class is kind of helping me too, to see a lot of [ways to prepare food] and hands-on preparing the food is really good for me too because I'm actually doing it, I'm actually helping so I can see what you put in and what's going in and how it tastes afterwards"

The ability to influence participant perception and preference for healthy food options was a key strength of the Life Skills at a Tribal College class. Even participants who did not complete the full semester so had more limited opportunities to prepare and sample a variety of healthy food options expressed the view that exposure to tasty healthful foods improved their perception of taste. The identification of this strategy by participants highlights the possibilities with involving participants in hands-on food preparation and consumption of flavorful, nutrient dense foods using previously unknown cooking techniques and foods never tasted or consumed before.

American Indian and Alaska Native cultural traditions and practices. Cultural traditions or practices were rarely discussed or mentioned by students in qualitative interviews. Only two participants mentioned a cultural practice (i.e. powwow) as a special event or tradition for their family. Family get-togethers and celebrations typically mentioned were Christmas, Thanksgiving, and birthdays and all involved food and meals shared together. Only one participant clearly identified specific cultural or family practices as a strategy for making healthy food choices or as an influencing factor on dietary habits. However, even though cultural traditions, practices, or events were not specifically identified or recognized as influencing factors for food choices or dietary habits, several participants discussed aspects inherent among AIAN traditions and values that positively contributed or provided motivation for healthy

practices. These aspects included being a role model, passing information to others, learning "from the old ways", and being mindful of the next generation (Cajete, 1994; Juntunen et al., 2001; White Shield, 2009).

> "We start at home, we're at home, this is our homeland. Why can't we start living positive and healthier? Then we can be a role model and show that."
>
> "It makes me think a lot of how we used to live a long time ago to now. And just knowing that, for me, 200 years ago, this way of life my parents always told me its good to learn our ways from back in the day."

Interestingly, participants mentioned cultural traditions and practices in response to a variety of questions, not only those addressing food patterns and influences. The inclusion of these aspects in participant responses shows the value of cultural practices, traditions, and beliefs and the potential impact on food choices, even if those influencing factors are not formally recognized by the individual. Understanding these inherent values and influencing factors among AIAN students also highlights the importance of valuing and incorporating cultural traditions and practices into learning environments and educational settings that promote healthy food choices among AIAN. It is also important to note that AIAN dietary practices have been significantly altered, and deviated from traditional food patterns, contributing to a variety of health-related challenges. Addressing these changes in traditional food sources and loss of historic relationships with food is a key message intended to empower tribal communities (Echo Hawk Consulting, 2015).

Traditional learning. In addition to key aspects of AIAN traditions and culture, many students also identified the value of traditional learning styles including small groups and hands-on experience. In fact, 12 of 20 participants indicated their preferred learning environment was a

small group or just one-on-one with the teacher. One student described a memorable learning experience with food related to traditional foods:

> "It was just like how this program is with a grandmother figure. I had that in my nutrition and wellness class my senior year and she taught us all the different native foods. Native foods that can be healthy for you, different alternatives that can be used for making certain things and like even cookies, cookies that taste sweet she used different preservatives to change for sugar."

The Life Skills at a Tribal College class and the opportunity for hands-on learning experiences (including cooking) was mentioned as a valuable learning tool and time of enjoyment by several participants. Five of nine students who completed the Life Skills at a Tribal College course had improved confidence in their capability for making healthy food choices over the course of the semester.

> "Taking this class made me more aware of you know, where our food comes from, how to prepare food in a more healthy way, eating basically the same but more healthy"
>
> "[I learn something about food choices] probably every time we cook here at life skills. Like every time we make something, I just think like what if I had been eating like this ever since growing up."

The recognition of learning environments and experiences, especially those that were hands-on, that were helpful for the individual provides an opportunity to encourage these experiences in a variety of educational settings. It also reiterates the importance of creating learning environments that support multicultural learners, especially those environments that incorporate a variety of teaching styles to meet the needs of AIAN students (Keith, in press).

Personal motivational factors. Personal motivational factors are an important strategy for making healthy food choices and could often be identified by participants. Several participants stated there is "nothing preventing them" from making healthy choices, it is just a matter of making that decision. Others spoke to the need to find ways to get motivated to make a healthy choice:

> "It's all in your own mind, it's just if you want to make healthy choices, you can do it. That's the way I see it. If you want to do anything with your life and anything at all, you have to do it. There ain't nobody holding you back from eating healthy, working out, going to class, nothing, it's just you are the person, you gotta do it if you want it."
>
> "I'd have to say being around more positive people that you know, make eating healthy a habit. Because I can pick that up from somebody, like a habit that they have that I can pick it up. Actually getting out and being more active with people who do that and socializing with that kind of group of people."

Several participants who completed the Life Skills at a Tribal College class recognized the difference between knowing what the healthy choice is and actually making the healthy choice. Knowledge of healthier choices does not always translate into behavior but awareness of making the choice is a key factor and first step. Also, knowing that they are aware of healthier choices but need to make extra efforts to actually choose the healthier food option is another important step in the process of changing behavior. Both knowledge of healthier choices and the action step of making the healthier choice are key aspects of the transtheoretical change theory. In addition to this recognition of the efforts needed to make healthy choices, participants identified barriers (such as time) and were able to share the process of overcoming those barriers.

"[It's easy] making the choice to eat something healthier rather than go for the junk food and microwave stuff; as compared to the beginning of the semester."

"Well, now I look at it as cooking is more therapy for me. I try to put my needs, my wants aside and trying to, you know, I want to be a little family so me as the grandparent I need to show my grandkids that you've got to make time. It's just, family time."

The identification of personal motivation factors is a key strength shown by participants. Not only do personal motivation factors play a role in choosing healthy foods but they also assist in overcoming personal barriers to making that choice. In this way, participants are displaying higher levels of self-efficacy for making healthy choices when they identify tools that will assist them in overcoming barriers. Higher levels of self-efficacy for a particular behavior leads to setting higher goals, staying committed to a difficult task longer, and an increased likelihood of practicing that behavior. In addition, higher self-efficacy is a significant predictor and key to changing behavior (Bandura, 1997).

Health goals. An additional theme, or sub-theme, that emerged as part of participants' personal motivation factors was the presence of health goals. Many participants voiced desire for improving their health as part of their goals for coming to college. Having those health goals was identified as a factor that could help them with making healthy food choices. In addition, participants recognized the role of food choices in addressing and preventing weight gain, in themselves as well as their children.

"Because I want to be fit and I want to be healthy and I know that like, putting fat or something bad into my body ain't gonna help me you know? When I eat better, I feel better. I don't feel like all lazy or like barely walking around."

> "I have a little boy who's kind of getting overweight for his age so I'm trying to cook healthier and get some mild exercise in a day."

In addition to having health goals as personal motivation factors, disease processes were voiced as concerns or learning experiences. When discussing learning experiences and factors that influence food choices, 10 students identified a health concern or crisis (often diabetes) for themselves or a family member as a factor that made them want to be healthier and improve their food choices.

> "In the past 35, 30 years now, I've seen more health problems than I ever did with families, relatives, neighbors, you know I walk into see my mom on dialysis and when she was on dialysis there were probably just one or two people. Now the whole room is full."

The identification of health problems in others (i.e. empathy), specifically diabetes and hemo-dialysis resulting from uncontrolled diabetes, was unfortunately not unexpected. Prevalence and incidence rates of type 2 diabetes are higher among AIAN than any other ethnic group and the disease has been cited as an "epidemic" among AIAN communities (Hill, 1997). This prevalence translates into nearly every AIAN being personally diagnosed or having close family and friends with diabetes (Echo Hawk Consulting, 2015). Participants viewed the disease process and suffering of their family and friends as a motivating factor for making healthier food choices. In this way, they were able to connect the role of food choices to their personal risk for unhealthy weight gain and the development of certain chronic diseases.

Physical activity and nutrition knowledge. An additional sub-theme regarding personal motivational factors was the identification of knowledge relating to physical activity and nutrition as a method of choosing healthier food options. Strategies for avoiding unhealthy foods

mentioned by a number of students included physical activity. In addition, several students also indicated awareness of the health or nutritional value of foods as a tool for choosing healthier foods.

> "Just hearing the life skills how bad the fat is and what they can do to you in the long term. If you drink too much of pop or eat too much candy. That's what helps me decide if I should eat candy or pop."
>
> "Well, I think working out has a big impact on what I eat too. Because if I eat, say, a tuna sandwich and a salad and work out afterwards, I feel perfectly fine. But say I had a big meal with like something really greasy and then go work out, I feel sick when I go work out"

Recognizing the value of nutrition knowledge as well as the role of physical activity for overall health is key to understanding the inclusion of these factors in education efforts. Making information relevant to learners is a key component of adult education. Efforts to improve health behaviors include nutrition and physical activity. If participants are putting value on their knowledge of these factors as a way to improve their behaviors, it reiterates the importance of including a physical activity component within nutrition education efforts targeted to AIAN tribal college students.

CHAPTER 5: DISCUSSION

The tribal nations represented in the Life Skills at a Tribal College class highlights the culturally-rich learning environment present in tribal colleges. Students at UTTC bring their tribal culture and values and learn alongside other representatives of tribal nations from across the United States. Many of the participants in the Life Skills at a Tribal College class had peers who were also single parents and had young children. Of the nine participants who completed the Life Skills at a Tribal College class, six had children and five of those were single parents. Our study demographics are similar to typical AIAN students in other learning environments but quite different than the average demographic in larger four-year institutions (Freeman & Fox, 2005; Hunt & Harrington, 2010). For example, demographic characteristics at the 1862 land grant university in North Dakota (NDSU) for fall of 2014 included 69.8% of the full-time student population between the ages of 18 and 21 (NDSU, 2014), compared to 38.5% of the total number of students enrolled and 11.1% of the students that completed the Life Skills at a Tribal College class. Life Skills at a Tribal College participants were primarily female (66.7%) while females represent 44.2% of the student population at NDSU (NDSU, 2014). Older than average students with children are less common as a demographic characteristic at larger, four-year institutions when compared to tribal college settings.

Self-Efficacy, Nutrition Knowledge, and Dietary Behaviors

General self-efficacy did not increase significantly over the course of the Life Skills at a Tribal College class. While participants met regularly throughout the semester (twice a week for 18 weeks), this could be a reflection of inadequate meetings, sporadic attendance, or lack of time spent on objectives addressing self-efficacy or discussing barriers. Non-significant changes in general self-efficacy may also have been impacted by the change from a 4-point scale (January 2014) to a 10-point scale (April 2014). In addition, while perception of capability for making

healthy choices improved in some participants, it was not consistent among all participants and not statistically significant. These results were different than expected as interventions that aim to increase self-efficacy as a means for behavior change have shown increases in confidence in choosing healthy foods (Condrasky, Quinn, & Cason, 2008; Poddar et al., 2010; Saksvig et al., 2005). Other research specific to AIAN has shown the positive impact of self-efficacy on food intentions and healthy food behaviors (Gittelsohn et al., 2006; Ho et al., 2008). The presence of other barriers to making healthy choices may have contributed to negligible changes in participant perception of their own capability. Also, the utilization of a measurement that evaluates general self-efficacy instead of self-efficacy for specific behaviors related to making healthy food choices may have impacted participant responses. Finally, some of the Life Skills at a Tribal College classes included a very small number of participants (n=1 during fall 2015) which could influence participant dialogue regarding barriers and strategies and contribute to challenges in detecting significant changes in participant responses.

Participant nutrition knowledge and attitudes did not change significantly over the duration of the Life Skills at a Tribal College class. This was not expected as intervention classes, especially those education interventions that aim to increase nutrition knowledge, typically reflect increased nutrition knowledge among participants (Contento, 2011; Johnson & Johnson, 1985). While this was unexpected based on course learning objectives for nutrition education, possessing knowledge and healthy food intentions does not always translate into actual behaviors (such as choosing healthy foods) (Ho et al., 2008; Poddar et al., 2010).

Dietary intake and behavior changes were measured using a food frequency questionnaire as well as a 24-hour diet recall. Both were completed at the beginning and the end of the Life Skills at a Tribal College class. Intake and behavior changes were inconsistent and ranged from

improved dietary patterns to an increase in unhealthy choices (such as fried meats, fruit-flavored drinks, and candy). Some participants decreased their intake of fruits and vegetables over the course of the semester. Three participants who decreased their fruit and vegetable intake lived on campus but not in the dorm so had increased access to food preparation equipment. These participants likely did not consume meals from the cafeteria (which offers a full salad bar with variety of fruits and vegetables) but instead procured their own fresh produce and other food which may have contributed to decreased intake of fruit and vegetables. These dietary patterns may also reflect other challenges students vocalized such as finances, transportation, and time. These factors often serve as barriers to healthy food intake (Brown et al., 2010; Kerpan, Humbert, & Henry, 2015). In addition, while the environment was structured and involved hands-on food preparation during the Life Skills at a Tribal College class, participants' environment was only changed two days per week for 18 weeks and interviews were for the 24-hours preceding a class meeting time.

While the mean scores from the food frequency questionnaire and verbal indication of food consumed reflect an increase in healthier food intake in the majority of participants, none met USDA dietary guidelines for fruits, vegetables, whole grains, and dairy. Inadequate dietary intake has been shown in other research specific to diet evaluation in AIAN (Berg et al., 2012; Bruner & Chad, 2014; Eilat-Adar et al., 2013; Harnack et al., 1999a; Thompson et al., 2009; Zephier et al., 1997). No intake of whole grains was reported and dairy intake was lacking among all participants at both the beginning and the end of the semester. Dairy intake is commonly restricted in AIAN as dairy foods were not included in traditional food patterns and AIAN are more likely to experience symptoms of lactose intolerance (National Institute of Health [NIH], 2014). In addition, research on dietary intake shows that intake is typically under-

reported using a single 24-hour recall with the use of three 24-hour diet recalls considered optimal for estimating energy intake (Yunsheng et al., 2010). Participants completed two 24-hour recalls and a FFQ at two different time points. However, small improvements in dietary patterns may reflect a positive response to the culturally-relevant curriculum. Education and interventions that are culturally-specific to AIAN and tribal communities have been shown to have significant impacts on dietary behaviors and health outcomes such as body weight and BMI (Gittelsohn, Kim, He, & Pardilla, 2013; Kattelmann, Conti, & Ren, 2009; Mead, Gittelsohn, Roache, Corriveau, & Sharma, 2012; Weaver & Jackson, 2010).

Dietary behaviors such as eating alone or eating in front of the TV were decreased over the duration of the Life Skills at a Tribal College class for the majority of participants. Almost all reported a decrease in TV watching during mealtimes or only reported watching "not very often" (less than 1x/week). TV watching during mealtimes is associated with increased caloric intake, lower diet quality, and lack of mindful eating habits (Braude & Stevenson, 2014; Feldman, Eisenberg, Neumark-Sztainer, & Story, 2007; Ogden et al., 2013).

At the conclusion of the Life Skills at a Tribal College class, more participants ranked the grocery store as their top source of procuring food. At the initiation of the course, other sources were identified including food distribution programs, gas stations, fast food, and personal gardens. The increased identification of grocery stores as the source of food may be reflective of improved awareness of the choices available at grocery stores or the fact that some rural reservation communities lack a grocery store and many community members rely on the food distribution program or gas stations for food access. Access to grocery stores, or supermarkets, is positively related to healthier diets including higher fruit and vegetable consumption and lower obesity rates (Holsten, 2009; Morland, Diez, & Wing, 2006; Morland, Wing, & Diez, 2002).

Barriers and Strategies for Healthy Food Choices

Sensory factors such as taste are often a primary determinant in making food choices (Bruner & Chad, 2014; Harnack et at., 1999a; Thompson, Manore, & Vaughan, 2014). This phenomenon was present among participants with taste a primary theme as both a barrier and strategy for healthy eating. Participants identified exposure to flavorful, healthful food had an impact on their perception of healthy foods. Involving participants in hands-on food preparation of healthy foods can be a primary strategy for influencing food choices and has been recommended by AIAN participants as a helpful strategy for making healthful diet choices (Condrasky et al., 2008; Cunningham-Sabo et al., 2008; Karanja, 2014; Krieger, 2013). As a barrier or a strategy to making healthy choices, taste should be considered as a significant factor in educational methods to address healthy eating.

Other barriers for making healthy food choices among participants included time, budget concerns, and transportation. Family dynamics also played a role in making healthy food choices. Many of our participants described non-traditional family environments including single parents, blended families, and grandparents as primary caregivers. These factors are all common barriers for healthy food choices, especially among AIAN and those with low socio-economic status (Cunningham-Sabo et al., 2008; Davis et al., 2012; Kerpan et al., 2015; Macartney et al., 2013). Especially for those who live in single parent homes, limited income poses a challenge (Freeman & Fox, 2005). It is also common among AIAN families to live and spend time inter-generationally where younger children are cared for by grandparents and extended family, including meal preparation and service (Cunningham-Sabo et al., 2008). Literature is rare that addresses how to overcome barriers related to extended family (particularly grandparents) caring for and providing meals for children and young families. However, some differences in food handling by grandparents have been indicated in regard to food safety (Garden-Robinson, 2006),

using food to regulate emotion, and restricting food (Farrow, 2014). Specific information on grandparent and extended family feeding practices in tribal communities has not been identified but could provide valuable insights for AIAN families and the promotion of healthy eating practices.

Few participants identified learning to cook or prepare/plan meals in their early years and continued to lack experience and participation in food preparation activities at family events. In addition, many indicated they rarely ate meals together as a "family meal". Family meals have been identified as a positive influence on dietary practices (Burgess-Champoux et al., 2009, Franko et al., 2008; Gillman et al., 2000; Neumark-Sztainer et al., 2003). Another common characteristic among participants was the lack of a positive role model for healthy food choices. This phenomenon has been observed among other AIAN (Brown et al., 2010). Lack of experience in food preparation and little exposure to healthy eating via role models are barriers for AIAN college students when attempting to make healthy food choices for themselves and their children, especially as they are emerging into adulthood. These characteristics are consistent with those identified among AIAN by others (Maxwell, 2001; Vermilion, 2012; Warne, 2006 & 2015).

The majority of participants had difficulty describing life skills or knowing for certain what defined healthy food choices. Uncertainty about healthy food choices or understanding the implication when consuming food throughout the day was evident through participant responses to questions about nutrition knowledge as well. Dietary intake was also inconsistent with several participants who reported trying to be healthier. Lack of knowledge of healthy food choices has been identified among AIAN in other studies (Cunningham-Sabo et al., 2008; Eckhardt et al., 2014; Harnack et al., 1999a, 1999b). In addition, the paradox of identifying healthier foods but

not consuming them has also been observed among other AIAN participants (Taylor et al., 2006). Little literature exists on life skills interventions relating to healthy food choices among AIAN. However, other culturally-relevant, community-based interventions among AIAN focused on life skills such as communication and problem-solving skills, recognition and elimination of self-destructive behavior, identification of emotions and stress, and setting goals have been effective in changing behaviors (LaFromboise & Lewis, 2008).

Strategies for making healthy food choices were not always easily identified by participants. Through qualitative investigation, participant responses alluded to a variety of strategies and skills utilized in making food choices. Although few participants specifically mentioned their personal cultural practices or traditions as strategies, many mentioned inherent AIAN traditions and cultural practices such as being a role model, passing information to others, learning from the "old ways", and being mindful of the next generation (Cajete, 1994; Juntunen et al., 2001; White Shield, 2009). While little literature exists that connects these traditional practices with healthy eating choices, there is evidence that finding strength in personal cultural identity can contribute to positive behaviors and self-efficacy among AIAN (Huffman, 2001; Juntunen et al., 2001; White Shield, 2009). Intake of traditional indigenous foods has also been associated with improved health outcomes such as lower BMI (Atikesse, Boucher de Grosbois, St-Jean, Penashue, & Benuen, 2010; Compher, 2006). Additionally, the inclusion of traditional culture and practices has been recommended by tribal elders as a strategy for educating AIAN youth about making healthy food choices (Brown et al., 2010; Echo Hawk Consulting, 2015).

The majority of participants also identified traditional learning styles and teaching strategies as positive and preferred aspects of their experience in a higher education learning environment. These traditional learning styles included small groups (or one-on-one with the

teacher) and hands-on experience to practice learned skills. The Life Skills at a Tribal College course incorporated strategies to include these traditional learning styles, a teaching model based on Cajete's Native Science model, and also had a grandmother-figure as the primary contact and instructor for participants. Methods of education that are inclusive of traditional ways of learning among AIAN have been recommended as strategies for learning and to promote healthy behaviors among AIAN (Cajete, 1994; Castagna & Brayboy, 2008; Gay, 2000; Hooker, 2011; Ingalls, Hammond, Dupous, & Baeza, 2006; Keith, 2016; Schanche-Hodge et al., 2002; Swisher, 1991).

Personal or individual factors such as knowledge and skills as well as motivation and goals play a role in dietary choices (Chen & Garmararian, 2014; Thompson, Manore, & Vaughan, 2014). In particular, those with higher motivation for regulating food intake (such as those who are trying to control their weight) consume healthier diets (Eertmans, Victor, Vansant, & van den Bergh, 2005; Glanz, Basil, Maibach, Goldberg & Snyder, 1998; Sproesser, Strohbach, Schupp, & Renner, 2011; Steptoe & Wardle, 1999). Participants in our study were often able to verbalize factors that influence their personal motivation including their own health, the impact of deteriorating health or health crises among family/friends, and the future well-being of their children. Concern for disease and the role of health in food choices have been identified as primary factors for healthy eating (Eikenberry & Smith, 2004; Steptoe, Pollard, & Wardle, 1995; Sun, 2008). Family has also been identified as a promoter or enabler for healthful eating (Eikenberry & Smith, 2004). In addition, participants identified the role of nutrition knowledge in making healthy choices. Lack of nutrition knowledge and personal motivation for healthy choices have been identified as challenges for healthy food consumption (such as fruit and vegetable intake) (Chen & Gazmararian, 2014; Eikenberry & Smith, 2004). Despite the lack of

improvement or change in nutrition knowledge among participants, the identification of nutrition knowledge as a strategy for making healthy food choices speaks to the value of nutrition education interventions that aim to improve nutrition knowledge.

College Retention

Enrollment in the Life Skills at a Tribal College course appeared to have limited influence on within-semester college retention for AIAN tribal college students. Enrolled students faced a variety of barriers including the primary barrier (and aim of recruitment) of under-preparation for the academic environment. All of the participants who completed the course lived in on-campus housing or dorms. Only four of all original participants (n=26) resided off-campus. Within-semester retention rates were similar or lower than overall retention rates at UTTC. These retention rates occurred despite the financial incentive offered to enrolled participants in the Life Skills at a Tribal College class. While AIAN students have cited financial concerns as reasons for attrition (Huffman, 2003; Hunt & Harrington, 2010; Keith, Stastny, & Brunt, in-press), financial incentive did not appear as a primary factor for retention. Also, students may have experienced a social stigma as participants in a class where recruited students were enrolled in preparatory coursework. However, we did not include a measure of why participants left the course (or the college environment) nor a measure of UTTC staff/faculty/student perception of the Life Skills at a Tribal College class so it is unclear what role financial incentive or social stigma may have played in student attrition.

For those participants who completed the Life Skills at a Tribal College course, semester-to-semester retention was improved. Three out of four semesters showed 100% retention of students that completed the class. Comparatively the retention rates at UTTC ranged from 57% to 76%. In addition, the semester-to-semester retention rate of Life Skills at a Tribal College participants was higher than those participants who did not complete the class. Semester-to-

semester retention of participants who did not complete the class ranged from 0% to 33%. This may be indicative of the support system created through the small group setting of the Life Skills at a Tribal College class as AIAN students have identified supportive instructors, staff, and peers as important factors for retention (Gloria & Robinson Kurpius, 2001; Guillory, 2009; Keith et al., in press; Thompson et al., 2013). The formation of peer groups to assist in dealing with challenges within the college environment has also been identified by AIAN students as a relevant factor for retention (Guillory, 2009). Life Skills at a Tribal College participants were a small group meeting regularly and working through learning objectives as a group.

Qualitative feedback from students indicated the value of being able to discuss a variety of issues and challenges (finances, parenting, relationships, as well as academics) with fellow participants. Lowe (2005) identified finding a place of belonging, incorporating students' cultural values and identity, and providing support for cultural practices as important for AIAN students. The Life Skills at a Tribal College participants and instructors, including the class leader (grandmother-figure), were a small group, utilizing the same space each week for the full semester as way to promote comfort and peer relationships among participants. In addition, efforts were made to create a comfortable, welcoming environment for participants which has also been identified as a factor in retention of AIAN students (Jackson et al., 2003).

The Life Skills at a Tribal College curriculum, including classroom activities and learning objectives were designed to promote cultural values and self-efficacy among participants. These key components were inclusive of the recommendations Lowe (2005) shared as a successful AIAN student. In addition, students that are able to identify and utilize personal strengths related to their cultural identity and values have been shown to have clear advantages for academic success and continued college enrollment (Huffman, 2001; White Shield, 2009).

Limitations

The Life Skills at a Tribal College class dynamics and research outcomes were influenced by the restriction of the number of enrolled participants. This was due to the nature of a face-to-face, hands-on curriculum involving food preparation and consumption. The intent was to recruit ten participants each semester. However, only one semester met this goal with the three other semesters enrolling five or less participants. In addition, the total number of students that completed the Life Skills at a Tribal College class (n=9) limited the statistical analysis possible as well as the power associated with any of the quantitative analysis attempted. However, the qualitative nature of some of the research goals provided valuable insights.

An additional limitation was the dietary analysis included in the study. Participants completed a 24-hour recall and a FFQ at the beginning and the end of the Life Skills at a Tribal College class. Despite the widespread use of 24-hour recalls for a snapshot of participant dietary intake, recommendations exist for the use of repeated 24-hour recalls to improve accuracy. Also, the FFQ only offered insight for a partial list, not comprehensive list of dietary intake. However, research goals included general analysis of participant dietary intake and behaviors, not individual micronutrient intake.

Finally, the participant questionnaire to measure self-efficacy included the general self-efficacy scale. Other, more specific, self-efficacy scales including those for academic self-efficacy and health and nutrition behavior self-efficacy may have offered more insight regarding participant self-efficacy for desired behaviors.

CHAPTER 6: CONCLUSIONS

American Indians and Alaska Natives experience negative health issues at disparate rates when compared to other ethnic groups. Some of these health issues are directly influenced by dietary intake and food patterns. In addition, AIAN students experience the lowest rates of college retention and graduation in the United States. They often face a variety of barriers to completing their education that may be similar to other ethnic groups while also overcoming obstacles that are culturally-specific. However, AIAN students bring personal and culturally-rich skills and attributes that provide strength and motivation to persevere in the face of those challenges.

The Life Skills at a Tribal College class, an educational intervention utilizing a culturally-relevant curriculum aiming to improve participant's general self-efficacy, healthy food choices, and college retention rates, had a positive impact on AIAN tribal college students. While general self-efficacy did not increase significantly, individual participant perception of their capability for making healthy choices improved. In addition, while dietary analysis reflected improved intake, none of the participants met USDA dietary guidelines dietary for any food group including whole grains (half of daily intake of 6 to 8 oz), fruit (1.5 to 2 cups), vegetables (2.5 to 3 cups), dairy (3 cups), and meat/beans (5.5 to 6 oz) (USDA, 2015). Whole grains and dairy foods were significantly lacking in reported dietary patterns among participants. Despite the lack of improvement in food group consumption or adherence to USDA dietary guidelines for Americans, certain food patterns were improved in participants including reduced intake of sugar sweetened beverages and improved fruit intake. Unhealthy eating behaviors such as eating in front of the TV decreased. Qualitative analysis revealed valuable insights into the barriers and strategies identified by AIAN students when making healthy food choices. Addressing self-efficacy and perception of capabilities regarding making healthy food choices can help AIAN

students feel more capable of success and impact the quality of their diet. However, challenges remain to improving dietary intake to meet recommendations among AIAN tribal college student participants.

Participants in the Life Skills at a Tribal College class, despite enrollment in a targeted educational intervention, did not improve within semester retention rates at a tribal college. However, semester-to-semester retention rates were significantly higher for those who completed the course compared to overall rates at the tribal college and compared to those that did not complete the Life Skills at a Tribal College class. Strategies to assist AIAN students with identifying personal strengths and achieving successful academic experiences should be the focus of current program planning and future research in institutions of higher education.

REFERENCES

American College Testing (ACT) (2004). *The role of academic and non-academic factors in improving college retention.* Iowa City, IA: Author.

ACT (2013). ACT profile report. Retrieved from http://www.act.org/newsroom/data/2013/pdf/profile/National2013.pdf

Adams, A., LaRowe, T., Cronin, K., Prince, R., Wubben, D., Parker, T., & Jobe, J. (2012). The Healthy Children, Strong Families intervention: Design and community participation. *Journal of Primary Prevention, 33,* 175-185.

American Diabetes Association (2013). Complications. Retrieved from http://www.diabetes.org/living-with-diabetes/complications/

American Indian College Fund (AICF). *Cultivating success: The critical value of American Indian scholarships and the positive impact of tribal college capital construction.* Denver, CO.: AICF, 2003.

American Indian College Fund (AICF) (2002). Graduate survey. Retrieved from http://www.collegefund.org/userfiles/file/CultivatingSuccess.pdf

Anderson, E., Winett, R., & Wojcik, J. (2007). Self-regulation, self-efficacy, outcome expectations, and social support: Social cognitive theory and nutrition behavior. *Annals of Behavioral Medicine, 34,* 304-312.

Archer, S., Greenlund, J., Valdez, R. et al. (2004). Differences in food habits and cardiovascular disease risk factors among Native Americans with and without diabetes: The Inter-Tribal Heart Project. *Public Health Nutrition, 7,* 1025-1032.

Arnett, J.J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist, 55,* 469-480.

Arnett, J. & Tanner, J. (2005).*Emerging adults in America: Coming of age in the 21st century.* Washington, DC: American Psychological Association Press.

Atikesse, L., Boucher de Grosbois, S., St-Jean, M., Penashue, B., & Benuen, M. (2010). Innu food consumption patterns: Traditional food and body mass index. *Canadian Journal of Dietetic Practice & Research, 71,* e41-e49.

Aud, S., Fox, M., & KewalRamani, A. (2010). Status and trends in the education of racial and ethnic groups (NCES 2010-015). U.S. Department of Educaiton, National Center for Educaiton Statistics. Washington, DC: U.S. Government Printing Office. Retrieved from http://nces.ed.gov/pubs2010/2010015.pdf.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavior change. *Psychological Review, 84,* 191-215.

Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist, 28,* 117-148.

Bandura, A. (1997). *Self-efficacy: The exercise of control.* New York, NY: Freeman.

Bandura, A., Pastorelli, C., Barbaranelli, C., & Caprara, G.V. (1999). Self-efficacy pathways to child depression. *Journal of Personality and Social Psychology, 76,* 258-269.

Bandura, A. & Locke, E.A. (2003). Negative self-efficacy and goal effects revisited. *Journal of Applied Psychology, 38,* 87-99.

Bandura, A. (2006). Guide for constructing self-efficacy scales. In Pajares & Urdan (Eds) *Self-efficacy beliefs of adolescence* (pp. 307-337). Charlotte, NC: Information Age Publishing.

Behavior Risk Factor Surveillance System (2009). Prevalence and trends data. Retrieved from http://apps.nccd.cdc.gov/brfss/display.asp?cat=FV&yr=2009&qkey=4415&state=ND

BRFSS (2013). Prevalence and trends data. Retrieved from http://www.cdc.gov/brfss/brfssprevalence/index.html.

Berg, C., Daley, C., Mzir, N., Kinlacheeny, J., Ashley, A., Ahluwalia, J., Greiner, K., & Choi, W. (2012). Physical activity and fruit and vegetable intake among American Indians. *Journal of Community Health, 37,* 65-71.

Bowman, B. (1994) Cultural diversity and academic achievement. Published 1994. Retrieved from http://eric.ed.gov/?id=ED382757.

Braude, L. & Stevenson, R. (2014). Watching television while eating increases energy intake: Examining the mechanisms in female participants. *Appetite, 76,* 9-16.

Braxton, J., Hirschy, A., & McClendon, S. (2004). *Understanding and reducing college student departure* (ASHEERIC Higher Education Report, 30(3)). San Francisco: Jossey-Bass.

Brown, B., Harris, K., Harris, J., Parker, M., Ricci, C., & Noonan, C. (2010). Translating the Diabetes Prevention Program for Northern Plains Indian youth through community-based participatory research methods. *Diabetes Education, 36,* 924-935.

Bruner, B. & Chad, K. (2014). Dietary practices and influences on diet intake among women in a Woodland Cree community. *Journal of Human Nutrition & Dietetics, 27,* 220-229.

Burgess-Champoux, T., Larson, N., Neumark-Sztainer, D. Hannah, P. & Story, M. (2009). Are family meal patterns associated with overall diet quality during the transition from early to middle adolescence. *Journal of Nutrition Education and Behavior, 41,* 79-86.

Cajete, G. (1994). *Look to the mountain: An ecology of indigenous education.* Durango, CO: Kivaki Press.

Cajete, G. (1999). *Native science: Natural laws of interdependence.* Santa Fe, NM: Clear Light Books.

Castagna, A. & Brayboy, B. (2008). Culturally response schooling for indigenous youth: A review of the literature. *Review of Educational Research, 78,* 941-993.

Calsoyas, K. (2006). Considerations in the educational process relative to Native Americans. *Cambridge Journal of Education, 35,* 301-310.

Center for Disease Control & Prevention (CDC) (2009a). Minority health surveillance – REACH U.S. 2009. Retrieved from http://www.cdc.gov/features/dsreachus/

CDC (2009b). Racial and ethnic differences in diagnosed diabetes. Retrieved from http://www.cdc.gov/diabetes/pubs/estimates11.htm#4

CDC (2011). Health disparities and inequalities report. Retrieved from http://www.cdc.gov/features/healthdisparitiesreport/pdf/chdir_executivesummary.pdf

CDC (2012). A look inside food deserts. Retrieved from http://www.cdc.gov/features/FoodDeserts/index.html.

CDC (2014). Age-adjusted rate per 100 of civilian, non-institutionalized population with diagnosed diabetes, by race, U.S., 1980-2011. http://www.cdc.gov/diabetes/statistics/prev/national/figbyrace.htm. Updated October 15, 2014. Accessed January 2015.

CDC (2015a). National Center for Chronic Disease Prevention and Health Promotion. Division of Population Health. Behavior Risk Factor Surveillance System [BRFSS] Prevalence and trends data. http://www.cdc.gov/brfss/brfssprevalence/. Updated June 23, 2015. Accessed July 21, 2015.

CDC (2015b). Nutrition for everyone. http://www.nutrition.gov/smart-nutrition-101. Updated July 14, 2015. Accessed September 2015.

CDC (2015c). Overweight and obesity. Retrieved from http://www.cdc.gov/obesity/data/adult.html. Updated June 16, 2015. Accessed July 20, 2015.

CDC (2015d). Childhood obesity rates. http://www.cdc.gov/obesity/data/childhood.html. Updated June 19, 2015. Accessed July 15, 2015.

Chen, D. & Garmararian, J. (2014). Impact of personal preference and motivation on fruit and vegetable consumption of WIC-participating mothers and children in Atlanta, GA. *Journal of Nutrition Education & Behavior, 42,* 62-67.

College Board Advocacy & Policy (2008). Poverty rates by household type and education level, 2008. Retrieved from http://trends.collegeboard.org/education-pays/figures-tables/poverty-rates-household-type-and-education-level-2008

Compher, C. (2006). The nutrition transition in American Indians. *Journal of Transcultural Nursing, 17,* 217-223.

Condrasky, M. & Hegler, M. (2010). How culinary nutrition can save the health of a nation. *Journal of Extension, 48,* 1-6. Retrieved from http://www.joe.org/joe/2010april/comm1.php

Condrasky, M., Quinn, A., & Cason, K. (2008). Cooking camp provides hands-on nutrition education opportunity. *Journal of Culinary Science & Technology, 5,* 37-52.

Contento, I. (2011). *Nutrition education: Linking research, theory, and practice.* 2nd ed. Jones & Bartlett: Sudbury, MA.

Consortium for Student Retention Data Exchange (2007). CSRDE reports. Retrieved from http://csrde.ou.edu/web/reports.html

Creswell, J. (2006). *Qualitative inquiry and research design: Choosing among five traditions* (2nd ed.). Thousand Oaks, CA: Sage.

Cunningham-Sabo, L., Bauer, M., Pareo, S., Phillips-Benally, S., Roanhorse, J., & Garcia, L. (2008). Qualitative investigation of factors contributing to effective nutrition education for Navajo families. *Maternal & Child Health Journal, 12,* s68-s75.

Daniels, S., Arnett, D., Eckel, R., Gidding, S., Hayman, L., Kumanyika, S., et al. (2005). Overweight in children and adolescents: Pathophysiology, consequences, prevention, and treatment. *Circulation, 111,* 1999-2012.

Davis, A., Befort, C., Steiger, K., Simpson, S., & Mijares, M. (2012). The nutrition needs of low-income families regarding living healthier lifestyles: Findings from a qualitative study. *Journal of Child Health Care, 17,* 53-61.

Deaton, A. (2002). Policy implications of the gradient of health and wealth. *Health Affairs, 21,* 13-30.

DeLong, A., Larson, N., Story, M., Neumark-Sztainer, D., Weber-Main, A., & Ireland, M. (2008). Factors associated with overweight among urban American Indian adolescents: Findings from project EAT. *Ethnicity & Disease, 18,* 317-323.

Dennis, J., Phinney, J., & Chuateco, L. (2005). The role of motivation, parental support, and peer support in the academic success of ethnic minority first-generation college students. *Journal of College Student Development, 46,* 223-236.

DeWitz, S., Woolsey, M., & Walsh, W. (2009). College student retention: An exploration of the relationship between self-efficacy beliefs and purpose in life among college students. *Journal of College Student Development, 50,* 19-34.

Dodd, J.M., Garcia, M., Meccage, C., & Nelson, J.R. (1995). American Indian student retention. *NASPA Journal, 33,* 72-78.

Donnelly, R., Renk, K., & McKinney, C. (2013). Emerging adults' stress and health: The role of parent behaviors and cognitions. *Child Psychiatry & Human Development, 44,* 19-38.

Drewnowski, A. & Specter, S. (2004). Poverty and obesity: The role of energy density and energy cost. *American Journal of Clinical Nutrition, 79,* 6-16.

Echo Hawk Consulting. (2015). *Feeding ourselves: Food access, healthy disparities, and the pathways to healthy Native American communities*. Longmont, CO: Echo Hawk Consulting.

Eckhardt, C., Lutz, T., Karanja, N., Jobe, J., Maupome, G., & Ritenbough, C. (2014). Knowledge, attitudes, and beliefs that can influence infant feeding practices in American Indian mothers. *Journal of the Academy of Nutrition & Dietetics, 114,* 1587-1593.

Eertmans, A., Victor, A., Vansant, C., & van den Bergh, O. (2005). Food-related personality traits, food choice motives, and food intake. Mediator and moderator relationships. *Food Quality & Preference, 16,* 714-726.

Eikenberry, N. & Smith, C. (2004). Healthful eating: Perceptions, motivations, barriers, and promoters in low-income Minnesota communities. *Journal of the American Dietetic Association, 104,* 1158-1161.

Eilat-Adar, S., Mete, M., Fretts, A., Fabsitz, R., Handeland, V., Lee, E., et al. (2013). Dietary patterns and their association with cardiovascular risk factors in a population undergoing lifestyle changes: The Strong Heart Study. *Nutrition, Metabolism, & Cardiovascular Diseases, 23,* 528-535.

Erickson, F. (1987). Transformation and school success: The politics and culture of educational achievement. *Anthropology and Education Quarterly, 18*(4), 335-356.

Farrow, C. (2014). A comparison between the feeding practices of parents and grandparents. *Eating Behaviors, 15*, 339-342.

Feldman, S., Eisenberg, M., Neumark-Sztainer, D., & Story, M. (2007). Associations between watching TV during family meals and dietary intake among adolescents. *Journal of Nutrition Education & Behavior, 39,* 257-263.

Fordyce-Voorham, S. (2011). Identification of essential food skills for skill-based healthful eating programs in secondary schools. *Journal of Nutrition Education and Behavior, 43,* 116-122.

Franko, D., Thompson, D., Affenito, S., Barton, B., & Striegel-Moore, R. (2008). What mediates the relationship between family meals and adolescent health issues. *Health Psychology, 27*, S109-117.

Freeman, C. & Fox, M. (2005). Status and trends in education of American Indians and Alaska Natives (NCES 2005-108). Washing ton, DC: U.S. Government Printing Office. Retrieved from http://nces.ed.gov/pubs2005/2005108.pdf

Garden-Robinson, J. (2006). Seniors and food safety when grandparents take care of grandchildren. Published 2006. Retrieved from http://library.nd.gov/statedocs/NDSUExtensionService/fn703-20100824.pdf

Gay, G. (2000). Culturally responsive teaching: Theory, research, and practice. New York, NY: Teachers College Press.

Gilliland, H. (1995). *Teaching the Native American.* 3rd ed. Dubuque, IA: Kendall Hunt.

Gillman, M.W., Rifas-Shiman, S.L., Frazier, A.L., Rockett, H.R.H., Camargo, C.A., Field, A.E…...Colditz, G.A. (2000). Family dinner and diet quality among older children and adolescents. *Archives of Family Medicine, 9,* 235-240.

Gittelsohn, J., Wolever, T., Harris, S. et al (1998). Specific patterns of food consumption and preparation are associated with diabetes and obesity in a native Canadian community. *Journal of Nutrition, 28,* 541-547.

Gittelsohn, J., Anliker, J., Sharma, S., Vastine, A., Caballero, B., & Ethelbah, B. (2006). Psychosocial determinants of food purchasing and preparation in American Indian households. *Journal of Nutrition Education & Behavior, 38,* 163-168.

Gittelsohn, J. & Sharma, S. (2009). Physical, consumer, and social aspects of measuring the food environment among diverse low-income populations. *American Journal of Preventive Medicine, 36,* S161-165.

Gittelsohn, J. & Rowan, M. (2011). Preventing diabetes and obesity in American Indian communities: the potential of environmental interventions. *American Journal of Clinical Nutrition, 93,* 1179S-1183S.

Gittelsohn, J., Kim, E., He, S., & Pardilla, M. (2013). A food-store based environmental intervention is associated with reduced BMI and improved psychosocial factors and food-related behaviors on the Navajo Nation. *Journal of Nutrition, 143,* 1494-1500.

Glanz, K., Basil, M., Maibach, E., Goldberg, J., & Snyder, D. (1998). Why Americans eat what they do. Taste, nutrition, cost, convenience, and weight control concerns as influences on food consumption. *Journal of the American Dietetic Association, 98,* 1118-1126.

Gloria, A. & Robinson Kurpius, S. (2001). Influences of self-beliefs, social support, and comfort in the university environment on the academic nonpersistence decisions of American Indian undergraduates. *Cultural Diversity and Ethnic Minority Psychology, 7,* 88-102.

Glynn, S. & Ruderman, A. (1986). The development and validation of an eating self-efficacy scale. *Cognitive Therapy and Research, 10,* 403-420.

Going, S., Thompson, J., Cano, S., Stewart, D., Stone, E., Harnack, L. et al. (2003). The effects of the pathways obesity prevention program on physical activity in American Indian children. *Preventive Medicine, 37,* s62-s69.

Guillory, R. (2009). American Indian/Alaska Native college student retention strategies. *Journal of Educational Development, 33,* 12-38.

Gunderson, C. (2008). Measuring the extent, depth, and severity of food insecurity: An application to American Indians in the USA. *Journal of Population Economics, 21,* 191-215.

Guthrie, J., Lin, B., & Frazao, E. (2002). Role of food prepared away from home in the American diet, 1977-87 versus 1994-96: Changes and consequences. *Journal of Nutrition Education & Behavior, 34,* 140-150.

Harnack, L., Story, M., & Holy Rock, B. (1999a). Diet and physical activity patterns of Lakota Indian adults. *Journal of the American Dietetic Association, 99,* 829-835.

Harnack, L, Story, M., Holy Rock, B., Neumark-Sztainer, D., Jeffery, R., & French, S. (1999b). Nutrition beliefs and weight loss practices of Lakota Indian adults. *Journal of Nutrition Education, 31,* 10-15.

Hatcher, J.L. & Scarpa, J. (2002). Encouraging teens to adopt a safe, healthy lifestyle: A foundation for improving future adult behaviors. *Trends Child Research Brief*. Washington, DC: Knight Foundation.

Hays, D. & Singh, A. (2012). *Qualitative inquiry in clinical and educational settings.* New York: The Guilford Press.

HeavyRunner, I., & DeCelles, R. (2002). Family education model: Meeting the student retention challenge. *Journal of American Indian Education, 41,* 29-37.

Hill, M. (1997). The diabetes epidemic in Indian country. *Winds of Change, American Indian Science & Engineering Quarterly, Summer,* 26-31.

Ho, L., Gittelsohn, J., Sharma, S., Cao, X., Treuth, M., Rimal, R.,…Harris, S. (2008). Food-related behavior, physical activity, and dietary intake in First Nations – a population at high risk for diabetes. *Ethnicity & Health, 13*, 335-349.

Hodge, F. & Nandy, K. (2011). Predictors of wellness and American Indians. *Journal of Health Care for the Poor and Underserved, 22,* 791-803.

Holsten, J. (2009). Obesity and the community food environment: A systematic review. *Public Health Nutrition, 12,* 397-405.

Hooker, D. (2011). Small, peer-led collaborative learning groups in developmental math classes at a tribal community college. *Multicultural Perspectives, 13,* 220-226.

Hoover, J. & Jacobs, C. (1992). A survey of American Indian college students: Perceptions toward their study skills/college life. *Journal of American Indian Education*. Retrieved from http://jaie.asu.edu/v32/V32S1sur.htm

House, J. (1992). The relationship between academic self-concept, achievement-related expectancies, and college attrition. *Journal of College Student Retention, 33,* 5-10.

Hunt, B. & Harrington, C. (2010). The impending educational crisis for American Indians: Higher education at the crossroads. *Indigenous Policy Journal, 21,* 1-13.

Huffman, T. (2001). Resistance theory and transculturation hypothesis as explanations of college attrition and persistence among culturally traditional American Indian students. *Journal of American Indian Education, 40,* 1-39.

Huffman, T. (2003). A comparison of personal assessments of the college experience among reservation and nonreservation American Indian students. *Journal of American Indian Education, 42,* 1-16.

Hymes, D. H. (1974). On ways of speaking. In P. Bauman & J Sherzer (Eds.), *Explorations in the ethnography of speaking* (pp. 433-451). New York: Cambridge University Press.

Ingalls, L., Hammond, H., Dupoux, E., Baeza, R. (Winter, 2006). Teachers' cultural knowledge and understanding of American Indian students and their families: Impact of culture on a child's learning. *Rural Special Education Quarterly, 25,1,* 16-24.

Jackson, A., Smith, S., & Hill, C. (2003). Academic persistence among Native American college students. *Journal of College Student Development, 44,* 548-565,

Johnson, D. & Johnson, R. (1985). Nutrition education: A model for effectiveness, a synthesis of research. *Journal of Nutrition Education, 17,* S1-S44.

Johnson, R. (2013, July 31). Grad rates low at ND, Minn, tribal colleges: Numbers don't reflect schools' contributions to local communities, administrators, and students say. *The Forum,* pp. A1, A8.

Juntunen, C., Barraclough, D., Broneck, C., Seibel, G., Winrow, S., & Morin, P. (2001). American Indian perspectives on the career journey. *Journal of Counseling Psychology, 48,* 274-285.

Karanja, D. (2014). Experiential cooking classes for underserved audiences empowers families with skills to make healthy and affordable meals. [Abstract]. *Journal of Nutrition Education & Behavior, 46,* S113-S114.

Kattelmann, K., Conti, K., & Ren, C. (2009). The Medicine Wheel Nutrition Intervention: A diabetes education study with the Cheyenne River Sioux tribe. *Journal of the American Dietetic Association, 109,* 1532-1539.

Kaufman, P., MacDonald, J., Lutz, S., & Smallwood, D. (1997). Do the poor pay more for food? Item selection and price differences affect low income household food costs. Washington, DC: US Department of Agriculture, 1997. Report no. 759.

Keith, J. (in press). Creating a multicultural classroom. *Tribal College Journal*.

Keith, J., Stastny, S., & Brunt, A. (in press). Barriers and strategies for success for American Indian college students. *Journal of College Student Development.*

Kerpan, S., Humbert, M., & Henry, C. (2015). Determinants of diet for urban Aboriginal youth: Implications for health promotion. *Health Promotion Practice, 16,* 392-400.

Kids Count Data Center (2012). Head Start enrollment by age group. Retrieved from http://datacenter.kidscount.org/data/tables/5938-head-start-enrollment-by-age-group#detailed/1/any/false/868,867,133,38,35/1830,558,559,1831,122/12570

Kingston, P., Hubbard, R., & Lapp, B. (2003). Why education matters. *Sociology of Education, 76,* 53-70.

Klempel, N., Kim, S., Wilson, M., & Annunziato, R. (2013). A measure of family eating habits: Initial psychometric properties using the profile pattern approach (PPA). *Eating Behaviors, 14,* 7-12.

Krieger, E. (2013). Bringing cooking back: Food and culinary expertise as a key to dietitians' future success. Presentation at the Food & Nutrition Convention & Expo, Houston, TX.

Krumrei-Mancuso, E., Newton, F., Kim, E., & Wilcox, D. (2013). Psychosocial factors predicting first-year college student success. *Journal of College Student Development, 54,* 247-266.

LaFromboise, T. & Lewis, H. (2008). The Zuni life skills development program: A school/community-based suicide prevention intervention. *Suicide and Life-Threatening Behavior, 28,* 343-353.

LaRowe, T., Wubben, D., Cronin, K., Vannatter, S., & Adams, A. (2007). Development of a culturally appropriate, home-based nutrition and physical activity curriculum for Wisconsin American Indian families. *Preventing Chronic Disease, 4,* 1-8.

Larson, N., Perry, C., Story, M., & Neumark-Sztainer, D. (2006). Food preparation by young adults is associated with better diet quality. *Journal of the American Dietetic Association, 106,* 2001-2007.

Lewin, K. (1948). *Resolving social conflict*. New York: Harper & Brothers Publishers.

Lichtenstein, A. & Ludwig, D. (2010). Bring back home economics education. *Journal of the American Medical Association, 303,* 1857-1858.

Light, H. & Martin, R. (1986). American Indian families. *Journal of American Indian Education,* 26, 1-5.

Lowe, S. (2005). This is who I am: Experiences of Native American students. *New Directions for Student Services, 109,* 33-40.

Lundberg, C., McIntire, D., & Creasman, C. (2008). Sources of social support and self-efficacy for adult students. *Journal of College Counseling, 11,* 58-72.

Luszczynska, A., Scholz, U., & Schwarzer, R. (2005). The general self-efficacy scale: Multicultural validation studies. *The Journal of Psychology, 139,* 439-457.

Macartney, S., Bishaw, A., & Fontenot, K. (2013). Poverty rates for selected detailed race and Hispanic groups by state and place: 2007-2011. Retrieved from http://www.census.gov/prod/2013pubs/acsbr11-17.pdf.

Manson, S.M., Beals, J., O'Nell, T., Piasecki, J., Bechtold, D., Keane, E., & Jones, M. (1996). Wounded spirits, ailing hearts: PTSD and related disorders among American Indians. In M.J.F.A.J. Marsella, E.T. Gerrity, & R.M. Scurfield (Eds.), *Ethnocultural aspects of post-traumatic stress disorder* (pp. 255-283). Washington, DC: American Psychological Association.

Martin, R. (2005). Serving American Indian students in tribal colleges: Lessons for mainstream colleges. In *New Directions for Student Services* (pp. 79-86). Wiley Periodicals, Inc.

Maxwell, D. (2001). Native American college students: A population that can no longer be ignored. *The Vermont Connection, 22.* Retrieved from http://www.uvm.edu/~vtconn/v22/maxwell.html

Mead, E., Gittelsohn, J., Roache, C., Corriveau, A., & Sharma, S. (2012). A community-based, environmental chronic disease prevention intervention to improve healthy eating psychosocial factors and behaviors in indigenous in the Canadian Arctic. *Health Education & Behavior, 40,* 592-602.

Morisano, D., Hirsh, J., Peterson, J., Pihl, R., & Shore, B. (2010). Setting, elaborating, and reflecting on personal goals improves academic performance. *Journal of Applied Psychology, 95,* 255-264.

Morland, K., Diez, A., & Wing, S. (2006). Supermarkets, other food stores, and obesity: The Atherosclerosis Risk in Communities Study. *Am Journal of Preventive Medicine, 30,* 333-339.

Morland, K., Wing, S., & Diez, A. (2002). The contextual effect of the local food environment on residents' diets: the Atherosclerosis Risk in Communities Study. *American Journal of Public Health, 92,* 1761-1767.

National Center for Educational Statistics (NCES) (2008). Status and trends in the education of American Indians and Alaska Natives: 2008. Retrieved from http://nces.ed.gov/pubs2008/nativetrends/ind_6_1.asp

NCES. (2011). Graduation rates. Published November 2011. Retrieved October 2013 from http://nces.ed.gov/programs/digest/d11/tables/dt11_345.asp.

NCES. (2013). Post-secondary institutions and cost of attendance in 2012-2013; degrees and other awards conferred, 2011-2012; and 12-month enrollment, 2011-2012. Published July 2013. Retrieved August 2015 from http://nces.ed.gov/pubs2013/2013289rev.pdf.

National Conference of State Legislatures (2013). Federal and state recognized tribes. Retrieved from http://www.ncsl.org/issues-research/tribal/list-of-federal-and-state-recognized-tribes.aspx

National Institute of Health [NIH]. Lactose intolerance. Published May, 2014. Updated June, 2014. Retrieved June, 2015 from http://www.niddk.nih.gov/health-information/health-topics/digestive-diseases/lactose-intolerance/Pages/facts.aspx#who

Nelson, S., Corbin, M., & Nickols-Richardson, S. (2013). A call for culinary skills education in childhood obesity-prevention interventions: Current status and peer influences. *Journal of the Academy of Nutrition & Dietetics, 113,* 1031-1036.

Neumark-Sztainer, D., Hannan, P., Story, M., Croll, J., & Perry, C. (2003). Family meal patterns: Associations with sociodemographic characteristics and improved dietary intake among adolescents. *Journal of the American Dietetic Association, 103,* 317-322.

Norris, T., Vines, P., & Hoeffel, E. (2012). The American Indian and Alaska Native Population: 2010. 2010 Census Briefs. Retrieved from http://www.census.gov/prod/cen2010/briefs/c2010br-10.pdf.

North Dakota State University [NDSU] (2014). Student demographics. Retrieved from https://www.ndsu.edu/data/enrollment/demographics/#c250183

Ogbu, J. (1985). Cultural-ecological influences on minority school leavers. *Language Arts, 62,* 860-869.

Ogden, J., Coop, N., Cousins, C., Crump, R., Field, L., Hughes, S., & Woodger, N. (2013). Distraction, the desire to eat, and food intake: Towards an expanded model of mindless eating. *Appetite, 62,* 119-126.

Okagaki, L., Helling, M., & Bingham, G. (2009). American Indian college students' ethnic identity and beliefs about education. *Journal of College Student Development, 50,* 157-176.

Poddar, K., Hosig, K., Anderson, E., Nickols-Richardson, S., & Duncan, S. (2010). Web-based nutrition education intervention improves self-efficacy and self-regulation related to increased dairy intake in college students. *Journal of the American Dietetic Association, 110,* 1723-1727.

RAIN (2008). Retaining American Indians Now. Retrieved from http://www.ou.edu/rain/

Ricci, C., Brown, B., Noonan, C., Harris, K., Dybdal, L., Parker, M., & Gress, S. (2012). Parental influence on obesity in North Plains American Indian youth. *Family & Community Health, 35,* 68-75.

Rindone, P. (1988). Achievement motivation and academic achievement of American Indian students. *Journal of American Indian Education, 28,* 1-7.

Robbins, S., Lauver, K., Le, H., Davis, D., Langley, R., & Carlstrom, A. (2004). Do psychosocial and study skill factors predict college outcomes? A meta-analysis. *Psychological Bulletin, 130*, 261-288.

Rodriguez, L., Schwartz, S., & Whitborne, S. (2010). American identity revisited: The relation between national, ethnic, and personal identity in a multiethnic sample of emerging adults. *Journal of Adolescent Research, 25,* 324-349.

Saksvig, B., Gittelsohn, J., Harris, S., Hanley, A., Valente, T., & Zinman, B. (2005). A pilot school-based healthy eating and physical activity intervention improves diet, food knowledge, and self-efficacy for Native Canadian children. *The Journal of Nutrition, 135,* 2392-2398.

Schanche Hodge, F., Pasqua, A., Marquez, C., & Geishirt-Cantrell, B. (2002). Utilizing traditional storytelling to promote wellness in American Indian communities. *Journal of Transcultural Nursing, 13,* 6-11.

Schwarzer, R., & Jerusalem, M. (1995). Generalized Self-Efficacy scale. In J. Weinman, S. Wright, & M. Johnston, *Measures in health psychology: A user's portfolio. Causal and control beliefs* (pp. 35-37). Windsor, UK: NFER-NELSON.

Schwarzer, R., & Fuchs, R. (1996). Self-efficacy and health behaviors. In M. Conner & P. Norman (Eds.), *Predicting health behavior: Research and practice with social cognition models.* (pp. 163-196) Buckingham, UK: Open University Press.

Sharma, S., Dortch, K., Byrd-Williams, C., Truxillio, J., Rahman, G., Bonsu, P., & Hoelscher, D. (2013). Nutrition-related knowledge, attitudes, and dietary behaviors among head start teachers in Texas: A cross-sectional study. *Journal of the Academy of Nutrition & Dietetics, 113,* 558-562.

Sproesser, G., Strohbach, S., Schupp, H., & Renner, B. (2011). Candy or apple? How self-control resources and motives impact dietary healthiness in women. *Appetite, 56,* 784-787.

Stang, J. (2009). Improving health among American Indians through environmentally-focused nutrition interventions. *Journal of the American Dietetic Association, 109,* 1528-1531.

Steptoe, A., Pollard, T., & Wardle, J. (1995). Development of a measure of the motives underlying the selection of food. The food choice questionnaire. *Appetite, 25,* 267-284.

Steptoe, A. & Wardle, J. (1999). Motivational factors as mediators of socioeconomic variations in dietary intake patterns. *Psychology & Health, 14,* 391-402.

Sun, Y. (2008). Health concern, food choice motives, and attitudes toward healthy eating: The mediating role of food choice motives. *Appetite, 51,* 42-29.

Swisher, K. (1991). American Indian/Alaskan Native learning styles: Research and practice. (Report No. ED335175). Charleston, WV: Rural Education and Small Schools.

Taylor, C., Keim, K., Gilmore, A., Parker, S., & Delinder, J. (2006). Most commonly consumed foods and food perceptions in Native American women. *American Journal of Health Behavior, 30,* 613-625.

Thompson, F., McNeel, T., Dowling, E., Midthune, D., Morrissette, M., & Zeruto, C. (2009). Interrelationships of added sugar intake, socioeconomic status, and race/ethnicity in adults in the United States: National Health Interview Survey, 2005. *Journal of the American Dietetic Association, 109,* 1376-1383.

Thompson, M., Johnson-Jennings, M., & Nitzarim, R. (2013). Native American undergraduate students' persistence intentions: A psychosociocultural perspective. *Cultural Diversity and Ethnic Minority Psychology, 19,* 218-228.

Thompson, J., Manore, M., & Vaughan, L. (2014). *The science of nutrition. 3rd ed.* Glenview, IL: Pearson Education.

Tross, S., Harper, J., Osher, L., & Kneidinger, L. (2000). Not just the usual cast of characteristics: Using personality to predict college performance and retention. *Journal of College Student Development, 41,* 323-334.

Tseng, V. (2004). Family interdependence and academic adjustment in college: Youth from immigrant and U.S.-born families. *Child Development, 75,* 996-983.

U.S. Census Bureau (2006). American Community Survey Reports. Income, earnings, and poverty data from the 2006 American community survey. Retrieved from http://www.census.gov/prod/2006pubs/acs-02.pdf

U.S. Census Bureau (2010). Overview of race and Hispanic origin: 2010. Retrieved from http://www.census.gov/prod/cen2010/briefs/c2010br-02.pdf

U.S. Commission on Civil Rights (2004). Broken promises: Evaluating the Native American health care system. Retrieved from http://www.usccr.gov/pubs/nahealth/nabroken.pdf

U.S. Department of Agriculture (2015). My plate. Retrieved from http://www.choosemyplate.gov/MyPlate.

U.S. Department of Education (2008). *National Center for Education Statistics, Status and Trends in the Education of American Indians and Alaska Natives.* Alexandria, VA: ED Pubs.

U.S. Department of Education (2013). White house initiative on American Indian and Alaskan Native education: Tribal colleges and universities. Retrieved from http://www.ed.gov/edblogs/whiaiane/tribes-tcus/tribal-colleges-and-universities/

U.S. Department of the Interior, Office of the Secretary, Office of the Assistant Secretary – Indian Affairs (2014). 2013 American Indian Population and Labor Force Report. Retrieved from http://www.bia.gov/cs/groups/public/documents/text/idc1-024782.pdf

Varcoe, C., Botoroff, J., Carey, J., Sullivan, D., & Williams, W. (2010). Wisdom and influence of elders: Possibilities of health promotion and decreasing tobacco exposure in First Nations communities. *Canadian Journal of Public Health, 101,* 154-158.

Vermillion, L. (2012, November). *Native American students and higher education*. Presentation at the pedagogical luncheon for North Dakota State University faculty, Fargo, ND.

Warne, D. (2015, May). *Impact of historical trauma on American Indian health disparities.* Presentation at the Working in Native Directions (WIND) spring meeting for North Dakota State University students, staff, and faculty, Fargo, ND.

Warne, D. (2006). Research and educational approaches to reducing health disparities among American Indians and Alaska Natives. *Journal of Transcultural Nursing, 17,* 266-271.

Weaver, HN (2002). Perspectives on wellness: Journeys on the red road. *Journal of Sociology & Social Welfare, 29,* 5-15.

Weaver, H. & Jackson, K. (2010). Healthy living in two worlds: Testing a wellness curriculum for urban Native youth. *Child Adolescent Social Work Journal, 27,* 231-244.

Wells, R. N. (1989). *A survey of American Indian students.* Retrieved from http://search.proquest.com/docview/63026150?accountid=6766

White Shield, R. (2009). Identifying and understanding indigenous cultural and spiritual strengths in the higher education experiences of indigenous women. Wicazo Sa Review, 24, 47-63.

World Health Organization (2013). Obesity and overweight. Retrieved from http://www.who.int/mediacentre/factsheets/fs311/en/

Yungsheng, M., Olendzki, B., Pagoto, S., Hurley, T., Magner, R., Ockene, I.,…Schnelder, K. (2010). Number of 24-hour recalls needed to estimate energy intake. *Annals of Epidemiology, 19,* 553-559.

Yosso, T. (2005). Whose culture has capital? A critical race theory discussion of community cultural wealth. *Race Ethnicity & Education, 8,* 69-91.

Zephier, E., Ballew, C., Mokdad, A., Mendlein, J., Smith, C., Yeh, J., Lee, E., Welty, T., & Howard, B. (1997). Intake of nutrients related to cardiovascular disease risk among three groups of American Indians: The strong heart dietary study. *Preventive Medicine, 26,* 508-515.

Zephier, E., Himes, J., & Story, M. (1999). Prevalence of overweight and obesity in American Indian school children and adolescents in the Aberdeen area: a population study. *International Journal of Obesity, 23* (Suppl 2): S28-30.

Zephier, E., Himes, J., Story, M., & Zhou, X. (2006). Increasing prevalence of overweight and obesity in Northern Plains American Indian children. *Archives of Pediatric & Adolescent Medicine, 160,* 34-39.

Zimmerman, B.J., Bandura, A., & Martinez-Pons, M. (1992). Self-motivation for academic attainment: The role of self-efficacy beliefs and personal goal-setting. *American Education Research Journal, 29,* 663-676.

APPENDIX A: IRB APPROVAL

NDSU NORTH DAKOTA STATE UNIVERSITY

Institutional Review Board
Office of the Vice President for Research, Creative Activities and Technology Transfer
NDSU Dept. 4000
1735 NDSU Research Park Drive
Research 1, P.O. Box 6050
Fargo, ND 58108-6050

701.231.8995
Fax 701.231.8098
Federalwide Assurance #FWA00002439

February 20, 2013

Sherri Stastny
Department of Health, Nutrition & Exercise Science
351 EML

IRB Approval of Protocol **#HS13123**, "**Life skills at a tribal college**"
Co-investigator(s) and research team: **Ardith Brunt, Jill Keith**

Approval period: 2/20/2013 to 2/19/2014 **Continuing Review Report Due: 1/1/2014**

Research site(s): **United Tribes Technical College** Funding agency: **NIFA USDA**
Review Type: Expedited category # 7
IRB approval is based on original submission, with revised: signed protocol (received 2/20/2013).

Additional approval is required:

- prior to implementation of any proposed changes to the protocol (*Protocol Amendment Request Form*).
- for continuation of the project beyond the approval period (*Continuing Review/Completion Report Form).* A reminder is typically sent two months prior to the expiration date; timely submission of the report is your responsibility. To avoid a lapse in approval, suspension of recruitment, and/or data collection, a report must be received, and the protocol reviewed and approved prior to the expiration date.

A report is required for:

- any research-related injuries, adverse events, or other unanticipated problems involving risks to participants or others within 72 hours of known occurrence (*Report of Unanticipated Problem or Serious Adverse Event Form*).
- any significant new findings that may affect risks to participants.
- closure of the project (*Continuing Review/Completion Report Form*).

Research records are subject to random or directed audits at any time to verify compliance with IRB regulations and NDSU policies.

Thank you for cooperating with NDSU IRB procedures, and best wishes for a successful study.

Sincerely,
Kristy Shirley
Kristy Shirley, CIP
Research Compliance Administrator

APPENDIX B: INFORMED CONSENT

Informed Consent Documentation for UTTC Research Committee IRB Requirements

TITLE OF RESEARCH:	Life Skills at a Tribal College
IRB PROTOCOL:	
INVESTIGATOR:	Dr. Wanda Agnew, PhD Biological Science
	Colette Wolf, BS Horticulture
SPONSORS:	USDA TC Research - National Institute for Food and Agriculture

EXPLANATION OF PROCEDURES:

We are asking you to take part in a research study. This study is about life skills focusing on food gathering, food preparation, and food consumption and is offered by grandmother figures around a kitchen table. It might improve your feelings of value and belonging. The messages are about culture, traditional knowledge and the world today. USDA National Institute of Food and Agriculture (NIFA) will pay for the study. People who enter the study will be enrolled in college prep classes. All participants will be offered the same information. You will be asked to access your level of happiness, value, appreciation and belonging on campus, your home community and society in general; during and after the study in various ways. The study is related to Generational Trauma, which is diagnosed by effects that we know are difficult to measure, but commonly identified as being caused by food system and family interruptions over several generations. This study will include 30 participants enrolled in on-campus UTTC classes, during three different semesters.

If you enter the study, you will not be treated differently than other students, except you will attend 8 hours of group sessions, each week, during one semester. The study staff will interact with you as a student and attendance will be monitored. Various, consistent topics will be covered during the semester. Session activities include homework, preparing a meal and eating together with other group members. Other topics will focus on relationships, money management, personal health, spirituality, Tribal lands and legal issues. If you enter and complete the entire study, you will be in the study for up to 18 weeks, 8 hours each week.

Participant's Initials _____

If you qualify for the study, your evaluation and assessment responses and comments will be collected anonymously, using electronic or telephone survey tools. You will randomly be numbered as a participant using non-ordered numbers between 1 and 100. For data gathering purposes, in your presence,

you will be introduced to the research evaluators using that number rather than your name. You will not meet the evaluator and neither you nor the UTTC study leaders will have access to your individual study responses. All assessment data will be stored anonymously with an NDSU graduate student and her advisor for evaluation purposes. After data is gathered, students will be assigned a random name rather than using the random number in the report. Information from groups (group #1, group #2, group #3, randomly) will be stored together and compiled as aggregate data, but may be referred to by group. You will be able to request the aggregate data from the study leaders or UTTC Research Committee after the study is completed, in 2014. The unidentifiable data will be used as part of a published report, expected to be completed by 2016.

RISKS and DISCOMFORTS

You may have some uncomfortable or negative feelings during the study discussions. Study leaders are aware that there is potential for study participants to experience emotions requiring intervention during the study. Study leaders will offer you on and off campus resources and referral systems. You will be responsible for connecting with the resources or referral agency. There will be no tracking of these needs. But, private follow-up relating to the referral may be made, but will not be part of the research documentation or outcomes.

BENEFITS

You will receive a stipend for participating in the study. The stipend will be $7.00 per hour of attendance. Stipends will be distributed every two weeks. Stipends will become part of the educational lessons. You will be asked to participate in a saving system and track stipends and college expenses through a ledger, supporting everyday life skills focusing on math.

The life skills educational messages offered to you during the study will support self-appreciation and belonging. You will also be provided knowledge about prioritizing, studying, parenting, budgeting, food systems, relationships, home management and choosing a career and gaining employment. You will prepare and eat a free-of-charge light noon meal during each session of the study.

The study will reward you with a non-credit Certificate of Completion tracked through MyUTTC attendance system. The sessions will not impact your grades. The Certificate will be issued to you through UTTC's Department of Continuing Education, filed with UTTC Registrar's office and recorded on your transcript. Upon completion, you will to be awarded the signed frameable certificate worthy of mentioning in your professional resume.

Participant's Initials _____

ALTERNATIVES

There are other programs that may offer you parts of the Life Skills at a Tribal College curriculum. But, you will not be able to attend another program that is as inclusive, follow cultural specific educational styles, or intended to impact understanding of food way interruptions that caused Generational Trauma effects. The investigator or study leaders will discuss on-campus programs that support the curriculum.

CONFIDENTIALITY

Information obtained about you for this study will be kept confidential to the extent allowed by law. However, research information that identifies you may be shared with the UTTC Research Committee Institutional Review Board (IRB). This Committee is responsible for ensuring compliance with laws and regulations related to research in general. The National Institute for Food and Agriculture and the Office of Human Research Protection (OHRP) may also access the information, as they have the same obligations. The results of the study may be published for scientific purposes. These results could include your responses and opinions. However, your identity will never be given out or attached to responses or results.

All of your responses and comments will be kept confidential and you will never be asked to sign or provide your name to paper or electronic assessment or evaluation tools. Group discussions may be recorded through hand written notes or taped recording, but at no time will names or other identifiers be attached.

Monitors, auditors, the IRB for Human Use, and the regulatory authorities will be granted direct access to your original participation records for verification of attendance and/or project input without violating confidentiality.

REFUSAL or WITHDRAWAL without PENALTY

After ACT or ACT Work Keys college entrance exams, and during enrollment into classes, if you are identified to participate with preparatory college classes your Academic Advisor will ask you to enroll in the Life Skills at a Tribal College Certificate sessions. Whether or not you take part in the study is your choice. There will be no penalty if you decide not to be in the study. If you decide not to be in the study, you will not lose any benefits or respect you normally receive as an enrolled student at UTTC. You are free to withdraw from the study at any time. Your choice to leave the study will not affect your relationship with your Academic Advisor or others on the UTTC Campus. You may refuse to enroll, or withdraw after enrolling at any time before the study is over, with no effect on your class standing, grades, or job at UTTC. You will not be offered or receive special consideration if you take part in the study.

Participant initials _____

In addition, you may continue with the certificate program, even if you do not participate in the research study components.

You may be removed from the study without your consent if the sponsor ends the study, if the study is determined for any reason to require termination, if the study leaders determine it is not in the best interest of your health or well-being, or if you are not following study rules.

COST of PARTICIPATION

There will be no cost to you for facility use, printed materials, books, or educational food supplies used during the Life Skills at TC sessions. You will not be charged any fees by UTTC Registrar or Finance when awarded the non-credit Certificate of Completion.

PAYMENT for RESEARCH-RELATED INJURIES

UTTC has not been provided for any payment if you are harmed as a result of taking part in this research study. If such harm occurs, treatment will be provided. However, this treatment will not be provided free of charge.

SIGNIFICANT NEW FINDINGS

You will be told by study leaders if new information becomes available and might affect your choice to stay in the study

QUESTIONS

If you have questions, concerns, or complaints about the research study or a research-related mental, emotional, spiritual or physical injury including available treatments, please call Dr. Wanda Agnew. She will be glad to visit with you, answer your questions or guide you to programs or people who may have answers for you. Dr. Agnew's number is 701-255-3285 Ext 1234.

If you have questions about rights as a research participant, or concerns or complaints about the research, you may contact the UTTC Institutional Assessment Director, Dr. Stacie Iken at 701-255-3285 Ext. 1530. Regular hours for both Dr. Agnew and Dr. Iken are 8:00 am to 5:00 pm, CT, Monday through Friday.

LEGAL RIGHTS

You are NOT waiving any legal rights by signing this informed consent document.

Participant Initials _____

SIGNATURES

Your signature below indicates that you agree to participate in this study, Life Skills at a Tribal College. You will receive a copy of this document.

Signature of Participant Date

Signature of Principal Investigator Date

Signature of Witness Date

Reviewed By:

Signature UTTC IRB Representative Date

Verbal Script for Obtaining Informed Consent

As your Academic Advisor at UTTC, I want to tell you about a study we are offering our students. We are studying things that impacted food systems and Native American families..

Our study is called Life Skills at a Tribal College. You will take your preparatory math and English classes at the same times you may earn a certificate that involves gathering food, cooking food and eating together while we talk. The conversations will be about money management, study skills, cultural values and learning styles.

The sessions will be the entire semester, two days each week for 4 hours. There will be 10 students, mostly from your vocation. We will support each other and see if the sessions make your college life successful and help you in getting a job.

Would you like to read and hear more about the research study?

APPENDIX C: WRITTEN PARTICIPANT QUESTIONNAIRE

Age: _____ Tribal Affiliation: _____ Number of dependents: _____

Gender: Male Female **Single parent:** Yes No

First in family to attend college: Yes No

Living situation: On-campus dorms On-campus other housing Other

Off-campus apartment Off-campus house

Please rate the following statements and how they relate to you on a scale of 1 to 10 with 1=Not at all true and 10=exactly true.

1. I can always solve problems if I try hard enough.
   1 2 3 4 5 6 7 8 9 10
2. If someone tries to stop me, I can find a way to get what I want.
   1 2 3 4 5 6 7 8 9 10
3. It is easy for me to stick to my plans and accomplish my goals.
   1 2 3 4 5 6 7 8 9 10
4. I am sure I know what to do if something unexpected happens to me.
   1 2 3 4 5 6 7 8 9 10
5. Because I am smart I can figure things out when something unexpected happens.
   1 2 3 4 5 6 7 8 9 10
6. I can solve most problems if I really try.
   1 2 3 4 5 6 7 8 9 10
7. I can stay calm when I have a problem.
   1 2 3 4 5 6 7 8 9 10
8. When I have a problem, I can usually find more than one way to solve it.
   1 2 3 4 5 6 7 8 9 10
9. If I am in trouble, I can usually think of a way out.
   1 2 3 4 5 6 7 8 9 10
10. I can usually handle whatever comes my way.
    1 2 3 4 5 6 7 8 9 10
11. I spend time identifying long-range goals for myself.
    1 2 3 4 5 6 7 8 9 10
12. There are lots of things I can do if I want to.
    1 2 3 4 5 6 7 8 9 10

Please circle one answer for the following questions:

13. Which food group should be consumed most?
    a. Bread, cereal, rice
    b. Meat, poultry, beans
    c. Milk, cheese, yogurt
    d. Fruit

e. Vegetables
f. Fats, oils, sweets

14. Which food group should be consumed fewest?
    a. Bread, cereal, rice
    b. Meat, poultry, beans
    c. Milk, cheese, yogurt
    d. Fruit
    e. Vegetables
    f. Fats, oils, sweets
15. How many servings of fruits and vegetables should you eat per day?
    a. 2 c. 4 e. I don't know
    b. 3 d. At least 5

16. Which contains the most calories?
    a. 1 gram of protein
    b. 1 gram of fat
    c. 1 gram of carbohydrate
    d. I don't know

17. Learning the relationship between food and health is important
    Agree Disagree Neither
18. People who are overweight have a higher risk of health problems.
    Agree Disagree Neither
19. The foods I eat/drink are healthy so I do not need to change.
    Agree Disagree Neither

20. Yesterday, how many times did you:

a.	Eat vegetables	None	1	2	3	4	5 or more
b.	Eat fruit	None	1	2	3	4	5 or more
c.	Drink 100% fruit juice	None	1	2	3	4	5 or more
d.	Eat whole wheat bread	None	1	2	3	4	5 or more
e.	Eat fried meat	None	1	2	3	4	5 or more
f.	Eat French fries or chips	None	1	2	3	4	5 or more
g.	Eat frozen dessert	None	1	2	3	4	5 or more
h.	Eat a doughnut, cookie, brownie	None	1	2	3	4	5 or more
i.	Eat candy	None	1	2	3	4	5 or more
j.	Drink fruit flavored drink	None	1	2	3	4	5 or more
k.	Drink soda pop	None	1	2	3	4	5 or more
l.	Drink milk	None	1	2	3	4	5 or more
m.	Eat restaurant food	None	1	2	3	4	5 or more
n.	Eat a meal	None	1	2	3	4	5 or more

For the following questions, please answer on a scale of 1 to 4 with 1= never (at least not in the last month or so), 2= not very often (less than 1 time/week), 3= occasionally (1 time/week), 4= often (at least 2 times/week).

21. How often do you eat together with your family?
    1 2 3 4
22. How often do you eat alone?
    1 2 3 4
23. How often do you eat in front of the TV or computer?
    1 2 3 4
24. How often do you cook a meal for yourself or for others such as your family or children?
    1 2 3 4

Please rank the following with 1 being the least often and 6 being the most often.

25. I get the majority of my food from:
    a. Food Distribution program ___
    b. Gas station ___
    c. Fast food ___
    d. Restaurant ___
    e. Grocery store ___
    f. My own garden ___

Thank you for your willingness to share information about yourself. Your participation is appreciated!

APPENDIX D: TELEPHONE INTERVIEW SCRIPT

UTTC representative introduced Jill Keith, as Jill Keith, a graduate student. Participant is introduced as participant No. ____

Hello, my name is Jill Keith and I am a graduate student at NDSU. Congratulations on your acceptance and enrollment at United Tribes Technical College! I am calling to ask you a few questions that relate to your enrollment in the course "Life Skills at a Tribal College". Do you mind talking with me for a few minutes to answer some questions?

No. Discontinue interview.

Yes. OK. We are going to talk about your class, food, and nutrition. Please feel free to stop me and ask questions at any time. If you need me to repeat a question, I'm happy to do so.

Let's start.

1. On a scale of 1 to 10 with 1 being easy and 10 being difficult, how capable do you feel when making healthy food choices?
   1 2 3 4 5 6 7 8 9 10

   a. What part is easy?
   b. What part is a struggle?

2. Think about where you grew up and who prepared food in your family.
   Describe how your family made the meal, how they gathered, and how the person who prepared the meal decided what to prepare.

   Prompts:
   a. Family meals
   b. Food preparation

3. Is there any time of year or special events when your family has special traditions?

   If yes, tell me about them.
   Prompts:
   a. Is there food?
   b. Who prepares it
   c. How are you involved?

4. Do you feel you have had positive role models for food choices?
   a. Yes
   b. No
   c. Maybe
   If yes, who? Why is that person your role model?

5. Think about where you live now and your family eating habits. Think about yesterday. Thinking about after you woke up in the morning – what was the first thing you ate? About what time was that? What did you have next? About what time of the day was that? {Continue until the whole day is discussed}

   What made you choose the foods you did?

6. What things prevent you from making healthy food choices?

7. How could you deal with _____{things they mentioned as barriers}?

8. What are 2 or 3 things that would help you most in making healthy food choices?

9. Describe a time you learned something about making food choices that really stuck with you.

10. Where (or from whom) did you learn it?

11. When it comes to learning in a school environment, how would you prefer to learn?
    a. Large lecture hall
    b. Regular classroom
    c. Small group
    d. One-on-one with just the teacher
    e. Other

12. What do you think of when I say "life skills"?

13. How would healthy choices relate to life skills?

14. Now that you are in college, you may learn some "non-school" skills that could help you in life. Are there any skills you hope to learn while you are here?

Those are all the questions we have for you today. Thank you for your time. ☺