The Effect of fatalistic thinking on lifestyle choices: type-2 diabetes in Northern Plains Indian tribes of the United States

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The Effect of Fatalistic Thinking on Lifestyle Choices: Type-2 Diabetes in Northern Plains Indian Tribes of The United States

by

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B.S., University of Wyoming, 1990

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The Effect of Fatalistic Thinking On Lifestyle Choices: Type-2 Diabetes in Northern Plains Indian Tribes of The United States.

Director: Christine Fiore, Ph.D.

Non-insulin dependent diabetes mellitus (NIDDM), type-2 diabetes, is a health problem of epidemic proportion in Native American communities of the United States. Health problems associated with type-2 diabetes are, kidney failure, blindness, coronary problems, nerve cell damage, and even death. There is abundant research on the medical aspects of type-2 diabetes in Native American populations. This research has limitations. The majority of the research has been done within the Indian Tribes of the southwestern U.S. This research overlooks addressing the prevention of complications resulting from type-2 diabetes. Research conducted on the psychological factors in diabetes management unique to Native Americans is lacking.

This study will be conducted within a population of Northern Plains Indian Tribes of the U.S., the Eastern Shoshone and Northern Arapaho tribes of the Wind River Reservation. This study will examine lifestyle choices associated with complications of type-2 diabetes, diet, exercise, and smoking. This study will assess these lifestyle choices and their association with fatalistic thinking. The term fatalistic thinking is used to describe a thought pattern of one who believes that he/she can do nothing to prevent complications resulting from type-2 diabetes. Using the transtheoretical model of behavior change, readiness to adopt a healthy lifestyle will be assessed. Distrust is present in this population toward the U.S. Government and mainstream culture. This distrust is based on the hardships the two tribes have endured at the hands of the United States government and mainstream culture in the past 150 years. This distrust may result in a fatalistic belief toward a western medical approach to treat diabetes.

Research suggests that lifestyle changes such as a healthy diet, weight management, and increased exercise levels increase insulin sensitivity resulting in better glycemic control in type-2 diabetes.
ACKNOWLEDGMENTS

First I would like to thank the Eastern Shoshone and Northern Arapaho people as well as others of the Wind River Indian Reservation who participated in this project; without you this project would not have been possible. I would like to recognize and thank the Joint Business council of the Eastern Shoshone and Northern Arapaho Tribes as they provided not only the permission to do this study on the Wind River Reservation but also provided the financial support that made this project happen.

I would like to dedicate this Masters thesis project to my late 'Grandma' Josephine C. Calhoun. She left us in August, 1998, and is now home with the creator; she lived with type-2 diabetes for more than 20 years, it is my hope that this research and other research like it can make a difference in the lives of those like my 'Grandma Jo'.

To my family without whom I would not be here today: Dad, thank you for all you have done to support me in my educational and personal efforts including being the single subject for the pilot study on the fatalism questionnaire as it was being developed, and for encouraging me to get back up after I had fallen; Mom, thank you for teaching me to have patience, how to realize the importance of the greater good and to have "a little faith" as you have always done, especially when I have faced the difficulties of this project and others like it in my educational career and personal life; Tammy, thank you for believing in me and thank you for bringing that beautiful little lady, Courtney, into our lives; Tara I will never forget when I went away to college for the first time and you told your friends in your fourth grade class about your brother who was going to be a "Wyoming Cowboy", as well I thank you for bringing Anthony into our family; he is a treasure.

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I have learned an immense amount about research, people, diabetes, and a list of topics that could go on for as many pages as this paper is long. I again thank all of the above mentioned and look forward to working with many of you in the future on research in the area of type-2 diabetes. May we all further the cause of improving the success of Indian and non-Indian people alike in the struggles they may face with type-2 diabetes. I know my “Grandma Jo” is watching.
# TABLE OF CONTENTS

**CHAPTER 1: INTRODUCTION** ............................................. 1

Diabetes in Native Americans ........................................... 2

Cultural background/distrust:
Eastern Shoshone and Northern Arapaho tribes, Historical relations with the
U.S. Government/white culture and
current cultural beliefs related
to fatalistic thinking ............................................. 9

Objectives of this study ............................................. 24

Lifestyle choices .................................................. 26

Transthoeretical model of change ................................ 28

Hypothesis .......................................................... 34

**CHAPTER 2: METHOD** ............................................... 36

Subjects .......................................................... 36

Procedures ......................................................... 38

Measurements ...................................................... 41

**CHAPTER 3: RESULTS** ............................................. 45

Discussion ......................................................... 55

REFERENCES ...................................................... 71

APPENDIX A (Participation consent form) ....................... 75

APPENDIX B (Tables) ............................................... 77

APPENDIX C (Request for permission to Eastern Shoshone &
Northern Arapaho Tribes to do study) ............................ 88

APPENDIX D (Measures) ............................................ 93
INTRODUCTION

Non-insulin dependant diabetes mellitus (type-2 diabetes) is a disease that prevents the body from being able to break sugar down into usable energy for the body. This disease appears to evolve in stages. The first is insulin resistance, which leads to impaired glucose tolerance, and the second, which depends on insulin secretory failure, leads to worsening hyperglycemia and overt diabetes (Knowler et. al, 1993).

In Native American communities the mortality rate from type-2 diabetes is approximately four times the rate for whites and twice the rate for African Americans in the United States (Newman et. al, 1993). Prior to the 1930's there were no documented cases of type-2 diabetes in Native Americans (Ghodes, 1991). According to Bennet and Johnson (1992), Welty and Coulehan (1993), and Jackson (1995), prior to modern lifestyles there were no reports of type-2 diabetes or coronary heart disease in this population. In the 1940's the prevalence of Type-2 in Native Americans was similar to that of the general population of the U.S. (Knowler et. al, 1993). In the 1950's type-2 diabetes was beginning to become increasingly common in the Pima tribe of the southwestern U.S. (Knowler et. al, 1993). In the 1960's type-2 diabetes had become a major health problem in the Native American population in general. The initial

1

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reaction of the medical community however was that for some unknown reason type-2 diabetes was not causing the health problems in Native Americans that it was known to cause in the general population. Type-2 diabetes was considered a "benign chemical abnormality" in the Native American population (Ghodes, 1991). In the late 1960's and early 1970's the health complications such as retinopathy, amputations, renal failure, and a variety of others were becoming evident in the Native American population. It is now apparent that the persons in the Native American population who were initially diagnosed with type-2 in the 1940's and 1950's had not had the disease long enough to begin to suffer the complications that are associated with type-2 (Ghodes et., al 1993). Today these health complications from type-2 diabetes are prevalent in the Native American population (Ghodes et. al, 1993).

**Diabetes in Native American populations**

Native American populations have the highest rate of occurrence of type-2 diabetes of all races in the U.S., and the members of the Pima tribe of southwestern Arizona have the highest rate of any defined population in the world at the rate of 1 in 3 people being diagnosed with type-2 diabetes (Knowler et. al, 1993). The amount of research that has been done in Native American populations in the area of
effects and rates of occurrence of type-2 diabetes is substantial.

Exactly how and why this incidence of diabetes in epidemic proportion has occurred among this population is yet unknown. It has been hypothesized by some as being a result of a "Thrifty Gene" which may be present in Native Americans. This "Thrifty Gene Theory" states that Native Americans have undergone a dramatic lifestyle change within the last century (within two generations) and their bodies have not genetically adjusted to this dramatic change. In the days of nomadic lifestyles food was hunted and gathered requiring a high amount of physical effort. The food supply was not as constant and effortless to obtain as it is today. Also, the traditional foods were lower in fat, and overall caloric value.

This theory is based on the idea that a gene is present in the genetic makeup of Native Americans which allows fat to be stored in a very efficient manner. This gene may have historically allowed the Native American people to survive through times of little or no food supply. This theory further proposes that in today's world of a constant food supply which requires considerably less effort to obtain than in the past, this "thrifty gene" that was at one time a major asset has now become a major liability. In addition to the idea that this gene may result in a metabolism that
stores fat efficiently, there is a much higher fat content in the food eaten today by not only Native Americans but the entire U.S. population in general (Ravussin, 1993). A more consistent food supply that requires less physical effort to be obtained combined with the increased caloric and fat content of food in the diet has lead to an increase in obesity in many Native American populations (Knowler et. al, 1993; Ravussin, 1993).

Obesity is currently considered the leading risk factor in the onset of type-2 diabetes (Bennett & Johnson, 1992; Knowler et. al, 1993). The findings of Bogardus (1993) suggest that although type-2 diabetes is characterized by obesity which may lead to abnormal insulin secretion, insulin resistance, and excess hepatic glucose output, genetic components also play a distinct part in the onset of type-2 diabetes.

Insulin sensitivity can be increased with dietary changes that assist in weight management (Knowler et. al, 1993). The role of increased physical activity in preventing and controlling chronic diseases has been well documented. Control and prevention of coronary heart disease, hypertension, type-2 diabetes, obesity and improvement in mental health have all been clearly associated with physical exercise (Patrick et. al, 1994). Obesity exacerbates diabetes. Upper body fat distribution and body mass index contribute independently to the probability of developing
diabetes (Foreyt & Goodrick, 1995). Weight loss in obese people is associated with glycemic control. Decreased insulin secretion, increased hepatic glucose output and peripheral insulin resistance are affected positively by moderately low or very low calorie diets (Foreyt & Goodrick, 1995). Exercise has also shown to be beneficial to diabetic control and risk reduction. In adults with type-2 diabetes regular aerobic exercise is associated with decreased blood pressure and improvements in glycemic control. Strength training has also shown to be beneficial to those diagnosed with type-2 diabetes in improving insulin sensitivity and glucose tolerance (Foreyt & Goodrick, 1995).

The costs and problems that are associated with the treatment of diabetes related problems lend worthiness and social value to studies which may result in better prevention and/or treatment procedures in caring for the diabetic population. Diabetes is a very expensive disease to treat. The total cost estimate in 1993 for treating diabetes patients was in the range of $92-105 billion. It is estimated that in the U.S. population one in every seven health care dollars is spent on diabetes. The rate of health care dollars spent on diabetes is 3.6 times higher than that of non-diabetic health care (Acton, 1995). The question of what to do with the patients who already have type-2
diabetes or how to (if possible) prevent new cases is only recently starting to be researched (Ghodes, 1993).

In a study by Gittelson et. al, (1995) qualitative and quantitative data were used together to develop a diabetes intervention program in an Ojibwa-Cree community in Northern Ontario. This study was in response to what the authors saw as a lack of efforts toward diabetes prevention efforts. It was noted that much research has focused on the pathogenesis and management of the disease. An approach oriented toward prevention of the disease or prevention of its complications was lacking. Results from a variety of qualitative data and quantitative data gathered in the research community were then presented to the community. Both community members and investigators who had gathered the data generated intervention ideas. An intervention strategy using that process was developed.

The two focal areas of intervention that were presented as a result of this effort were as follows: children’s consumption of fat and “added fat” consumption by adults were very high and needed to be decreased (Gittelson et. al, 1995). The rates of type-2 diabetes in the community were estimated to be 16% of the population over the age of ten, with another 10% having impaired glucose tolerance. The overall intervention strategy included a community based component, including interventions at the local grocery...
store and schools as well as a community education/media campaign. Results from this intervention effort are not yet available addressing whether or not actual health outcomes have been affected. This type of research intervention effort will increase our knowledge as to the effectiveness of prevention efforts directed at dietary changes, specifically within a community of Northern Native Americans. It seems likely that Gitteloson et. al, 1995, will generate results which will further support the idea that type-2 diabetes and its health complications can be prevented or delayed.

Improvements in current prevention and treatment efforts as well as developing new efforts are worthy goals yet to be attained. Primary prevention efforts for diabetes have been consistently identified as the number one priority in the majority of literature concerning the problem of unusually high incidence of type-2 diabetes among Native American populations (Gitteloson et. al, 1995; Ghodes et. al, 1993; Ghodes & Bennett, 1993; Johnson & Strauss, 1993; Knowler et. al,; Kuller, 1993;). The majority of research that has been done in the Native American population has been done in the southwestern U.S. with tribes such as the Pima, the Dine' (Navajo), the Salt River Apache and various others (Acton, et. al, 1993; Stahn, et. al, 1993)
The northern plains tribes of the Wyoming/Montana area, although not as heavily researched as the southwestern tribes, have also been shown to have extremely high rates of diabetes when compared to the other ethnic groups in the U.S. Acton et. al, (1993) reported the rate of type-2 diabetes to be 119 cases per 1,000 patients from the tribes of Wyoming and Montana, who receive regular medical care from the Indian Health Service (IHS). Although these authors reported that the rates of diagnosed diabetes were likely underestimated due to the fact that no systematic screening process has been in place, the prevalence rate that they found was still 3.6 times that of the general population of the U.S. Ghodes (1993) estimated the prevalence rate of type-2 diabetes at Wind River specifically to be 125 per 1,000 cases, slightly higher than the mean rate reported by Acton et. al in 1993 for all tribes in the Billings area IHS. Among other northern plains tribes, Stahn et. al, (1993) reported the prevalence rates of type-2 diabetes in the Winnebago and Omaha tribes of North Dakota and Nebraska to be 8.8 times the rates of the general population of the U.S. When examining the prevalence rates among the Sioux tribes of South Dakota and a prevalence rate was found which is 3.7 times higher than that of the U.S. general population.
Clearly, Native Americans are facing a serious health problem that is having a significant impact on their current and future well being. Research is needed which will further our current understanding concerning prevention of type-2 diabetes and its complications in Native American populations as well as the general United States (U.S.) population. (Ghodes, 1993). Currently, there are no research data on the two Wind River Reservation Indian Tribes for specific intervention or prevention approaches in dealing with the behavioral management aspect of type-2 diabetes. Examining the tribal history, and cultural values may help to determine a direction in which to proceed with such research.

**Eastern Shoshone & Northern Arapaho Tribes; Historical relations with the U.S. Government/White culture and current cultural beliefs related to fatalistic thinking.**

The Wind River Indian Reservation is located in west central Wyoming, stretching across two Wyoming counties, Fremont and Hot Springs. The two tribes that reside on the Wind River Indian Reservation are the Eastern Shoshone and the Northern Arapaho. Both tribes are recognized by the federal government of the United States as Sovereign nations. Both the Eastern Shoshone and Northern Arapaho lived nomadic lifestyles historically, but today do not live
such lifestyles. These tribes may be yet another group to support the "thrifty gene theory" of the onset of type-2 diabetes.

According to the Bureau of Indian Affairs (BIA) of the U.S. government, there are 6,000 enrolled members of the Northern Arapaho tribe and 3,025 enrolled members of the Eastern Shoshone tribe (BIA census, Nov. 1996). The total population of the Wind River Reservation includes 1,100 enrolled members of other tribes of the U.S., and 1,000 residents who are non-Indians (BIA census, 1996).

The Eastern Shoshone tribe is one of many bands of Shoshone Indians that were at one time located in various areas of the Rocky Mountains and Plains stretching across what is today California, Nevada, Utah, Idaho, and Wyoming. They are believed to have been in these areas as early as the 1500's (Flynn, 1991; Trenholm & Carley, 1964). The Shoshone Indians are known historically to have been relatively peaceful, especially to the white man. Although the Shoshones were known for their peacefulness, they were known to be a feared enemy when their lands were encroached upon by other tribes and non-Indians in competition for resources such as land and game. The Shoshones' acquisition of horses lead to them being known as "fearsome foe to encounter in battle due to their superb horsemanship" (Flynn, 1991; Trenholm & Carley, 1964). The modern day
Eastern Shoshone of the Wind River Indian Reservation still pride themselves on raising horses and consider themselves to have outstanding horsemanship.

The Shoshone had two main societies of men in the early days, the Yellow Noses and the Logs. The Yellow Noses were the warrior society. The Logs were responsible for protecting the women and children in the camps and for taking care of the daily camp duties such as maintenance of tribal lodges and other such responsibilities (Flynn, 1991; Trenholm & Carley, 1964). The Shoshone did not have a formal age grading system that was followed to advance in either of these societies. However, the elders of the tribe were paid the highest respect and were highly regarded due to the wisdom they had gathered over the years (Flynn, 1991, Trenholm & Carley, 1964). Long gone are the days of these two Shoshone societies having to be being responsible for daily camp and warrior duties. However, the Eastern Shoshone still honor and respect the tribal elders, holding them in the highest regard, due to their wisdom gathered over many years.

Tribal governments were highly fragmented in the days prior to Euro-American invasion of the plains. Indian tribes, as we know them today, actually consisted of many smaller bands which were not centrally located but rather scattered out over vast areas. The only time entire tribes
or large bands would come together was seasonally, for purposes such as hunting or ceremonial gatherings. The Shoshone were no exception to this, as they too were scattered in many small bands and came together seasonally for hunting and ceremonial gatherings. The arrival of European traders, along with the U.S. government and its great westward expansion, changed all of this. In the mid 1800's the U.S. government requested that Indian tribes band together and appoint "chiefs" to act as spokesmen in dealings with the government (Flynn, 1991). This forced the bands into living together year-round and created unique problems that the Shoshone had never had to deal with in their nomadic past.

Chief Washakie was the Shoshone chief for nearly 60 years, from the early 1840's until his death in 1900. In spite of his reputation as an ally and friend of the white man, Washakie eventually expressed resentment and frustration toward the "white mans government". In 1868 the government drastically reduced the initial "Shoshone Territory" from the approximately 45 million acres it had outlined in the first Fort Bridger treaty of 1863 to approximately 4 million acres. The initial 1863 treaty outlined Shoshone territory to include parts of Colorado, Utah, Idaho and Wyoming. The 1868 treaty established what was known at the time as the "Shoshone Indian Reservation"
located in west central Wyoming. Washakie delivered the following words at the signing of the 1868 treaty:

"I am laughing because I am happy. Because my heart is good. As I said two days ago, I like the country you mentioned, then for us, the Wind River valley. Now I see my friends are around me and it is pleasant to meet them and shake hands with them. I always find friends along the road in this country about Bridger, that is why I come here. It is good to have the railroad through this country and I have come down to see it. When we want to grow something to eat and to hunt I want the Wind River Country. In other Indian countries, there is danger, here it is safe for all to travel. When the white man came into my country and cut the wood and made the roads my heart was good and I was satisfied. You have heard what I want, the Wind River Country is the one for me. We may not for one, two or three years be able to till the ground. The Sioux may trouble us. But when the Sioux are taken care of we can do well. Will the whites be allowed to build houses on our Reservation? I do not object to traders coming among us, and care nothing about the miners and mining country where they are getting out gold. I may bye and bye get some of that myself.

I want for my home, the valley of the Wind River and lands on its tributaries, as far east as the Popo-Agie and want the privilege of going over the mountain to hunt where I please."

Even after the amount of land was drastically reduced in 1868 from the amount outlined in 1863, Washakie still had a great amount of trust in the U.S. government. However, in ten short years, Chief Washakie watched the government as it did not hold its promises, and against his wishes, placed the Northern Arapaho Tribe in his Wind River Country. In 1878, ten years after delivering the above address Washakie delivered this address to government officials regarding the 1868 treaty:
"The white man's government promised that if we, the Shoshones, would be content with the little patch allowed us, it would keep us well supplied with everything necessary to comfortable living and would see that no white man should cross our borders for game or for anything that is ours. But it has not kept its word! The white man kills our game, captures our furs and sometimes feeds his herds upon our meadows. And your great and mighty government...does not protect us in our rights. It leaves us without the promised seed, without tools for cultivating the land, without implements for harvesting our crops, without breeding animals better than ours, without the food we still lack..., without the many comforts we can not produce, without the schools we so much need for our children.

I again say the government does not keep its word, and so after all we can get, by cultivating the land and by hunting and fishing, we are sometimes nearly starved and go half naked as you see us! Knowing all this, do you wonder, sir, that we have fits of desperation and think to be avenged?" (Trenholm & Carley, 1964)

Washakie, chief of the Shoshones for nearly 60 years and friend to the white man and white government during that time came to a point where he no longer trusted the white government and its promises. This time in Shoshone history may be associated with the onset of distrust and fatalistic thinking regarding the future for the Shoshone people. This however was not the only betrayal that the Shoshone Tribe has endured at the hands of the U.S. government in the last century. As mentioned before in 1878 the U.S. government placed the Northern Arapaho tribe on what was known as the Shoshone Reservation at that time. The Shoshones were told that this was only temporary and that the Northern Arapaho would be moved in the spring of 1879. This move of the Northern Arapaho that was promised never occurred.
In 1927 the Shoshone tribe sued the United States for giving the Northern Arapaho tribe a portion of their reservation without any type of permission or compensation. After 12 long years of litigation the Shoshone tribe won a 4.5 million dollar settlement (termed the Tunnison Award) from the U.S. government (Trenholm & Carley, 1964). In 1939 the Northern Arapaho tribe became permanent residents of the Shoshone reservation as part of this settlement. The name of the Shoshone Reservation was officially changed to the Wind River Indian Reservation. Ironically, the U.S. government deducted from that 4.5 million dollar settlement the incurred costs of operating the Shoshone Reservation from 1868 to 1939. Livestock and rations that had been part of the 1868 treaty, such as cattle, agricultural seed and tools, were now being deducted from the settlement that was intended to right the wrong doing of the U.S. government to the Shoshone tribe. In addition, Washakie had previously been given a silver lined saddle by President Ulysses S. Grant. The saddle had been given to Washakie in honor of his willingness to cooperate with the U.S. government. As part of the settlement of 1939, the Shoshone tribe was actually charged for the cost of that saddle, which was given to Washakie as a gift in honor of his service to the U.S. Government (Trenholm & Carley 1964).
The Northern Arapaho Tribe that is currently on the Wind River Reservation is the main tribe of the Arapaho. The Southern Arapaho and the Gros Ventre are derived from this main group of Arapaho Indians. The first recorded histories place them originating around the area of northern Minnesota, close to what is now the Canadian border (Flynn, 1991). Sometime during the 1600's the tribe migrated south and west. The Northern Arapaho were scattered throughout parts of South Dakota, Wyoming, and Colorado by the 1800's (Flynn, 1991). It is believed that around the mid 1800's the Northern and Southern Arapaho had split into two geographically separated groups. Within the Arapaho tribe there were several bands. Membership in these bands was primarily based on family and geography. Movement within the bands was flexible and freely allowed.

The achievement of being granted status or power within the tribe was based primarily on age categories. The Arapaho believe that youth, the first stage of life, could last as long as until age 40, or until a person demonstrated adequate wisdom and status in the tribe (Flynn, 1991). There were seven men's ceremonial lodges, each one representing attainment of a higher status in the tribe. Tribal chiefs were usually selected from men in the later lodges, such as the sixth level or Dog Lodge (Fowler, 1989). These men were generally in their late 40's and 50's or in the "third hill
of life" (Fowler, 1989). The highest status and authority was reserved for the oldest men and women in the tribe. These people were regarded as the ceremonial leaders and they were authorized to perform religious and ceremonial rituals for the tribe. Religious and ceremonial rituals performed by the elders helped the tribe achieve cohesion, with the elders serving as intermediaries between the Creator and the Arapaho people (Fowler, 1989).

Age grading and other ceremonial rights among the Arapaho were important symbolic rituals which defined and legitimized authority, bringing order to Arapaho political life. These ceremonials and rituals augmented tribal government. They provided an atmosphere of common purpose and a value system which emphasized decisions by consensus and respect for the wisdom of elders (Flynn, 1991). In the mid-19th century, however, the spiritual beliefs of the Arapaho would come under assault as intruders entered their territory and altered forever the world as the Arapaho knew it (Fowler, 1989).

Chief Black Coal became the principal chief of the Arapaho in the spring of 1872 (Flynn, 1991). Although not known as friendly to the U.S. government in the same respect was as Washakie of the Shoshone, Black Coal, whom was a distinguished warrior at a young age, did serve as a military scout for the U.S. government. Black Coal assisted
in the roundup of Sioux and Northern Cheyenne by General Crook and his forces in 1876. This service was to be in exchange for a reservation near the Tongue River in northern Wyoming promised to Black Coal by General Crook. This promise died when General Crook died.

The Tongue River Reservation was never granted to the Arapaho. In 1878, Black Coal's people and many other Arapahos were placed on what was at that time the Shoshone Reservation. The Arapaho tribe, much like the Shoshone, consisted of several bands who would come together seasonally for hunting and ceremonies. This was to be a temporary placement until the Arapaho could be moved to a reservation that had been promised to them in southern Wyoming and northern Colorado extending eastward to Nebraska and south to Kansas. This move never occurred: this reservation, like the one in northern Wyoming that was promised to the Arapaho, was never granted. This reservation, however, had actually been part of an agreement that the Arapaho had signed in 1851 during the signing of the first Fort Bridger treaty but had never been granted. After Blackcoal died in 1892 Sharpnose became the principal chief of the Northern Arapaho.

Sharpnose was the last chief of the Northern Arapaho and was instrumental in keeping the Arapaho in Wyoming on what would eventually become the Wind River Indian
Reservation. Sharpnose died in 1901, one year after the death of Washakie, the last chief of the Shoshone.

Sharpnose’s last spoken words were to Charles Little Ant:

"My friend I am dying of my battle wounds. Watch out for our children and yourselves, stay together as the Arapaho have always been together since our beginning... beware of the stranger and his strange ways" (Flynn, 1991)

Distrust in the white man was present in the last words of the Arapaho chief.

The Arapaho, like the Shoshone, eventually sued the federal government in 1955 for failing to pay them for the homelands lost to non-Indians in parts of Wyoming, Nebraska, Kansas, and Colorado. These lands compromised the reservation that been promised them in the original Fort Laramie treaty of 1851. The Arapaho tribe won the claim in 1961. The U.S. government, however, claimed the award monies, stating that the award monies would serve as reimbursement for the 1940's settlement money paid to the Shoshone tribe to allow the Arapaho to stay at the Wind River Reservation. Thus the Arapaho ended up actually paying the U.S. government for half of the Wind River Reservation (Flynn, 1991).

The final result of all the broken promises and broken treaties, was that two Indian tribes who were traditionally bitter enemies being placed together to live on the same reservation. The history of the two Wind River Reservation
Indian tribes is filled with many more examples of deceit and broken promises too numerous to mention here. The historical oppression and wrongdoing by the U.S. government leaves little to the imagination as to why the members of this population have a great amount of distrust toward the white culture, the U.S. government and its representatives. Fatalistic thinking based on hopelessness seems likely to be present in this population. This may result from the members of this population feeling as though they are controlled by a government that they have no influence over. Hence the feelings of not being in control over their own living conditions and or political situations would seem to be a likely result.

Today, the two tribes on the Wind River Indian Reservation exist in a world vastly different from that of their ancestors. The culture of these two plains Indian tribes has survived several "termination" attempts by the U.S. government. The Sun dance is one piece of culture and tradition that the U.S. government attempted to destroy and prevent the tribes at Wind River from practicing. In the 1930's the U.S. government actually determined the Sun dance was an attempt to hold onto a way of life, an uncivilized way of life, that the U.S. government no longer wanted the Indians to practice. This law was enforced on Indian Reservations by the BIA. For cultural taboo reasons, the Sun
dance will not be discussed in detail here other than to describe it as a powerful spiritual and medicinal ceremony. Both the Eastern Shoshone and Northern Arapaho tribes currently have yearly Sun dances.

There are many ceremonies and cultural values that are still considered to be very important to the cultural well being of both the Shoshone and Arapaho tribes of Wind River, such as the respect paid to elders of each tribe. Although each tribe has a distinct set of cultural values based on respect and trust there are many similarities.

Food and celebration are very important in both of these cultures. Food is considered a sacred gift from the creator. Celebrations such as pow-wows involve feasts, as do times of mourning such as when "someone goes home". When paying a visit to someone, if they are eating or getting ready to eat, and they offer you to eat with them, it is highly offensive to refuse them. It is considered an honor and highly respectful to cook food for an elder. When elders of either tribe are asked to speak or bless events they often will tell stories and may spend a great deal of time telling a story before they finish their blessing. This is part of what the elders do, and to interrupt them or hurry them is to pay disrespect to them. Tobacco, sage, sweet grass, and cedar are all important to both of these tribes and are all used in a spiritual manner. When asking elders
for advice or to say a prayer it is respectful to give them some sweetgrass, sage, tobacco, or cedar. To question what has been told to you by an elder is also considered disrespectful and implies that you do not trust the elder. Violation of trust or showing disrespect is also considered highly offensive, not only to elders but to peers and youth as well. Trust and respect are the foundations of many cultural beliefs in this population.

This is merely a brief overview of some current cultural values and beliefs on the Wind River Reservation. Members of this population often have little, if any, reason to trust the U.S. government or members of the white culture. This may result from the fact that representatives of the U.S. government and members of white culture are perceived by the tribal members as people who do not respect their way of life and therefore cannot be trusted.

This is a population of people who rely today primarily on the U.S. government for the majority of their health care through the Indian Health Service (IHS). The IHS is a branch of the Public Health Service, within the Division of the U.S. Department of Health and Human Services. The IHS is funded through congressional action and its funding is based primarily upon land cessation that was agreed to by the U.S. government in their various treaties with Indian tribes of the U.S.
There is a great amount of distrust in the IHS and its personnel by members of the two tribes at Wind River. This is based not only on the distrust of the U.S. government, but also of the primary care medical doctors and other health care providers as well. Tribal members of this population rely on IHS physicians and other IHS employees for their primary health care. These physicians are often at the IHS facilities for a temporary appointment. In this time many of them are repaying their loans or scholarships that were used to pay for their education by providing service to the IHS. Members of the reservation community are well aware of this fact and often feel that the doctors or other IHS employees don't really care about them. Personally, I have often heard the following description of the physicians at both IHS clinics at Wind River: "They are just here to pay back their loans then they will be gone, they don't even know what they are doing, just practicing on us probably".

Given this brief historical background of relations with the U.S. government and current cultural belief/attitude toward the U.S. government, white culture, and the IHS, it is not difficult to envision fatalistic thinking based on distrust being present in this population of Northern Arapaho and Eastern Shoshone.
Objectives of this study

Diabetes Locus Of Control

This study evaluates whether or not fatalistic thinking or beliefs of inevitability affects lifestyle choices of individuals who have been diagnosed with type-2 diabetes. In a study which examined diabetes-specific locus of control, Peyrot & Rubin (1994) found that attitudes which reflect internality are sometimes associated with positive health outcomes. The overall findings of the study suggest that the concept of diabetes specific locus of control does have some explanatory power in accounting for health outcomes. The Peyrot & Rubin (1994) study did not involve a population of Native American subjects; however, it does suggest that locus of control does play a part in health-related behaviors and outcomes.

A study by Peterson & Seligman (1987) revealed that pessimistic vs. optimistic explanatory styles are linked to increased risks for illness. Pessimistic explanatory styles have been shown to be associated with an increase in the likelihood that a person will quit a health regimen or fail to seek medical advice in case of health problems (Seligman, 1991).

A study by Stewart, Greenfield, and Hays in 1989 suggested that although patients with diabetes experience a
decrease in quality of life compared to healthy individuals, these decreases are not as great as those found in other patient groups such as those with coronary vascular disease (Dimsdale & Baum, 1995). Jacobson, Degroot and Samson in 1994, found that the quality of life decreases in relation to an increase in complications from diabetes (Dimsdale & Baum, 1995). However, Stewart et. al, in 1989, found that patients who had not experienced complications showed minimal decrements in physical and social functioning but still rated themselves lower on quality of life measures than healthy adults.

**Diabetes Quality of Life**

People who believe that they have no control over whether or not they will suffer health complications due to type-2 diabetes may be displaying fatalistic thinking. This person may have a pessimistic explanatory style. That is they may believe that things that happen to them in life that are completely beyond their control. Therefore, of Diabetes Specific Locus of Control, and Quality of life are examined to determine their relationship to fatalistic thinking and diabetes outcome.

**Cultural Beliefs/Fatalism**

In this study, fatalistic thinking or beliefs of inevitability is defined as "I will suffer the health
complications that are a result of diabetes regardless of how I chose to live, because I know that Indians always get diabetes and have health complications from it, my family members all have diabetes and health complications from it, and I know that you can't prevent diabetes or the health problems that it causes". The belief of prevention is defined as "If I take good care of myself by exercising eating right and following suggestions from the doctors or other health care providers, I won't suffer health complications from diabetes regardless of the fact that I have been diagnosed with diabetes". A questionnaire was developed to ascertain information regarding fatalistic thinking for people with diabetes.

**Lifestyle Choices**

The lifestyle choices of diet, exercise, smoking, and alcohol consumption are examined as the positive versus negative lifestyle choices. Subjects who chose to exercise more, eat a healthier diet, not smoke tobacco, (with exception for ceremonial use of tobacco) or drink less alcohol or use caffeine less frequently are categorized as making more positive lifestyle choice. Subjects who choose not to exercise, are careless about what types of food they eat, drink alcohol more often, smoke tobacco more frequently
(once again making an exception for the ceremonial use of tobacco) are categorized as making poorer lifestyle choices.

Exercise is defined as any physical activity (including things such as yardwork, housework, walking, hiking, and aerobics) that raises the person's heart rate for more than thirty minutes throughout the day a minimum of three times per week, preferably each day of the week. This amount of physical activity has recently been shown to have beneficial effects in both physical and mental health (Pate et al., 1995).

The positive lifestyle choices that are measured have been shown to reduce the need for insulin in diabetics and to help them keep their weight down which is a key factor in the management of the disease (Davidson, 1986; Hendrick, 1985; Tsalikian, 1990). Some lifestyle choices have been shown to affect obesity directly. Obesity has also been directly associated with the onset of type-2. Obesity is also highly correlated with the complications from type-2 in Native American Populations (Knowler et al., 1993). Some of those lifestyle choices are lack of exercise, high fat diet, tobacco smoking, alcohol, and other drug consumption (Knowler et al., 1993). Management of weight has been shown to be directly related to insulin sensitivity in the body. In type-2 diabetics decreased weight has shown an increase
in insulin sensitivity leading to better glycemic control (Ghodes, 1993).

A questionnaire was developed to determine whether fatalistic thinking is related with lifestyle choices. People who hold non-fatalistic beliefs were expected to score lower on fatalism items, while scoring higher on items tapping self determination on this measure. The belief in preventing complications of type-2 is thought to be present in the people who hold non-fatalistic beliefs. Individuals who hold fatalistic beliefs are expected to score higher on fatalism items and lower on self control items than those with the non-fatalistic beliefs. Inevitability of health complications from type-2 is thought to be present in the fatalistic thinkers.

This also may be indicative of whether or not a person is willing to make lifestyle changes to either prevent or reduce obesity which has been linked to the onset and complications of type-2 (Ghodes & Bennett, 1993; Knowler et al. 1993).

**Transtheoretical Model Stages of Change.**

The Transtheoretical model of change (TMC) allows for individuals to fit a treatment mode to their specific situation. Lifestyle changes that are suggested to people who are diagnosed with type-2 are often quite dramatically
different from the lifestyle they are used to. Allowing for individual differences may be a key factor in motivating people to adhere more precisely to lifestyle changes and treatment regimens for type-2.

The TMC was developed by James Prochaska and his colleagues at the University of Rhode Island over the last fifteen years (Prochaska & DiClemente, 1992). The TMC conceptualizes change as progressing cyclically through a series of discrete stages reflecting degrees of motivation to change. Further, it appears that people use specific processes or strategies at each stage of change, and a mismatch between strategy and stage may result in an increased likelihood of failure to achieve change. There are distinct but interrelated levels at which change can be addressed (DiClemente, 1991; Ockene, Ockene, & Kristellar, 1988; Prochaska, 1995; Prochaska, 1991; Prochaska, DiClemente, & Norcross, 1992).

**Stages of Change**

A unique contribution to understanding change evolved out of TMC research. It was discovered that while moving toward changing a behavior, people progressed through a series of discreet stages reflecting degree of motivation.

The initial stage of change is termed **precontemplation**, and is characterized by a lack of intention to change the
behavior within the next six months. Individuals in this stage are often uninformed about the long-term consequences of their current behavior, avoid thinking about the problems associated with the behavior, they feel demoralized about their ability to make changes, and may be defensive in response to social pressures to change (Grimley, Prochaska, Velicer, Blais, & DiClemente, 1994). Attempting to get a person in this stage to change his or her behavior is often unsuccessful. A lack of desire to change is characteristic of persons in the precontemplation stage (Prochaska, DiClemente, & Norcross, 1992). A diabetic person in precontemplation regarding dietary restrictions might say "what's wrong with eating sweets every once in a while?" Prochaska and DiClemente (1992) reported that only 3% of smokers classified as precontemplators who were still precontemplators one month later, had made an attempt to quit smoking six months later. They also noted that, those who moved from precontemplation to the next stage, contemplation, within the first month, were twice as likely (7%) to have attempted change six months later.

The second stage, contemplation, is characterized by an awareness of a problem with the current behavior and seriously thinking about changing it, but not being quite ready to make the change. People tend to stay in the
contemplation stage for prolonged periods of time (Prochaska, 1995). Contemplators tend to struggle with the weighing of the pros and cons of the current behavior and the solutions to the problem (Prochaska, DiClemente, & Norcross, 1992). For the diabetic in this stage there may be a dilemma regarding the conflict between short term positive consequences and potential long-term health problems. The diabetic may be torn between eating foods that taste good and that friends and family are enjoying, but not wanting the result of high blood sugar and risk of complications. On discrete measures contemplators state they intend to change their behaviors within the next six months (Prochaska, DiClemente, & Norcross, 1992). In the study by Prochaska and DiClemente (1992), 20% of the smokers in the contemplation stage who remained in this stage one month later, had attempted to quit smoking within six months. However, of those who progressed to the next stage, preparation, 41% had attempted change six months later.

The third stage, preparation is characterized by attempts to change within the previous year and intention to change within the next month. These individuals may be making attempts to change their behavior, but have not yet reached a specified criterion for change. The diabetic in preparation to change diet may have cut down on the number
of candy bars consumed each week, but is still occasionally eating them. On discrete measures people in the preparation stage score high on both the contemplation and action scales.

The fourth stage, action is characterized by an actual change or modification in behavior, experiences, and/or environment in order to overcome the problem behavior. Action requires considerable time and effort and is often noticed by significant others. People are classified as being in action if they have successfully changed for a period of time from one day to six months. Because action includes overt behavior change, people often equate action with change. The danger in conceptualizing change as an all or nothing process is that the necessary prerequisite changes in intention, and the important efforts required to maintain the changes following action, may be ignored (Prochaska, DiClemente, & Norcross, 1992).

The fifth stage, maintenance is characterized by the new behavior being performed consistently for more than six months. The individual in the maintenance stage is working to maintain the new behavior and prevent relapse. During relapse, people regress to a previous stage. The majority of people who relapse (85% of smokers) relapse to contemplation
or preparation and repeat the process (Prochaska & DiClemente, 1986).

As people cycle through the stages of change, lapsing along the way, the more action taken the better the prognosis for lasting change (Prochaska, 1995). That is, with each attempt to change (action), the individuals may learn from their mistakes, progress quicker to another action attempt, and be increasingly resilient to future relapse (DiClemente, et. al., 1991).

**Matching Stage of Change and Intervention Strategy**

Treating precontemplators as if they are ready to contemplate deeply the causes of their current behavior may be a mistake. That is, precontemplators are not likely to benefit from discussing solutions to the problem if they do not perceive that there is a problem. In a behavioral weight-loss program, the processes used early in treatment were the single best predictor of outcome (Prochaska, Norcross, Fowler, Follick, & Abrams, 1992). These authors suggest that interventions be guided by matching processes with the individual's stage of change.

The TMC is the result of years of research aimed at improving our understanding of how people change. This work has identified three main dimensions of change: the stages, processes, and levels of change. People employ different
processes or strategies as they progress through the stages of readiness to change (Prochaska, 1995).

The TMC at this point lacks empirical evidence of its applicability in a Native American Population, although it is noted here that findings by Daskavich (1997) give a preliminary indication that the TMC may be successfully applied to measuring readiness to change in a Native American Population.

**Hypotheses**

The hypotheses tested in this study are:

1. Fatalistic thinking will be positively correlated with negative lifestyle choices.

2. Non-fatalistic thinking will be positively correlated with positive lifestyle choices.

3. Members of the sample who endorse more fatalistic beliefs will be more likely to be precontemplators or contemplators, regarding diabetes behavior management, assessing with the TMC.

4. Members of the sample who display non-fatalistic thinking will be more likely to be in the action or maintenance stage in their diabetes behavior management assessing with the TMC.
5. Members of the sample who endorse a high sense of external diabetes locus of control will endorse more fatalistic thinking items.

6. Members of the sample who endorse a high sense of internal diabetes locus of control will endorse fewer fatalistic thinking items.

7. Higher scores on the Diabetes quality of life measure will be positively correlated with non-fatalistic thinking.

8. Lower scores on the Diabetes quality of life measure will be positively correlated with fatalistic thinking.

9. Higher scores on the Diabetes quality of life measure will predict endorsement of the action or maintenance stage using the TMC.
Methods

Subjects

This particular study involved collecting data from the Wind River Indian Reservation located in west central Wyoming. Since obtaining a truly random sample is very difficult in this setting, a sample of convenience was gathered consisting of subjects from the reservation with diabetes. The data were collected on multiple occasions at the Ft. Washakie and Arapaho Indian Health service clinics, and the tribal health department all located on the Wind River Indian Reservation. The data was collected through the use of a questionnaire at both the IHS clinics and the tribal health department on the Wind River Reservation. The data were collected by the primary researcher, and several assistants, Lisa Appelhans, Diana Richter, Wanda Posey, and other members of the IHS and Tribal health department staff. Questionnaires were handed out to tribal members and collected when the items on the measure were completed.

The sample consisted of 153 Native Americans currently living on the Wind River Indian Reservation located in west central Wyoming (see table 1). The participants were 34.6% Eastern Shoshone members, 52.9% Northern Arapaho tribal members, Eastern Shoshone and Northern Arapaho mixed blood tribal members, 2.6% and members of other various Indian
tribes accounting for 6.5% of the sample, while 3.3% of the sample did not specify their tribal affiliation. An outstanding majority, of the sample 97.4%, reported being an enrolled member of an Indian tribe, while 2.6% reported being non-enrolled. The total percentage of those who preferred to speak their native language was 35.3%, with a distribution of 37% of the Shoshone tribal members reporting they preferred their native language, while 42.1% of the Arapaho tribal members reported preferring their native language.

With regard to gender distribution, the sample consisted of 27.5% males, and 63.4% females, with 9.2% not specifying this information. Average reported Native American blood quantum was in the categorization of 50-75%.

Number of years in school was recorded, with the mean number of years of education reported at 12.45. The ages of participants ranged from 16 to 79, with a mean age of 49.4 years (SD=11.30). The mean number of years diagnosed with diabetes was 4.29. Type-2 diabetes occurs more frequently in Native American populations, with type-1 occurring far less often: however, in this sample 21.6% of the population reported their diabetes type as type-1, and 68% of the sample population reported their diabetes as type-2, with 10.5% not specifying this information. There is a high likelihood that those individuals who reported having been
diagnosed with type-1 diabetes have misunderstood their diagnosis. This is based on the fact that the type-1 diabetes prevalence rate is estimated to be only 10% of all cases of diagnosed diabetes in the United States (Feifer & Tansman, 1999; Lipkin, 1999). In Native Americans type-1 diabetes is actually considered a rare occurrence. Type-2 diabetes is more prevalent in the Native American population of the United States than all other races/ethnic groups combined at a ratio of 2.1 to 1.0 (Ghodes, Kaufman, & Valway, 1993). Please see tables 1-7 for further demographic data.

Procedures

Federally recognized Native American tribes of the U.S. are considered to be sovereign nations under their various applicable treaties. This creates a unique situation to be addressed in conducting research within an Indian community or on an Indian reservation.

The consent of the particular tribe(s) to be surveyed must be obtained from their respective tribal government(s) prior to conducting the research. This permission by the tribal government is required prior to obtaining personal consent, which must also be obtained. This is due to the governmental structure of the tribes and the government to government relationship that tribes have with the federal
government of the U.S. Federally recognized Indian tribes are considered "distinct political entities separate from state and federal governments" (Utter, 1993). Clear communication of the research idea and question to the tribe(s) in question is a must. Cooperation with the IHS, which is the primary medical care provider on most Indian reservations, is also something that needs to be incorporated into the research. The question of how to address the problem of diabetes in the particular Indian community needs to remain the focus of the discussion in gaining permission to do such research.

Involvement of health care providers in the tribal health department such as Community Health Representatives (CHR's), or public health nurses at the IHS clinics will be an asset in this project.

Both the Eastern Shoshone and Northern Arapaho are federally recognized Indian tribes. The Shoshone Business Council and the Arapaho Business Council are responsible for the day to day governmental and business operations of the Shoshone and Arapaho tribes independently. These councils consist of six elected enrolled members of each tribe. For governmental policy and business affairs that affect the whole reservation and both tribes, the Shoshone and Arapaho business councils form the Joint Business Council of the Shoshone and Arapaho tribes. Each tribe is governed by its
own respective General Council, which consists of all enrolled members who are at least 18 years old. Permission to do this study was obtained by the Joint Business Council of the Wind River Reservation. Permission and cooperation with the Wind River Service Unit of the Indian Health Service in carrying out this study was also obtained (see letters in Appendix).

The Wind River Indian Reservation is listed under the Billings Regional Area of IHS which covers Montana and Wyoming. There are a total of eight Indian reservations and 12 Indian tribes in the Billings Area of the Indian Health Service, they are Flathead Reservation (Confederated Salish & Kootenai tribes), Browning Reservation (Blackfeet tribe), Rocky Boy Reservation (Chippewa/Cree tribes), Fort Peck Reservation, (Assiniboine tribe), Fort Belknap (Assiniboine/Sioux tribe), Crow (Crow tribe), Northern Cheyenne (Northern Cheyenne tribe), and Wind River (Eastern Shoshone & Northern Arapaho tribes). Although this study involved only the Eastern Shoshone and Northern Arapaho of Wind River it is the hope of the researcher to replicate and expand the study at some point to include all reservations and tribes within the Billings Area IHS.
Measures

One of the questionnaires to be used in this study has been developed by the researcher to collect demographic data, cultural belief data, and fatalistic thought pattern data (see Appendix D). The questionnaire includes an instruction page and a consent to participate form (see Appendix D). There are also two standardized diabetes health measures included, the Diabetes Locus Of Control, and the Diabetes Quality Of Life.

The Diabetes Locus of Control measure (DLC: Peyrot & Rubin, 1994) is designed to measure whether or not subjects perceive having any control over their diabetes (see appendix A). The DLC response options are 1 = strongly disagree, 2 = disagree, 3 = mildly disagree, 4 = mildly agree, 5 = agree, 6 = strongly agree (Peyrot & Rubin, 1994). Cronbach’s alpha reliabilities ranging from 0.65 to 0.75 have been reported for various scales on this measure (Peyrote & Rubin, 1994). According to Peyrot & Rubin (1994), intercorrelations between scales have been reported to be as follows: internal and chance ($r = -0.13$, NS); internal and powerful other ($r = 0.17$); internal DLC-autonomy and internal-DLC blame (correlations range from 0.33 to 0.55); and powerful other DLC-health professional with powerful other DLC-nonmedical (correlations range from 0.26 to 0.39).
With respect to concurrent validity, correlations of chance DLC with various behaviors have been reported (-0.21, exercise; 0.22, high blood glucose). Correlations have also been reported between overall internal DLC with high blood glucose (-0.28), internal DLC with binge eating (0.22), internal DLC-blame with binge eating (-0.25) and high blood glucose (-0.20), internal DLC- autonomy with high blood glucose (-0.31), and a correlation of (-.19) of powerful other DLC-nonmedical with binge eating (Peyrot & Rubin, 1994). Correlations between all other scales and binge eating, exercise and high blood glucose were non-significant (Peyrot & Rubin, 1994). Although these patterns of correlations are in the appropriate directions, the variance accounted for is low. Reliability and validity coefficients appear to be somewhat low for certain scales. These scales have not been tested in the population being studied here; therefore the use of these measurements is intended to be informative as to their utility. An item was added to the diabetes locus of control to strengthen its cultural appropriateness.

The Diabetes Quality of Life (DQOL) will also be used to measure perceived quality of life in this population (see Appendix D). The Diabetes Quality Of Life Measure (DQOL; Diabetes Control Complications Trial Research Group, 1988) includes five scales: satisfaction with treatment, treatment
impact, worry about the future effects of diabetes, worry about social and vocational issues, and overall well being (Diabetes Control Complications Trial Research Group, 1988). A five point Likert scale system is used throughout the DQOL for measurement of satisfaction on the items ranging from very satisfied to very dissatisfied. Five point Likert scales are also used to measure treatment impact ranging from "never" to "all the time" with respect to frequency of the experience. Worry scale items measuring both future effects of diabetes and social/vocational effects of diabetes were measured with a Likert scale with responses ranging from "never worry" to "always worry" including an "does not apply" option. There were two items added to this measure to increase the cultural specificity regarding travel for culturally relevant activities.

The responses to the DQOL were scored as specified by the Diabetes Control Complications Trial Research Group (1988; Jacobson, de Groot & Samson, 1994a; Ware & Sherbourne, 1992). A score of zero for the total or for a particular scale represents the lowest possible quality of life, and 100 represents the highest possible. Internal consistency of the scales range from .47 to .92 using Cronbach's alpha (Diabetes Control Complications Trial Research Group, 1988; Jacobson, de Groot & Samson, 1994a). Stability coefficients range from .78 to .92 over a one week
period (Diabetes Control Complications Trial Research Group, 1988).

With regard to construct validity, the total DQOL score shows "moderately strong, consistent correlations" with measures of "psychological symptoms, well being, and adjustment to illness" (Diabetes Control Complications Trial Research Group, 1988; Jacobson, de Groot, & Samson, 1994a; Jacobson, de Groot, & Samson 1995). The DQOL shows good internal consistency (with Cronbach's alphas ranging from 0.66 to 0.88 on independent scales; 0.92 for DQOL total), and good stability over one week ($r = 0.92$, DQOL total). Convergent validity of the DQOL has also been demonstrated with a variety of other instruments measuring psychiatric symptoms, perceived well being, and adjustment to treatment (Diabetes Control Complications Research Group, 1988).
Results

The results of the analyses on the data were arrived at using SPSS for Windows version 7.0 and are as follows:

Reliability and psychometric properties of the fatalism measure

Initially a rational approach was used in generating scales for this measure. This rational approach was taken with the idea that components of the measure were assessing aspects of traditional beliefs and spirituality of the Eastern Shoshone and Northern Arapaho tribal members, rather than merely assessing fatalistic thought. The scale constructed by this rational approach were defined as Traditional health beliefs and Spirituality, each was measured by the items within the Darren Calhoun (DC) measure. The items were measured by six items each. The items were 8, 22, 25, 28, 36 from the (DC) measure, for the Traditional health beliefs subscale. The items for the spirituality scale of the DC measure were 8, 28, 29, 30, 35, and 36. For a description of the DC items please see table 9. There was some overlap between the items that were used for each subscale. The intercorrelations of the two subscales with each other and with fatalism are as follows: fatalism with traditional health beliefs, $\tau[139]=.028(p<.01)$, traditional health beliefs with
spirituality, $r[146]= .758 \ (p<.01)$, and fatalism with spirituality, $r[139]= -.178 \ (p<.01)$; please see table 13.

A Cronbach's alpha was computed to determine the internal consistency of the rationally derived overall fatalism measure, which will be referred to as the DC total measure of Fatalism. The alpha level of the DC fatalism measure, constructed from 32 items, is .70. Although this alpha level is quite acceptable, there may have been some items within the DC scale of fatalism which prevented higher levels from being attained.

There were five specific items on the DC scale of fatalism that were reflected for scoring purposes. These items may have affected the alpha levels in a negative fashion. If DC #21, "I think diabetes can be cured with medicine" (reflected) had not been included, the alpha level of the total scale would have been .71. If DC #22, "I think diabetes can be cured using traditional medicine" (reflected) had not been included, the alpha level would have been .72. Also, if item DC #28, "I think that the creator controls what happens to me in life" (reflected) had not been included, the alpha level would have been .71. DC #35, "I think that when the creator calls me home it is my time to go regardless of diabetes" (reflected), appears to have had a similar effect, as the alpha level would be .72.
if it were not included. These particular questions on the fatalism measure had a negative item total correlation. If these items not been reflected, the alpha levels attained would have been slightly higher. It appears that reflecting these particular items may have been an error in construction of the rational scale.

As noted, additional items on the Fatalism measure were broken down into two subscales referred to as Spirituality and Traditional beliefs, with six items each. The alpha for the Spirituality scale is .43, which is an unacceptably low level. The Traditional beliefs scale has an alpha level of .63, an acceptable level.

Analyses were conducted using these three rationally derived scales rather than the factors which were derived from the Principle Components Analysis described below, as these scales are easier to interpret and were the focus of the study.

A Principle Components Analysis with Varimax rotation was performed to assess the utility and structure of this measure empirically and derive factor loadings. A scree plot was generated in this analysis, and it suggested three distinct factors within the fatalism items. The factor analysis was performed extracting three factors; each of the three factors had eigenvalues >1.0 and accounted for at least 6% of the variance. The first factor accounted for
15.6% of the variance in the items, with the second factor accounting for 12.3%, and the third factor accounting for 6% of the variance. These factors accounted for a total 34% of the overall variance in the items. The factors which were identified from the principle components analysis all had loadings of a minimum level of .390, and the factors were named, Trust, Distrust, and Control.

The Trust factor consisted of the items 6 (reflected), 7 (reflected), 12, 19, 20, 23, 24, 26, 27, 29, 32, 34, and 36. This factor appears to be measuring Trust in health care delivered as well as a non-fatalistic attitude regarding prevention of the onset of Type-2 diabetes and the medical and psychological problems it may create. The factor may be assessing a construct that is similar to internal locus of control. The items this factor consists of appear to be measuring the same construct on a more consistent basis than the other factors. For a description of the items listed in each of the three factors please refer to table 9.

The factor named Distrust, as identified by the principle components analysis, consists of eleven (11) items, with loadings 4, 5, 9, 10, 13, 14, 18, 21 (negative loading), 22, 25, 31, and 33, from the DC measure, see table 9 for a listing of the factor's items. This factor may be measuring fatalistic thought, where the person maintains an enduring belief that it is inevitable that he or she will
automatically get diabetes if it is present in other members of his or her family and race. This factor may also be measuring distrust of the health care being received, as well as certain amount of distrust toward the United States government and western or non-Indian people and culture. There may also be a tendency to endorse traditional beliefs, also included on this scale, something that could be misinterpreted here as tapping fatalistic thought. An individual who endorses the spiritual and philosophical notion of living for the present day could have this response misinterpreted in a way that appears to be fatalistic thought. This idea is supported by the fact that this item contributes to the overall rationally derived fatalism scale.

The Control factor consisted of items 1 (negative loading), 8, 15 (reflected), and 17 (negative loading). This factor contains only four items, the smallest number of the three empirically derived factors. These items may be measuring a construct that is similar to locus of control. They appear to assess some level of perceived control, both internal and external. This factor may also be measuring knowledge about diabetes and its occurrence rates in the Native American Population, levels of distrust, as well as knowledge of medical complications of diabetes. For a description of the items please refer to table 9.
The following results address the validity of the fatalism measures.

**External/Internal diabetes Locus of Control related to fatalistic thinking/non-fatalistic thinking.**

A Pearson product correlation investigating the relationship between Diabetes Locus of Control and fatalistic thinking was significant ($r_{[139]} = .453, p < .01$; see table 10). There is relatively strong support for the hypothesis that fatalistic thinking and locus of control are related, as the variance accounted for is $r^2 = .205$ or 21%, indicating a relatively strong relationship. This result demonstrates that greater fatalistic thinking is associated with more external locus of control, and non-fatalistic thinking with more internal locus of control on the Diabetes Locus of Control scale.

**Fatalistic thinking as related to lifestyle choices.**

A correlational analysis was conducted to determine the relationship between the subjects' reported lifestyle choices and Fatalistic thinking. The predicted relationship between Fatalistic thinking and negative lifestyle choices was supported, with $r_{[139]} = .230 (p < .01)$; see table 10. This support however, is weak. The amount of variance accounted for by the relationship ($r^2 = .0529$) is approximately 5%, far...
below the 10% which is generally taken as a baseline level
for a meaningful proportion of explained variance.

The predicted relationship between non-fatalistic
thinking and positive lifestyle choices also received
support in the predicted direction, $r_{(df=139)} = -0.237$, $p = 0.01$; see table 10. The negative correlation here indicates that
positive lifestyle choices are related to non-fatalistic
thinking. Although the finding is in the predicted
direction, the support is weak. This correlation only
accounts for approximately 5% of the variance in lifestyle
choices, $r^2 = 0.0561$; see table 10.

**Diabetes Quality of Life as related to Fatalistic thinking.**

The Diabetes Quality of Life scale consists of the
following subscales: Diabetes Quality of Life Treatment
Satisfaction, the Quality of Life Health Item, Quality of
Life Treatment Impact, Quality of Life Future Worry, and
Quality of Life Social/Economic worry. Four of the five
components of the Quality of Life measure
showed significant relationships with fatalistic thinking.
However, the support for these relationships was weak.

The hypothesized relationship between Fatalistic
thinking and Quality of Life, social economic worry, was not
supported ($r_{[139]} = 0.135$). The hypothesis regarding Fatalism
and Diabetes Quality of Life Treatment dissatisfaction was
weakly supported ($r = .200$, $p < .05$, 2-tailed test). However for this correlation $r^2 = .04$; only 4% of the variance is accounted for, which is well below the baseline level of 10% that would indicate a stronger and more meaningful relationship.

The hypothesis regarding Fatalism and the single Quality of Life health item obtained weak support ($r = .167$, significant at the .05 level, 2-tailed test). The variance accounted for by this association, $r^2 = .027$ or 3%, is far below the baseline level of 10% that would indicate a stronger, more meaningful relationship.

The hypothesis regarding Fatalism and Diabetes Quality of Life treatment impact was also supported ($r = .201$, $p < .05$, two tailed test). The variance accounted for here, ($r^2 = .04$ or 4%), is also far below the baseline level of 10% that would indicate a more statistically meaningful relationship.

The hypothesized relationship between Fatalism and the Diabetes Quality of Life Future worry scale received only weak support ($r = .184$, $p < .05$, two tailed test). The variance accounted for ($r^2 = .03$ or 3%) is well below the baseline level of 10%. See table 10 for a summary of these results.
Fatalistic beliefs as related to the Transtheoretical model's stages of change.

A One-way Analysis of Variance was performed to assess whether Fatalistic thinking varies across the five stages of change (precontemplation, contemplation, preparation, action, or maintenance). Stage was the independent variable and the number of Fatalistic items endorsed was the dependent variable in this analysis. The One-way Analysis of Variance revealed higher levels of fatalism in the action stage, mean = 2.45, and the maintenance stage, mean = 2.48. The lowest level of fatalism appeared in the preparation stage, mean = 2.38, and in the precontemplation stage, mean = 2.42. Although it appears that there are differences between the stages of change as related to fatalism, these differences were not significant.

Hypotheses predicting a relationship between stage of change and fatalistic thinking were not supported, as the results are not only non-significant, they are also in direct opposition to what one would expect, (F = [5, 128] = .550, p = .738, see Table 11). A Tukey's Honestly Significant Difference test also was performed and revealed no differences among the groups.
Diabetes Quality of Life as related to the endorsement of
the action or maintenance stages in the Transtheoretical
model of change.

A series of One-way Analyses of Variance was conducted
for identified stage of change (precontemplation,
contemplation, preparation, action, maintenance) and each
scale of the Diabetes Quality of life measure. There was
some support for the hypothesized relationship between the
Quality of life treatment dissatisfaction and endorsement of
particular stages of change on the TMC, ($F = [4, 137] = 2.479,$
$p = .047$). Tukey's multiple comparisons procedure indicated
that the action and precontemplation stages of change were
in different homogenous subsets. The mean level of the
treatment dissatisfaction subscale of the Diabetes Quality
of Life scale for people in the action stage and the
precontemplation stage was significantly different than in
other stages of change, as tested by the Tukey's Honestly
Significant Different procedure; see table 12.

The One-way analysis of variance also revealed a trend
toward support for the hypothesized relationship between
Diabetes Quality of Life social and economic worry subscale
and stage based on the TMC ($F = [4, 139] = 2.252,$
$p = .067$). The trend toward support of the hypothesized Quality of Life
treatment social and economic worry and stage of change
relationship was supported by a Tukey's multiple comparison analysis. The Tukey's procedure indicates that the action and precontemplation stages are in different homogenous subsets; see table 12.

Relationships between stage and the remaining Diabetes Quality of Life subscales, Diabetes quality of life Future worry, (F=[4,137]=1.97, p=.102), Diabetes quality of life Health item, (F=[4,139]=1.26, p=.290), and Diabetes quality of life Treatment impact, (F=[4,136]=.894, p=.470) were all found to be non-significant with the initial One-way analysis of variance; see table 12.

Although no hypothesis was stated regarding stage of change and Locus of control, a One-way Analysis of Variance was performed to assess whether the two constructs were related. The analysis indicated a significant relationship between Locus of Control and the stages of change (F=[4,138]=2.916, p=.024). A Tukey's multiple comparisons procedure further clarified this relationship. The Tukey's procedure indicated the action and maintenance stages of change to be in different homogenous subsets; see table 14.

Discussion

This study was designed to assess whether or not a fatalistic thought pattern regarding the onset of type-2 diabetes, complications as a result of type-2 diabetes, and
management of this chronic disease exists and can be assessed in members of the Shoshone and Arapaho tribes of the Wind River Reservation. A second goal of this study was to assess how fatalistic thinking interacts, if at all, with individual locus of control and individual quality of life.

A moderate sized sample (n=153) was collected from the Wind River Indian Reservation that consisted primarily of members of the Eastern Shoshone Tribe, Northern Arapaho Tribe, members of both the Eastern Shoshone & Northern Arapaho combined or mixed blood, and a small number of other Plains Indian tribes such as the Oglala Sioux of The Pine Ridge Reservation.

The fatalistic thinking measure consists of items that are based on the notion that a great amount of distrust exists in this population of Native Americans, toward the United States government and mainstream or white culture. Beliefs related to distrust and the impact the distrust has had on this population in the last 100 years was used in the design of the measure. Items intended to address the distrust and fatalistic thinking are those such as: “If the doctor/health educator or other health care provider told me that type-2 diabetes might be preventable I would not trust them”, “I think all Indians eventually get diabetes”, “I think that diabetes was brought to Indian people by white people”, “I think the commodities that are given to Indians
by the United States Government cause diabetes". These are only a few examples of the fatalistic thought items from the DC Fatalism Measure.

This distrust is exemplified by the speech delivered from Washakie to congressional leaders in 1878. Ten years prior in 1868, Washakie spoke to congressional leaders declaring that he was pleased with the treatment provided his tribe by the United States, while in 1878 Washakie informs the government of their broken promise (see p. 13). In addition the dying words of Sharpnose, the last Chief of the Northern Arapaho tribe, were to Charles Little Ant an Arapaho tribal member. Sharpnose’s words were directed to not trusting “the stranger and his strange ways” (see p. 18).

There are no documented cases, and no oral histories among tribal elders regarding this “sugar disease” and no recollection of the kinds of health problems such as retinopathy, blindness, nerve cell damage and numerous others, that type-2 diabetes results in. Type-2 diabetes may have been non-existent in this population prior to euro-American invasion of Native American culture and life. Given the history of transmission of other health problems such as smallpox, members of this culture may perceive type-2 diabetes as a disease that was brought to them by the white man and United States Government. Smallpox was brought
intentionally to many plains tribes as an act of war. Type-2 diabetes may be seen as a result of the United States Government destroying the way of life, dietary and otherwise, that the traditional Shoshone and Arapaho people lived. This drastic change in lifestyle resulting from the westward expansion of the United States government, may be viewed as a causal factor in the onset of type-2 diabetes in this population.

Results from the principle components analysis that was performed suggest that several forms of distrust do exist in this population of Plains Indian tribes. There were three factors identified in the principle components analysis; based on item content they were named Trust, Distrust, and Control. There is some overlap in these three factors, as noted by the significant intercorrelations between the proposed constructs of Fatalism, Traditional Health Beliefs, and Spirituality; please see table 13.

Many of the items of Trust and Distrust are actually reflected items. These items speak directly to both trust and distrust. The distrust items which had loadings of at least .390 were items such as #5, “If the doctor or health care provider told me that type-2 diabetes might be preventable I would not trust them”, #9 “I think that dietary changes suggested by doctors or other health care personnel are ways to try to get Indians to eat like white
people", #10 "I think that lifestyle changes like, trying to get more exercise, are ways to try to get Indians to act like white people", #18 "I think that diabetes was brought to Indian people by white people to try to harm Indian People". There are a total of 12 items that had a minimum loading level of .390; those mentioned above are a few of the items. The items directly address distrust as an important component of fatalism which has been proposed to be present in this population, and this is supported by the Principle Components Analysis.

The primary health care provider present on the Wind River Indian Reservation is the Indian Health Service, which is a United States government organization. The questions that make up the fatalism measure (containing the three factors identified as Trust, Distrust and Control) are written in an attempt to determine whether or not there exists a fatalistic thought pattern toward type-2 diabetes and its complications. Based upon the premise that members of this population are distrusting the health care system or at least the system’s funding source, the questions were designed to assess whether people see the disease itself as something that was once foreign to them and brought about by the United States and white society. The Principle Components Analysis provides some support for this notion.
The results of this study show some support for the idea that fatalistic thought does in fact exist among this population. The strong correlation between the fatalistic thinking measure and the external locus of control measure suggests that fatalistic thinking, as it has been defined here, may have a substantial overlap with external locus of control. When an individual perceives that he or she does not control what may happen to them, this may indeed be similar to fatalistic thinking. A person who feels helpless in their efforts regarding complications as a result of type-2 diabetes may believe that this is beyond their power. In the opposite direction as well, when there is a lack of fatalistic thought the participants showed more internal locus of control, which suggests that the individuals felt as if their actions could make a difference in how complications as a result of type-2 diabetes might affect them.

Furthermore, fatalistic thinking as defined by the mainstream population, may be viewed differently within this culture. In mainstream society in the United States, when one is faced with a chronic condition which may lead to death, it may be considered fatalistic to do nothing to react to the situation in a manner to prevent future problems. However, in Native American populations, as in many Plains Indian tribes, the general cultural practice is
not to plan for the future in the same sense as the mainstream society. The children and the next generation are important to this population of Plains Indians, although living for the day is important as well.

Therefore, when someone isn't making behavior change immediately as a result of having been diagnosed with type-2 diabetes is this necessarily due to 'fatalism?' In some segments of the more traditional population the answer would be "no". One could have gained a level of acceptance and willingness to allow Diabetes to progress with the notion that it is the individuals time "to go home" (die) regardless of diabetes. Acceptance of death is viewed differently by some in this culture than that of mainstream society.

There could be other factors influencing the person's decision making such as denial that a problem exists, or co-morbid psychological disorders present such as depression or anxiety. In addition there is a subgroup in this population identified by the principle components analysis who have endorsed items which are consistent with making an effort to control or manage their diabetes, items like # 1 (which had a negative loading) "I think Indians get diabetes more than other ethnic groups such as Whites, African Americans, Asians, etc.", and # 15, "I think I have control over anything in my life that happens to me". Endorsement of
these items show some support that a segment of this population is actually not thinking fatalistically or in a distrusting manner, but rather in a active manner to address their diabetes. In addition the items which address trust show that some members of this population may actually show some trust and try treatment recommendations to address their diabetes. Endorsement of items like # 6 " I trust what my doctor or health care provider recommends for treating my diabetes”, #19 “ I think that diabetes can be prevented”, #26 “I think I can control my physical health”, and # 36 “ I think my body is sacred and I do the best I can to take care of it” indicate that a group of people in this population actually want to address the disease of diabetes, and may trust what western medicine has to offer them. This could be impacted by the fact that there is no known recollection or history of the presence of diabetes prior to the euro-American invasion of these Indian cultures. Therefore the premise might be “the whiteman disease can only be cured by the whitemans medicine”, as was the case in the smallpox epidemic.

An individual’s locus of control may be affected by whether or not a person feels that they have some control over the effects of type-2 diabetes. With fatalistic thought being present we would expect the person to report in a fashion which would be external in nature, that is, to
believe that he or she has little or no influence in what happens to his or her health as a result of type-2 diabetes. The inverse is implied here, that is if the person feels that they have an influence over their health regardless of type-2 diabetes, then they are likely to have an higher reporting of internal locus of control, thus showing less influence of fatalistic thought. The results of this study show some support for these proposed relationships.

Quality of life problems which are a result of diabetes are predicted to be affected in a negative fashion. Results of the current study suggest that fatalistic thought is also likely related to diabetes’ influence on quality of life. However, it appears that the individuals having less impact to their quality of life as a result of type-2 diabetes may not display fatalistic thought, or that the influence of such thought is minimal.

The measurement of fatalistic thinking may in fact require more intense study and different techniques of measurement and design. In measurement of fatalistic thinking it will be important in future research to determine how fatalistic thinking is a separate construct from external locus of control. Acceptance of life as it comes and acceptance of death in this culture may be viewed differently. This might lead one to believe this as
fatalistic thought, when in fact, fatalism is being confused for acceptance.

There also may be an effect of having collected the data at primarily the Indian Health Service Clinics on the Wind River Indian Reservation. The population sampled was largely the population that utilizes the diabetic clinic. Utilizing this clinic provided for easy data collection; however, this may have lead to a sample which was less likely to report fatalistic thought overall. This may be a result of members of this group having made decisions to change behavior, therefore being less likely to report external locus of control or fatalistic thinking. This particular sample of individuals may then have less within group variability. The endorsement by 66% of the subjects as being in the action or maintenance stage on the readiness for change measure is supportive of this possibility.

Additionally, the lack of support for significant differentiation between the stages of change in this population may be due to the stage measure used in this study. This measure may not be a sensitive measure of individual readiness to change due to its format. Another explanation for the limitation of this construct in the current study might be that the forced choice five item measure may pull for social desirability in responding. In other words, the individuals who responded to the
questionnaires may have been attempting to appear in a more positive fashion with regard to their diabetes management. Individuals may wish to appear compliant with behavior change to manage their diabetes rather than appear non-adherent to making such behavior change. This could lead those individuals to answer the readiness to change measure appearing to have made changes that have not actually occurred. No other measure than the five item forced choice component were ascertained to validate behavioral stage. As described above many participants may in fact have also been representative of a select group of this population in that they are actively managing their diabetes by attending the diabetic clinic regularly. It is also possible that the stage measure may need specific modification to be more culturally appropriate.

Other studies have shown that individuals suffering from diabetes have an increased prevalence of symptoms of depression, anxiety or shameful feelings about this chronic condition (CDC, 1991). Feifer & Tansman, (1999) report that psychological distress and psychiatric disorders such as depression, anxiety, and eating disorders have been found to be more common in diabetic adults than in the general population. The prevalence rate for the general population for major depressive disorder is 5%-25% (DSM-IV, 1994) while the rate in the diabetic population is 20-60% (Feifer &
Tansman, 1999). It appears that the assessment of psychological distress which could lead to depression or anxiety is important. Future studies may benefit from assessing for the symptoms of these psychological conditions and exploring their relationships with fatalism.

Many individuals are likely to have responded to the exercise/activity portion of the questionnaire in a exaggerated fashion. This is a common problem when using measures of self report exercise. According to Kleges, Heck, Mellon, Fulliton, Somes, & Hanson, (1990) people have a tendency to overestimate their aerobic activities by as much as 300%. Again this may have lead to individuals’ over-reporting not only their levels of activity, but also perhaps lead to reporting behavior change which may not have occurred. Measuring sedentary activities may prove more useful for future research to address this potential problem.

The predicted relationship between Locus of Control and fatalistic thinking had a larger effect size than any other relationship predicted. This relationship has practical implications. The relationship between locus of control and fatalism may be allowing us to see ways to improve the current treatment approach used in diabetic populations. For instance, individuals diagnosed with diabetes may benefit from the use of psychological services. These services could
be in the form of increased education and or psychotherapy.

The relationship between locus of control and fatalism suggests that members of this population may believe they have little or no control over what happens to them in their lives. This is likely to influence their response to treatment of their diabetes. Helping an individual change their beliefs about control over their lives may actually benefit them in their management of diabetes. Presently it is not apparent that this treatment approach is utilized in this population. Currently diabetic patients in this population utilize primarily the medical treatment approach to diabetes, with limited attention paid to the behavioral treatment possibilities. While the medical approach has valuable and important treatment components, it may be strengthened by assisting an individual with changes in their belief system.

The findings regarding the relationship between fatalistic thought and locus of control appears to suggest that how people think or believe may affect their adherence diabetes treatment regimen. Increasing adherence to a diabetes treatment regimen appears to be more likely if a behavioral aspect is included. Locus of control information could then be designed as a part of services to improve motivation to change behavior and maintain that behavior change.
The hypothesized relationship between diabetes quality of life and fatalistic thinking was supported. There were several statistically significant relationships found here. Although the effect sizes are small, fatalistic thinking appears to influence diabetes quality of life at a rate which is greater than chance alone. Upon examination, fatalistic thinking is related to all five subscales of the quality of life measure at a significant level. The influence of fatalistic thought is apparent in social/economic worry, treatment dissatisfaction, treatment impact, future worry, and how an individual perceives their health.

What specifically this translates to for the treatment of diabetes is difficult to ascertain. The relationship may be bi-directional in that the effects of diabetes results in a lower reported quality of life leading the person to become more fatalistic, or the fatalism could be influencing the person's motivation to address the behavior management with respect to diabetes. This could be an important component to working with this population clinically. A person may feel like it is too difficult to change, that life will somehow become harder if he or she does change. Such individuals may benefit from knowing that people who have made changes now report a higher quality of life and feel more control over their diabetes. This validation for
the individual may make it seem more worth their effort to pursue change and to maintain behavior change.

In summary, it appears that fatalistic thinking maybe relevant in this population of people with diabetes. Fatalistic thought is positively correlated with external and negatively correlated with internal locus of control. The present study raised some concern about the Fatalism measures sensitivity to different reasons for external locus of control.

The Principle Components Analysis revealed that there is overlap between the proposed construct of fatalism and spirituality, and traditional health beliefs. Similarities between locus of control and fatalism are also noted as their is some similarity in item design, and the Principle Components Analysis indicated one factor structure that is similar to locus of control termed "control". The current fatalism measure may actually measure a variety of constructs such as fatalism, knowledge about diabetes, perception of control, traditional health beliefs and spirituality.

Future studies should make an effort to address the possible cultural distinctions of fatalism (acceptance vs. hopelessness) through more specific measurement and design. This may help to address cultural practices which are likely present. The present study supports the relevance of
fatalistic thinking to the experience of diabetes and to the prevention of its complications, but due to limitations in the stage measure it is unclear what role fatalism plays in behavior management. Given the findings of Daskavich et. al, (1997) fatalistic thought is likely to have an influence on persons on stage of change. Future studies will need to assess more sensitively for individual readiness in conjunction with a more refined fatalism measure.
References


Walsh, J. (1997). Personal communication/consultation

APPENDIX A: QUESTIONNAIRE AND INSTRUCTIONS

Consent for Participation

Diabetes Lifestyle choice questionnaire

I understand that the purpose of this study is to study the life experiences of people with diabetes. I will be asked to complete a questionnaire that will ask about my life related to diabetes, my cultural beliefs, how long I have had type-2 and whether or not I believe that I can prevent complications associated with type-2. All information in this study will be kept confidential and my name or any other identifying information will not be used or recorded in any way. If I wish to receive results of this study when it is completed I understand that I can call Christine Fiore, Ph.D. at the University of Montana at (406) 243-2081. I understand that this project aims to improve the care of people with diabetes by better understanding the difficulties for people with diabetes. I understand that I may not directly benefit from being in this study but I may help in how health care programs are designed to benefit Native Americans. I understand that my participation is voluntary and that I may stop at any time. If I have questions about this project I can speak to Dr. Fiore at the above listed phone number. Although this research does not take place at the University of Montana nor does it involve
any physical contact or risk of injury the following liability information is provided:

In the event that you are injured as a result of this study you should seek appropriate medical treatment immediately. If the injury is caused by the negligence of the University of Montana or any of its employees, you may be entitled to reimbursement or compensation pursuant to the Comprehensive State Insurance Plan established by the department of Administration under the authority of the M.C.A., Title 2, Chapter 9. In the event of such injury further information may be obtained from the University of Montana Claims Representative of the University Legal Counsel.

I understand each of the above items and agree to participate in this study.

____________________    __________________   Name

               Date

____________________    __________________

Witness               Date
APPENDIX B: TABLES
Table 1.
Demographic Variables

Descriptive Statistics

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<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Deviation</th>
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<tr>
<td>Age</td>
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<td>11.30</td>
</tr>
<tr>
<td>Blood Quantum a</td>
<td>1.9</td>
<td>1.04</td>
</tr>
<tr>
<td>Total Blood Quantum b</td>
<td>1.83</td>
<td>1.03</td>
</tr>
<tr>
<td>How Traditional are you?  c</td>
<td>2.88</td>
<td>1.02</td>
</tr>
<tr>
<td># of years in school</td>
<td>12.45</td>
<td>2.45</td>
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<tr>
<td>how long ago diagnosed d</td>
<td>4.29</td>
<td>.99</td>
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</table>

* Note, n=137-153.
a: Indian blood quantum of tribe enrolled in; 1= 100%, 2= 75-99%, 3= 50-74%, 4= 25-49%, 5= 24% or less.

b: Total blood quantum, total degree of Indian blood; 1= 100%, 2= 75-99%, 3= 50-74%, 4= 25-49%, 5= 24% or less.

c: How traditional are you?; 1= not at all, 2= less so than most others, 3= as traditional as most people on the reservation, 4= more traditional than most people on the reservation, 5= very traditional

d: How long ago diagnosed with diabetes?; 1= 6 months or less, 2= more than 6 months but less than 1 year, 3= 1 to 2 years, 4= 2 to 5 years, 5= more than 5 years
Table 2.  
Distribution of cases by gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percent</th>
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</thead>
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<tr>
<td>Valid Male</td>
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<td>27.5</td>
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<tr>
<td>Valid Female</td>
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<td>139</td>
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</tr>
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<td>Missing</td>
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<td>Total</td>
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<td>100.0</td>
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Table 3.  
Distribution of cases by tribal affiliation

<table>
<thead>
<tr>
<th>Tribal Affiliation</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid Eastern Shoshone</td>
<td>53</td>
<td>34.6</td>
</tr>
<tr>
<td>Valid Northern Arapaho</td>
<td>81</td>
<td>52.9</td>
</tr>
<tr>
<td>Valid Shoshone and Arapaho</td>
<td>4</td>
<td>2.6</td>
</tr>
<tr>
<td>Valid Other tribe</td>
<td>10</td>
<td>6.5</td>
</tr>
<tr>
<td>Total</td>
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<td>Missing</td>
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<td>3.3</td>
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<tr>
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Table 4.
Distribution of cases by enrollment

<table>
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<th>Frequency</th>
<th>Percent</th>
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<tbody>
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<td>97.4</td>
</tr>
<tr>
<td>No</td>
<td>4</td>
<td>2.6</td>
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<tr>
<td>Total</td>
<td>153</td>
<td>100.0</td>
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Table 5.
Distribution by type of diabetes

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<th>Type of Diabetes</th>
<th>Frequency</th>
<th>Percent</th>
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</thead>
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<tr>
<td>Type-1</td>
<td>33</td>
<td>21.6</td>
</tr>
<tr>
<td>Type-2</td>
<td>104</td>
<td>68.0</td>
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<tr>
<td>Total</td>
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<td>Missing</td>
<td>16</td>
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<tr>
<td>Total</td>
<td>153</td>
<td>100.0</td>
</tr>
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Table 6.
Distribution of cases by native language preference by tribal affiliation.

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<tr>
<th>Tribal Affiliation</th>
<th>Eastern Shoshone</th>
<th>Northern Arapaho</th>
<th>Shoshone and Arapaho</th>
<th>other tribe</th>
<th>total</th>
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</thead>
<tbody>
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</tr>
<tr>
<td>Yes</td>
<td>Count</td>
<td>17</td>
<td>32</td>
<td>2</td>
<td>3</td>
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<tr>
<td></td>
<td>% within tribal affiliation</td>
<td>37.0%</td>
<td>42.1%</td>
<td>50.0%</td>
<td>33.3%</td>
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<tr>
<td>No</td>
<td>Count</td>
<td>28</td>
<td>43</td>
<td>2</td>
<td>6</td>
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<tr>
<td></td>
<td>% within tribal affiliation</td>
<td>60.9%</td>
<td>56.6%</td>
<td>50.0%</td>
<td>66.7%</td>
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<td>Count</td>
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<td>1</td>
<td>0</td>
<td>0</td>
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<tr>
<td></td>
<td>% within tribal affiliation</td>
<td>2.2%</td>
<td>1.3%</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>46</td>
<td>76</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
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</table>

Table 7.
Chi-square analyses of language preference by tribal affiliation.

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<tr>
<th>Chi-Square tests</th>
<th>value</th>
<th>df</th>
<th>asymp.sig. (2-sided)</th>
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<tr>
<td>Pearson Chi-Square</td>
<td>3.346a</td>
<td>9</td>
<td>.949</td>
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a. 11 cells (68.8%) have expected count less than 5. The minimum is .03.
Table 9.
Principle components analysis

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<th>Statement</th>
<th>I Trust</th>
<th>II Distrust</th>
<th>III Control</th>
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<tbody>
<tr>
<td>DC1. I think Indians get diabetes more than other ethnic groups such as Whites, Blacks, Asians, etc.</td>
<td>-.128</td>
<td>.028</td>
<td>-.392</td>
</tr>
<tr>
<td>DC2. I think I got diabetes because others in my family have diabetes.</td>
<td>-.267</td>
<td>.252</td>
<td>-.056</td>
</tr>
<tr>
<td>RDC3. I think I could have prevented getting diabetes.</td>
<td>.133</td>
<td>.115</td>
<td>.351</td>
</tr>
<tr>
<td>DC4. I think if anyone in a family has diabetes their whole family will have diabetes.</td>
<td>.071</td>
<td>.559</td>
<td>.006</td>
</tr>
<tr>
<td>DC5. If the doctor/health educator or other health care provider told me that type-2 might be preventable I would not trust them.</td>
<td>.059</td>
<td>.421</td>
<td>.168</td>
</tr>
<tr>
<td>RDC6. I trust what my doctor or health care provider recommends for treating my diabetes.</td>
<td>.431</td>
<td>.076</td>
<td>-.036</td>
</tr>
<tr>
<td>RDC7. If the doctor/health educator or other health care personnel told me that type-2 might be preventable and I believed them, I would try suggested lifestyle changes such as a new diet and increased exercise, as a way to control my weight.</td>
<td>.512</td>
<td>.108</td>
<td>.230</td>
</tr>
<tr>
<td>DC8. I think a traditional diet like dried meat, berries, fish, and other natural foods would be better for me to manage my diabetes.</td>
<td>-.095</td>
<td>.170</td>
<td>.457</td>
</tr>
<tr>
<td>DC9. I think that dietary changes suggested by doctors or other health care personnel are ways to try to get Indians to eat like white people</td>
<td>-.050</td>
<td>.606</td>
<td>.051</td>
</tr>
<tr>
<td>DC10. I think that suggested lifestyle changes like trying to get more exercise are ways for doctors to try to get Indians to act like white people.</td>
<td>-.068</td>
<td>.676</td>
<td>.108</td>
</tr>
</tbody>
</table>
Table 9.
Principle components analysis (continued)

<table>
<thead>
<tr>
<th></th>
<th>I Trust</th>
<th>II Distrust</th>
<th>III Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>RDC11. If the doctor/health educator or other health care personnel told me that type-2 complications such as kidney trouble, foot problems, vision problems, and other health problems associated with diabetes might be preventable I would believe them</td>
<td>.375</td>
<td>-.027</td>
<td>.358</td>
</tr>
<tr>
<td>RDC12. If the doctor/health educator or other health care personnel told me that type-2 complications such as kidney trouble, foot problems, vision problems, and other health problems associated with diabetes might be preventable, and I believed them I would try suggested lifestyle choices such as a new diet, or increased exercise, as a way to control my weight.</td>
<td>.631</td>
<td>.020</td>
<td>.160</td>
</tr>
<tr>
<td>DC13. I think I got diabetes because I am an Indian</td>
<td>.088</td>
<td>.499</td>
<td>-.143</td>
</tr>
<tr>
<td>DC14. I think all Indians eventually get diabetes.</td>
<td>.097</td>
<td>.652</td>
<td>-.112</td>
</tr>
<tr>
<td>RDC15. I think I have control over anything in my life that happens to me.</td>
<td>.345</td>
<td>-.042</td>
<td>.537</td>
</tr>
<tr>
<td>DC16. I think that diabetes was brought to Indian people by white people.</td>
<td>-.097</td>
<td>.386</td>
<td>-.378</td>
</tr>
<tr>
<td>DC17. I think the Commodities that are given to Indians by the United States Government, cause diabetes</td>
<td>.211</td>
<td>.269</td>
<td>-.551</td>
</tr>
<tr>
<td>DC18. I think that diabetes was brought to Indian people by white people to try to harm Indian people.</td>
<td>.179</td>
<td>.636</td>
<td>-.197</td>
</tr>
<tr>
<td>DC19. I think diabetes can be prevented.</td>
<td>.486</td>
<td>-.007</td>
<td>.216</td>
</tr>
<tr>
<td>DC20. I think it will help me to manage my diabetes to listen to the doctor or other health care provider and follow his/her instructions.</td>
<td>.395</td>
<td>.060</td>
<td>.141</td>
</tr>
</tbody>
</table>
Table 9.
Principle Components Analysis (continued)

<table>
<thead>
<tr>
<th>DC21. I think diabetes can be cured with medicine.</th>
<th>I Trust</th>
<th>II Distrust</th>
<th>III Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>.100</td>
<td>-0.413</td>
<td>.096</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DC22. I think diabetes can be cured using traditional medicine.</th>
</tr>
</thead>
<tbody>
<tr>
<td>.165 .571 .359</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DC23. I think complications from diabetes can be prevented</th>
</tr>
</thead>
<tbody>
<tr>
<td>.612 .096 .309</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DC24. I follow recommendations from my doctor or other health care provider about diet and exercise to prolong my life.</th>
</tr>
</thead>
<tbody>
<tr>
<td>.627 -0.089 -0.236</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DC25. I think traditional healing/medicine is better for my diabetes than going to the clinic/doctor for healing/medicine</th>
</tr>
</thead>
<tbody>
<tr>
<td>.061 .652 -0.295</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DC26. I think I can control my physical health.</th>
</tr>
</thead>
<tbody>
<tr>
<td>.688 -0.084 .219</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DC27. I think I can control my mental health</th>
</tr>
</thead>
<tbody>
<tr>
<td>.686 -0.023 .095</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DC28. I think that the creator controls what happens to me in my life.</th>
</tr>
</thead>
<tbody>
<tr>
<td>-0.274 .297 .105</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DC29. I am being disrespectful to my body if I don't take care of it.</th>
</tr>
</thead>
<tbody>
<tr>
<td>.498 -0.016 .070</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DC30. I am fearful of death</th>
</tr>
</thead>
<tbody>
<tr>
<td>.158 -0.198 -0.363</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DC31. I think it is more important to live every day and enjoy life than it is to take steps to lengthen my life.</th>
</tr>
</thead>
<tbody>
<tr>
<td>-0.196 .507 .267</td>
</tr>
</tbody>
</table>

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Table 9.
Principle components analysis (continued)

<table>
<thead>
<tr>
<th>Item</th>
<th>I Trust</th>
<th>II Distrust</th>
<th>III Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC32. I am willing to make sacrifices to prolong my life.</td>
<td>.636</td>
<td>-.062</td>
<td>-.081</td>
</tr>
<tr>
<td>DC33. I think I have no control over anything in my life that</td>
<td>.039</td>
<td>.543</td>
<td>.117</td>
</tr>
<tr>
<td>happens to me.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC34. I would do what is within reason to lengthen my life rather</td>
<td>.672</td>
<td>.098</td>
<td>-.178</td>
</tr>
<tr>
<td>than let myself die.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC35. I think that when the creator calls me home it is my time to</td>
<td>-.373</td>
<td>.117</td>
<td>-.132</td>
</tr>
<tr>
<td>go, regardless of diabetes.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC36. I think my body is sacred and I do the best I can of take</td>
<td>.751</td>
<td>-.112</td>
<td>-.173</td>
</tr>
<tr>
<td>care of it.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Note: RDC indicates reflected items.
Table 10. 
Correlates of Fatalistic Thinking

<table>
<thead>
<tr>
<th></th>
<th>Fatalism</th>
<th>Spirituality</th>
<th>Traditional beliefs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes locus of Control</td>
<td>.453*</td>
<td>-.205*</td>
<td>.102</td>
</tr>
<tr>
<td>Life style choices</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Healthy behaviors</td>
<td>-.237*</td>
<td>.053</td>
<td>-.052</td>
</tr>
<tr>
<td>Unhealthy units consumed</td>
<td>.230*</td>
<td>-.163</td>
<td>-.110</td>
</tr>
<tr>
<td>Diabetes Quality of Life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social/economic Worry</td>
<td>.135</td>
<td>-.081</td>
<td>.052</td>
</tr>
<tr>
<td>Treatment satisfaction</td>
<td>.200*</td>
<td>-.192*</td>
<td>-.137</td>
</tr>
<tr>
<td>Health Item</td>
<td>.167*</td>
<td>.168*</td>
<td>-.070</td>
</tr>
<tr>
<td>Treatment impact</td>
<td>.201*</td>
<td>-.061</td>
<td>.049</td>
</tr>
<tr>
<td>Future worry</td>
<td>.184*</td>
<td>-.127</td>
<td>.108</td>
</tr>
</tbody>
</table>

*Correlation is significant at the .05 level (2-tailed).
Table 11.
Fatalistic beliefs & Stage of Change: Means and SD’s of Fatalism scale

<table>
<thead>
<tr>
<th>Stage</th>
<th>TMC</th>
<th>Fatalism scale score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mean</td>
</tr>
<tr>
<td>1 precontemplation; n=8</td>
<td></td>
<td>2.42</td>
</tr>
<tr>
<td>2 contemplation; n=21</td>
<td></td>
<td>2.43</td>
</tr>
<tr>
<td>3 preparation; n=12</td>
<td></td>
<td>2.38</td>
</tr>
<tr>
<td>4 action; n=12</td>
<td></td>
<td>2.45</td>
</tr>
<tr>
<td>5 maintenance; n=92</td>
<td></td>
<td>2.48</td>
</tr>
</tbody>
</table>

Table 12.
Relationship between Diabetes Quality of Life and Transtheoretical Stage of Change

<table>
<thead>
<tr>
<th>Stage</th>
<th>DQOL Tx. Impact</th>
<th>DQOL Soc. ec worry</th>
<th>DQOL Tx. Dissatisfac.</th>
<th>DQOL Future worry</th>
<th>DQOL Health Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 precon (n=8)</td>
<td>2.02 (.38)</td>
<td>1.60 (.64)</td>
<td>2.00 (.60)</td>
<td>1.54 (.63)</td>
<td>2.25 (.89)</td>
</tr>
<tr>
<td>2 cont. (n=21)</td>
<td>2.42 (.62)</td>
<td>2.27 (.70)</td>
<td>2.68 (.69)</td>
<td>1.86 (.66)</td>
<td>2.60 (.60)</td>
</tr>
<tr>
<td>3 prep (n=10)</td>
<td>2.23 (.69)</td>
<td>2.25 (1.02)</td>
<td>2.36 (.98)</td>
<td>1.80 (.55)</td>
<td>2.70 (1.06)</td>
</tr>
<tr>
<td>4 action (n=12)</td>
<td>2.47 (.82)</td>
<td>2.78 (1.21)</td>
<td>2.79 (.62)</td>
<td>2.37 (1.10)</td>
<td>2.46 (.78)</td>
</tr>
<tr>
<td>5 maint (n=92)</td>
<td>2.29 (.59)</td>
<td>2.26 (.86)</td>
<td>2.43 (.62)</td>
<td>1.82 (.74)</td>
<td>2.30 (.72)</td>
</tr>
</tbody>
</table>

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Table 13.
Intercorrelations: Fatalism Scale, Tradition Health Beliefs, Spirituality Scale.

<table>
<thead>
<tr>
<th></th>
<th>Fatalism Scale</th>
<th>Traditional Health Beliefs</th>
<th>Spirituality Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatalism Scale</td>
<td>1.00</td>
<td>.028</td>
<td>-.178*</td>
</tr>
<tr>
<td>Traditional Health Beliefs</td>
<td>.028</td>
<td>1.00</td>
<td>.758*</td>
</tr>
<tr>
<td>Spirituality</td>
<td>-.178*</td>
<td>.758*</td>
<td>1.00</td>
</tr>
</tbody>
</table>

* Correlation is significant at the .05 level (2-tailed).
**Correlation is significant at the .01 level (2-tailed).

Table 14.
Locus of Control & Transtheoretical Model of Change

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Precontemplation (n=8)</td>
<td>3.22</td>
<td>.25</td>
</tr>
<tr>
<td>2 Contemplation (n=21)</td>
<td>2.74</td>
<td>.37</td>
</tr>
<tr>
<td>3 Preparation (n=10)</td>
<td>2.84</td>
<td>.38</td>
</tr>
<tr>
<td>4 Action (n=12)</td>
<td>2.88</td>
<td>.37</td>
</tr>
<tr>
<td>5 Maintenance (n=92)</td>
<td>2.71</td>
<td>.45</td>
</tr>
</tbody>
</table>
Dear Members of the Shoshone and Arapaho Joint Business Council,

I along with my faculty supervisor, Christine Fiore, at the University of Montana, am writing you this letter to inform you of a research idea that I have decided to pursue as a way of addressing type-2 in Native Americans. As you are already aware the health problems that we face with type-2 on the Wind River Reservation are many. The dialysis center that was built at the Lander hospital was a result of the problem we have in treating the complications from this disease. This research idea that I am speaking of is one in which I would ask community members who already have diabetes to fill out questionnaires that might identify whether or not they believe that they can prevent the complications that are a result of type-2. The complications are many and include kidney dialysis, amputations, problems with vision and numerous others. I believe that these complications can be prevented through the adherence to treatment and lifestyle changes that have shown to be effective in some recent research. I am asking for your permission to do such a study.

I believe this information could be important to our entire reservation population as we are all affected by diabetes through our families and friends. I am hoping to collect a sample of at least two hundred people from the Wind River Reservation who have type-2 to fill out the questionnaire. This sample would be taken as a convenience sample possibly at the I.H.S. (I have been in touch with Diana Richter the, I. H. S. Diabetic Coordinator on this issue) or other community sites around the reservation. Also I would like to be able to pay the people who participate by filling out the survey, the amount of five dollars per person. As previously stated to gather a sample of 200 persons, times five dollars per person would amount to a total of $1,000.00. I currently have no money with which to carry out this research project. I am asking the Joint Business Council to grant me $1,000 with which I would pay participants in the study. A report detailing the expenditure of this money would be sent to the (JBC) at the completion of this research project. The incurred costs of copying, data collection and others would be covered by myself and my faculty supervisor here at the University of Montana.

Thank you for your time and consideration of this proposal. If you have question or would like more information regarding this proposal please contact me at school in Missoula, my telephone # (406)251-6198, address; 2417 55th St. #B Missoula, MT. 59803 or My faculty Supervisor Christine Fiore, Ph.D. University of Montana, dept. Clinical Psychology, (406) 243-4521/2080 Missoula, MT. 59812.

Sincerely,

Darren Calhoun

University of Montana Department of Clinical Psychology, Missoula, MT. 59812

cc: Tribal Health Director, Paul J. Hanway
Thank you for filling out this questionnaire and participating in this study. The information you are sharing is very important to us in helping us understand how diabetes affects Indian people here in our community. Please answer all questions and be as honest in your answers as you can. Please read the instructions carefully to each section of the questionnaire, and feel free to ask if there is a part of the instructions that do not seem clear to you. This questionnaire is designed to assess different aspects of your life which may be affected by your diabetes. The questionnaire is also designed to assess aspects of your diabetes which may affect your lifestyle choices. Your answers are anonymous and will remain confidential, therefore please DO NOT put your name anywhere on this questionnaire. If you have any questions please ask. Thank you for taking the time and energy to help by participating in this study.

Please read the following statements, then circle the one that best describes you:

1. My diabetes is not a problem therefore I don’t need to make any lifestyle changes.

2. I think my diabetes is a problem and I know I need to make some lifestyle changes but I have not started those changes yet.

3. I know my diabetes is a problem and I am preparing to make some lifestyle changes and will begin to make those changes within the next month.

4. I know my diabetes is a problem and I have started to make lifestyle changes but I have been doing so for less than six months.

5. I know my diabetes is a problem, I have made lifestyle changes to deal with it, and I have been sticking to those lifestyle changes for over one year.

6. I know my diabetes is a problem, I have made lifestyle changes to deal with it and I have been sticking to those changes for the last five years.
Please circle your responses, or fill in the blanks. If you come to a question that doesn’t seem clear to you or if you have questions please ask at any time. Thank you for your time and help in this research project.

1. Age ______ Gender: Male / Female
   Height: Ft. _____ in. _____ Approximate Weight _______ Lbs.
2. Tribal Affiliation: _________________________________.
3. Enrolled Tribal member? YES/NO
4. Non-enrolled descendant? YES/NO
5. Degree of Indian Blood from tribe where you are enrolled _______.
6. Total Indian blood degree ____________.
7. Do you prefer to speak your Native language rather than English? YES/NO (e.g. Eastern Shoshone, Northern Arapaho or other Indian language)
8. How traditional do you consider yourself to be? (Circle your response)
   1 = not traditional at all
   2 = traditional but less so than most others
   3 = as traditional as most people on the reservation
   4 = more traditional than most people on the reservation
   5 = very traditional
9. Have you had traditional education from an elder? YES/NO
10. Please place a check next to the highest level of schooling you have completed.
    Highest grade completed (if not high school) _______
    GED _____
    High school _____
    Some college _____
    College Degree _____
    Advanced Degree (e.g. Master’s degree, Ph.D. M.D.) _____

11. What type of diabetes have you been diagnosed with? (circle your response)
Type-1 Diabetes (insulin-dependant)
OR
Type-2 (non-insulin dependant)
Do you take pills or get shots of insulin? (circle your response)

12. How long ago were you diagnosed with diabetes? (circle your response)

   6 months or less   more than 6 months, but less than 1 year

   1 to 2 years       2 to 5 years       More than 5 years

13. Do you think you can prevent complications like, problems with vision, circulation, problems with kidneys or others that are a result of diabetes? (Circle your response)
   1= no
   2= probably not
   3 = maybe
   4= probably can
   5= yes

14. Has anyone in your immediate blood related family, (only include immediate blood related family here, like grandparents, mother, father, children, brothers, sisters, aunts or uncles) been diagnosed with diabetes?
   YES/NO
   If yes, how many? (Circle your response)
   1-5       6-10       11-15       16-20       More than 20

15. Have any of your traditional relatives who are not related to you by blood such as adopted grandpas, grandmas, brothers, sisters, aunts, uncles, mother in-law, father in-law or others been diagnosed with diabetes?
   YES/NO
   If yes how many? (Circle your response)
   1-5       6-10       11-15       16-20       More than 20

16. Do any of your friends have diabetes? YES/NO. (Circle your response)
   If yes how many? (Circle your response)
17. What types of treatment have you had for diabetes?
(please circle all that apply to you)
pills, shots of Insulin, foot check ups, regular doctor visits, attend diabetic clinic, regular visits with the dietician, changes in my diet, increased exercise, dialysis, amputation, glasses, traditional medicine, dental check ups, eye exams, or other (please list)_______
_____________________________________________________.
DC Measure of Fatalism

Please read each question below carefully and rate how much you agree with each statement, on the following scale:

<table>
<thead>
<tr>
<th>I strongly disagree</th>
<th>I disagree</th>
<th>I am not sure</th>
<th>If I agree or disagree</th>
<th>I agree</th>
<th>I strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

1. I think Indians get diabetes more than other ethnic groups such as Whites, Blacks, Asians, etc.
   1   2   3   4   5

2. I think I got diabetes because others in my family have diabetes.
   1   2   3   4   5

3. I think I could have prevented getting diabetes.
   1   2   3   4   5

4. I think if anyone in a family has diabetes their whole family will have diabetes.
   1   2   3   4   5

5. If the doctor/health educator or other health care provider told me that type-II diabetes might be preventable I would not trust them.
   1   2   3   4   5

6. I trust what my doctor or health care provider recommends for treating my diabetes.
   1   2   3   4   5

7. If the doctor/health educator or other health care personnel told me that type-2 diabetes might be preventable and I believed them, I would try suggested lifestyle changes such as a new diet and increased exercise, as a way to control my weight.
   1   2   3   4   5

8. I think a traditional diet like dried meat, berries, fish, and other natural foods would be better for me to manage my diabetes.
   1   2   3   4   5

9. I think that dietary changes suggested by doctors or other health care personnel are ways to try to get Indians to eat like white people.
   1   2   3   4   5
10. I think that suggested lifestyle changes like trying to get more exercise are ways for doctors to try to get Indians to act like white people.

11. If the doctor/health educator or other health care personnel told me that type-2 diabetes complications such as kidney trouble, foot problems, vision problems, and other health problems associated with diabetes might be preventable I would believe them.

12. If the doctor/health educator or other health care personnel told me that type-2 diabetes complications such as kidney trouble, foot problems, vision problems, and other health problems associated with diabetes might be preventable, and I believed them I would try suggested lifestyle choices such as a new diet, or increased exercise, as a way to control my weight.

13. I think I got diabetes because I am an Indian.


15. I think I have control over anything in my life that happens to me.

16. I think that diabetes was brought to Indian people by white people.

17. I think the Commodities that are given to Indians by the United States Government, cause diabetes.

18. I think that diabetes was brought to Indian people by white people to try to harm Indian people.

19. I think diabetes can be prevented.

20. I think it will help me to manage my diabetes to listen to the doctor or other health care provider and follow his/her instructions.

21. I think diabetes can be cured with medicine.
<table>
<thead>
<tr>
<th>I strongly disagree</th>
<th>I disagree</th>
<th>I am not sure</th>
<th>I agree</th>
<th>I strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>22. I think diabetes can be cured using traditional medicine.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>23. I think complications from diabetes can be prevented.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>24. I follow recommendations from my doctor or other health care provider about diet and exercise to prolong my life.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>25. I think traditional healing/medicine is better for my diabetes than going to the clinic/doctor for healing/medicine.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>26. I think I can control my physical health.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>27. I think I can control my mental health</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>28. I think that the creator controls what happens to me in my life.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>29. I am being disrespectful to my body if I don’t take care of it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>30. I am fearful of death.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>31. I think it is more important to live every day and enjoy life than it is to take steps to lengthen my life.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>32. I am willing to make sacrifices to prolong my life.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>33. I think I have no control over anything in my life that happens to me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>34. I would do what is within reason to lengthen my life rather than let myself die.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>35. I think that when the creator calls me home it is my time to go, regardless of diabetes.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>36. I think my body is sacred and I do the best I can to take care of it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
Please read each of the following items carefully and select the number that best describes how you feel about diabetes. Please mark only one number to indicate how much you agree with each statement. **Please Note that the numbers on this scale that you are using to rate your responses have changed to include the number six (6), thank you.**

<table>
<thead>
<tr>
<th>I strongly Disagree</th>
<th>I disagree</th>
<th>I mildly Disagree</th>
<th>I mildly agree</th>
<th>I agree</th>
<th>I strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

1. I can avoid complications from diabetes.
   1   2   3   4   5   6

2. When my sugar is high it’s because of something I’ve done
   1   2   3   4   5   6

3. Good health is a matter of good fortune.
   1   2   3   4   5   6

4. Regular doctor’s visits avoid problems.
   1   2   3   4   5   6

5. What I do is the main influence on my health.
   1   2   3   4   5   6

6. If it’s meant to be I will avoid complications from diabetes.
   1   2   3   4   5   6

7. I should call my doctor when ever I feel bad.
   1   2   3   4   5   6

8. My blood sugars will be what they will be.
   1   2   3   4   5   6

9. Blood sugars are controlled by accident.
   1   2   3   4   5   6

10. I can only do what my doctor tells me.
    1   2   3   4   5   6

11. I never know why I’m out of control.
    1   2   3   4   5   6

12. Health professionals keep me healthy.
    1   2   3   4   5   6

13. My family is a big help in controlling my diabetes.
    1   2   3   4   5   6

14. When my blood sugar is high it’s because I have made a mistake.
    1   2   3   4   5   6
15. Good control is a matter of luck.
   1  2  3  4  5  6

16. Complications from diabetes are the result of carelessness.
   1  2  3  4  5  6

17. I am responsible for my health.
   1  2  3  4  5  6

18. Other people have a big responsibility for my diabetes.
   1  2  3  4  5  6

19. The creator is responsible for my diabetes.
   1  2  3  4  5  6
Please read each statement carefully. Please indicate how satisfied or dissatisfied you are with the aspect of your life described in the statement. Circle the statement that best describes how you feel. There are no right or wrong answers to these questions. We are interested in your opinion.

Use the following scale to rate your response:

<table>
<thead>
<tr>
<th>very satisfied</th>
<th>moderately satisfied</th>
<th>neither satisfied or dissatisfied</th>
<th>moderately dissatisfied</th>
<th>very dissatisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

A1. How satisfied are you with the amount of time it takes to manage your diabetes?

1 2 3 4 5

A2. How satisfied are you with the amount of time you spend getting checkups?

1 2 3 4 5

A3. How satisfied are you with your current treatment?

1 2 3 4 5

A4. How satisfied are you with the flexibility you have in your diet?

1 2 3 4 5

A5. How satisfied are you with the burden your diabetes is placing on your family?

1 2 3 4 5

A6. How satisfied are you with your knowledge about diabetes?

1 2 3 4 5

A7. How satisfied are you with your sleep?

1 2 3 4 5

A8. How satisfied are you with your social relationships and friendships?

1 2 3 4 5

A9. How satisfied are you with your sex life?

1 2 3 4 5

A10. How satisfied are you with you with your work, school and household activities?

1 2 3 4 5

A11. How satisfied are you with the appearance of your body?

1 2 3 4 5

A12. How satisfied are you with the amount of time you spend exercising?

1 2 3 4 5
A13. How satisfied are you with your leisure time?

A14. How satisfied are you with your life in general?

In the next group of questions please indicate how often the following events happen to you. Use **this scale to rate your response:**

<table>
<thead>
<tr>
<th>Never</th>
<th>Very Seldom</th>
<th>Sometimes</th>
<th>Often</th>
<th>All the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

B1. How often do you feel pain associated with the treatment for your diabetes?

B2. How often are you embarrassed by having to deal with your diabetes in public?

B3. How often do you have low blood sugar?

B4. How often do you feel physically ill?

B5. How often does your diabetes interfere with your family life?

B6. How often do you have a bad nights sleep?

B7. How often do you find your diabetes limiting your social relationships and friendships?

B8. How often do you feel good about yourself?

B9. How often do you feel restricted by your diet?

B10. How often does your diabetes interfere with your sex life?
<table>
<thead>
<tr>
<th>Never</th>
<th>Very Seldom</th>
<th>Sometimes</th>
<th>Often</th>
<th>All the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

B11. How often does your diabetes keep you from driving a car or using a machine (e.g., a typewriter)

| 1     | 2           | 3         | 4     | 5            |

B12. How often does your diabetes interfere with your exercising?

| 1     | 2           | 3         | 4     | 5            |

B13. How often do you miss work, school, or household duties because of your diabetes?

| 1     | 2           | 3         | 4     | 5            |

B14. How often do you find yourself explaining what it means to have diabetes?

| 1     | 2           | 3         | 4     | 5            |

B15. How often do you find that your diabetes interrupts your leisure time activities?

| 1     | 2           | 3         | 4     | 5            |

B16. How often do you tell others about your diabetes?

| 1     | 2           | 3         | 4     | 5            |

B17. How often are you teased because you have diabetes?

| 1     | 2           | 3         | 4     | 5            |

B18. How often do you feel that because of your diabetes you go to the bathroom more than others?

| 1     | 2           | 3         | 4     | 5            |

B19. How often do you find that you eat something you shouldn’t rather than tell someone you have diabetes?

| 1     | 2           | 3         | 4     | 5            |

B20. How often do you hide from others the fact that you are having an insulin reaction?

| 1     | 2           | 3         | 4     | 5            |
C1. How often do you worry about whether you will get married? 

1  2  3  4  5

C2. How often do you worry about whether you will have children? 

1  2  3  4  5

C3. How often do you worry about whether you will not get a job you want? 

1  2  3  4  5

C4. How often do you worry about whether you will be denied insurance? 

1  2  3  4  5

C5. How often do you worry about whether you will be able to complete your education? 

1  2  3  4  5

C6. How often do you worry about whether you will miss work? 

1  2  3  4  5

C7. How often do you worry about whether you will be able to take a vacation? 

1  2  3  4  5

C8. How often do you worry about whether you will be able to travel to other reservations for pow-wows, rodeos or other activities over the summer? 

1  2  3  4  5

C9. How often do you worry about whether you will be able to travel to other reservations for sundances or other ceremonies? 

1  2  3  4  5

D1. How often do you worry about whether you will pass out? 

1  2  3  4  5

D2. How often do you worry that your body looks differently because you have diabetes? 

1  2  3  4  5

D3. How often do you worry that you will get complications from diabetes? 

1  2  3  4  5
D4. How often do you worry that someone will not go out with you because you have diabetes?

1 2 3 4 5

E1. Compared to other people your age would you say that your health is:

1. Excellent 2. Good 3. Fair 4. Poor

(Please circle the one that you feel applies to you)

Please indicate by how often you choose to do the following in a given week:

***Please write/print out your responses clearly, thank you.

I eat high fat foods such as fried food or fast food how many times per week?

I consume at least one alcoholic drink how many times per week?

*Use the following classification to define alcoholic drinks;
1 oz. of hard liquor = 1 drink; 12 oz. of beer = 1 drink;
4 oz. of wine = 1 drink.

I smoke how many cigarettes per week?

I use tobacco for ceremonial purposes how many times per week?

I use chewing tobacco such as Copenhagen, Skoal, Redman, or others how many times per week?

I drink caffeine products such as coffee, tea, pop, or others, how many times per week?
**Physical Activity/Exercise**

We are going to ask you some questions about your physical activities/exercise during the past 7 days. If you did an activity/exercise, please check the space in front of it. Then, in the spaces provided for each activity you check, write how many total hours and/or minutes you did the activity in the past 7 days. If you did physical activities during the past 7 days that are not listed, please write them down in the spaces provided below. If you have any questions, please ask. We will be happy to help you.

1.) **Sport/Recreation**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Total time spent in past 7 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>____ slow walk (include treadmill)</td>
<td>___ hours and/or ___ minutes</td>
</tr>
<tr>
<td>____ walking quickly/hiking (include treadmill)</td>
<td>___ hours and/or ___ minutes</td>
</tr>
<tr>
<td>____ jogging or running</td>
<td>___ hours and/or ___ minutes</td>
</tr>
<tr>
<td>____ aerobics or calisthenics (e.g., jumping jacks)</td>
<td>___ hours and/or ___ minutes</td>
</tr>
<tr>
<td>____ stretching or yoga</td>
<td>___ hours and/or ___ minutes</td>
</tr>
<tr>
<td>____ soccer or football</td>
<td>___ hours and/or ___ minutes</td>
</tr>
<tr>
<td>____ tennis or racquetball</td>
<td>___ hours and/or ___ minutes</td>
</tr>
<tr>
<td>____ basketball</td>
<td>___ hours and/or ___ minutes</td>
</tr>
<tr>
<td>____ volleyball</td>
<td>___ hours and/or ___ minutes</td>
</tr>
<tr>
<td>____ softball or baseball</td>
<td>___ hours and/or ___ minutes</td>
</tr>
<tr>
<td>____ golf (walking &amp; carrying or pulling clubs)</td>
<td>___ hours and/or ___ minutes</td>
</tr>
<tr>
<td>____ golf (riding in golf cart)</td>
<td>___ hours and/or ___ minutes</td>
</tr>
<tr>
<td>____ martial arts</td>
<td>___ hours and/or ___ minutes</td>
</tr>
<tr>
<td>____ dancing of any kind</td>
<td>___ hours and/or ___ minutes</td>
</tr>
<tr>
<td>____ swimming</td>
<td>___ hours and/or ___ minutes</td>
</tr>
<tr>
<td>____ hunting</td>
<td>___ hours and/or ___ minutes</td>
</tr>
<tr>
<td>____ fishing</td>
<td>___ hours and/or ___ minutes</td>
</tr>
<tr>
<td>Activity</td>
<td>Hours and/or Minutes</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Paddling a boat or raft</td>
<td><strong><strong><strong><strong><strong>:</strong></strong></strong></strong></strong></td>
</tr>
<tr>
<td>Bowling</td>
<td><strong><strong><strong><strong><strong>:</strong></strong></strong></strong></strong></td>
</tr>
<tr>
<td>Archery</td>
<td><strong><strong><strong><strong><strong>:</strong></strong></strong></strong></strong></td>
</tr>
<tr>
<td>Weight lifting</td>
<td><strong><strong><strong><strong><strong>:</strong></strong></strong></strong></strong></td>
</tr>
<tr>
<td>Biking (include stationary bike)</td>
<td><strong><strong><strong><strong><strong>:</strong></strong></strong></strong></strong></td>
</tr>
</tbody>
</table>

**2.) Chores/Work**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Hours and/or Minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digging</td>
<td><strong><strong><strong><strong><strong>:</strong></strong></strong></strong></strong></td>
</tr>
<tr>
<td>Raking</td>
<td><strong><strong><strong><strong><strong>:</strong></strong></strong></strong></strong></td>
</tr>
<tr>
<td>Mowing the lawn</td>
<td><strong><strong><strong><strong><strong>:</strong></strong></strong></strong></strong></td>
</tr>
<tr>
<td>Hand watering</td>
<td><strong><strong><strong><strong><strong>:</strong></strong></strong></strong></strong></td>
</tr>
<tr>
<td>Harvesting or planting</td>
<td><strong><strong><strong><strong><strong>:</strong></strong></strong></strong></strong></td>
</tr>
<tr>
<td>Heavy carpentry or construction</td>
<td><strong><strong><strong><strong><strong>:</strong></strong></strong></strong></strong></td>
</tr>
<tr>
<td>Digging or chopping</td>
<td><strong><strong><strong><strong><strong>:</strong></strong></strong></strong></strong></td>
</tr>
<tr>
<td>Carrying heavy loads</td>
<td><strong><strong><strong><strong><strong>:</strong></strong></strong></strong></strong></td>
</tr>
<tr>
<td>Delivering mail, waiting</td>
<td><strong><strong><strong><strong><strong>:</strong></strong></strong></strong></strong></td>
</tr>
<tr>
<td>Tables or patrolling on foot</td>
<td><strong><strong><strong><strong><strong>:</strong></strong></strong></strong></strong></td>
</tr>
<tr>
<td>House painting</td>
<td><strong><strong><strong><strong><strong>:</strong></strong></strong></strong></strong></td>
</tr>
<tr>
<td>Making deliveries</td>
<td><strong><strong><strong><strong><strong>:</strong></strong></strong></strong></strong></td>
</tr>
<tr>
<td>Working horses or livestock</td>
<td><strong><strong><strong><strong><strong>:</strong></strong></strong></strong></strong></td>
</tr>
<tr>
<td>Logging</td>
<td><strong><strong><strong><strong><strong>:</strong></strong></strong></strong></strong></td>
</tr>
</tbody>
</table>

Ranch or farm work (please list activities in spaces below):

- __________________________________________:__________
- __________________________________________:__________

**Total time spent in past 7 days**

- ______________________________:_____________
other outdoor work (please describe in spaces below)

______________________________ hours and/or ___ minutes

______________________________ hours and/or ___ minutes

3.) **Housework**

--- sweeping or mopping ___hours and/or ___ minutes
--- scrubbing floors ___hours and/or ___ minutes
--- vacuuming ___hours and/or ___ minutes
--- washing windows ___hours and/or ___ minutes
--- dusting ___hours and/or ___ minutes
--- hanging/folding laundry ___hours and/or ___ minutes
--- hand-washing laundry ___hours and/or ___ minutes
--- ironing ___hours and/or ___ minutes

other housework or cleaning (please describe in the spaces below)

______________________________ hours and/or ___ minutes

______________________________ hours and/or ___ minutes

4.) **Cooking**

--- kneading bread ___hours and/or ___ minutes
--- hand-mixing ___hours and/or ___ minutes
--- butchering ___hours and/or ___ minutes
--- making dry meat ___hours and/or ___ minutes

other food preparation (describe in spaces below)

______________________________ hours and/or ___ minutes

______________________________ hours and/or ___ minutes
5.) In the spaces below, please describe any other physical activities you did in the past 7 days that we did not ask about.

_____________________________________ hours and/or ___ minutes

_____________________________________ hours and/or ___ minutes