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EXPLORATION OF THE MENTAL HEALTH IMPACTS OF DROUGHT ON RURAL
NEBRASKANS VIA REMEMBERED PERCEPTIONS

by

Grace Schleining

AN UNDERGRADUATE THESIS

Presented to the Faculty of the
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Thesis Advisor: Tonya Haigh

Thesis Reader: Hillary Mason

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University of Nebraska, 2024

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Abstract

Drought is a sociological phenomenon. It is a well-known occurrence across the midwestern United States; the drying out of the soil, the failing of crops, and the constant dryness and heat... this is all drought. Inspired by my earliest memory of this climate phenomenon I sought to determine whether we can identify evidence of negative mental health impacts and/or well-being in rural Nebraskans due to drought, thus my research question: Can we identify negative effects of drought on rural Nebraskan mental health and/or wellbeing? In this study, rural Nebraska community members, who are involved with the agricultural sector, were interviewed. They were asked questions regarding their perceptions and stories of drought

using purposive sampling and snowball sampling methods. The interviews were transcribed and put into a coding document based on common themes. In answering my main research question, I found themes throughout that indicate negative mental health/well-being impacts. Each and every individual in my study was able to speak to their experiences with drought and how it affected them. Stress was the most frequently mentioned mental health impact. The interviewees shared compelling responses that they became disheartened and no longer enjoyed farming. Furthermore, they expressed that their interactions with their loved ones suffered and their physical health was impacted. The interviewees reported witnessing these impacts on their friends and family as well. The purpose of this paper is to distill the results of the interviews into tangible evidence to assist in examining the research question. This small study found evidence that it is well-known within the farming community that mental health and well-being are negatively impacted by drought. With this knowledge, it is our job as a society to identify, address, and create solutions for a group of individuals that we as a society rely so heavily upon.

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Preface

This endeavor would not have been possible without the support and accessibility of my professor and UNL Environmental Studies program director, Dr. Dave Gosselin. I would like to express my deepest gratitude to Dr. Tonya Haigh, my thesis advisor, for her invaluable guidance and patience, and to Hillary Mason, my thesis reader, for her flexibility and belief in me, which

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Introduction

Drought has traditionally been studied from the perspective of economics or natural resources, and while these areas of study serve as axioms, some of the impacts that touch each person affected by drought have never been considered. A common thread through my research is that mental health impacts of drought are measurable only in rural communities because the

impacts have less of an immediate and measurable impact on the well-being, livelihoods, and comfort of city dwellers. Through my exploratory research, I have found that there have been significantly more studies and research conducted on developing countries versus developed countries, Australia being an exception. Many articles have focused on Australia and Brazil which have faced intense drought in recent years. There is a gap in the research regarding developed countries, in both local and rural communities. An article published by the University of Nebraska-Lincoln Extension, Institute of Agriculture and Natural Resources, states succinctly that, “All Nebraskans need to realize that drought, including multiple-year drought, is a normal part of the state’s diverse climate. Drought will undoubtedly play an ever-increasing role in the future as demand increases for the region’s finite water resources (Hayes, et al., 2005, para. 13).”

My exploration is a study of the impacts of drought on the mental health and well-being of rural Nebraskans, as a gap in research regarding this issue exists right here in our own backyard. I am well positioned to begin exploring this gap. This data is close to home, personal, and accessible.

There are various terms used to describe mental well-being for the purpose of different fields of study. Below are some definitions important to understand for this study.

- 1) **Mental Health** is defined by the World Health Organization as “a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community” (World Health Organization, 2022).
- 2) Defined by the American Psychological Association (APA) **mental health** is “a state of mind characterized by emotional well-being, good behavioral adjustment, relative freedom from anxiety and disabling symptoms, and a capacity to establish constructive

relationships and cope with the ordinary demands and stresses of life” (*APA Dictionary of Psychology*).

- 3) The APA defines **well-being** as “a state of happiness and contentment, with low levels of distress, overall good physical and mental health and outlook or good quality of life” (*APA Dictionary of Psychology* (a)).

Due to the sociological nature of this study, it’s important to keep in mind that “Sociological perspectives predict that especially taxing living conditions, roles, and relationships are related to low levels of psychological well-being” as noted in *A Handbook for the Study of Mental Health* (Scheid & Wright, 2017, p. 7). As laid out in a following article, the psychological responses (a reaction to a stimulus) recorded by those who experienced drought in Brazil included anxiety, emotional distress, and PTSD (Coêlho et al., 2004). A similar study to my own used the World Health Organization’s definition of mental health, referenced above, in their UK study; mental health is defined as “a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community” (World Health Organization, 2022, para.

1). This United Kingdom article makes some poignant statements:

“Mental health is the foundation for well-being and effective functioning... Mental health impacts associated with drought were found to be most severe for farmers and their families through loss of livelihoods from reduced agricultural output... When livelihoods are threatened, anxiety and depression can develop... Indicators such as distress or ‘emotional consequences of drought’ were generally associated with negative mental health impacts... Defining health outcomes associated with drought is also challenging, particularly in the area of mental health. Interpretations of mental health outcomes vary across studies, and often outcomes are not explicitly defined. Although mental health

concepts are complex and vary with social, cultural, and familial norms and values, categorization of adverse mental health outcomes is a prerequisite of further study...Mental health is more than just the absence of a mental illness or disorder, and it is determined by a host of socioeconomic, biological, and environmental factors (Vins et al., 2015, p.13253).”

Listed mental health outcomes of economic effects of droughts in this study include stress, shame, anxiety/anxious symptoms, and suicide.

“The circumstances of rural communities sometimes cause health to be defined differently, often with an emphasis on one’s ability to be productive and with distress seen more as a problem of daily living rather than a mental health issue. Research has repeatedly demonstrated a phenomenon of rural stoicism that, combined with a culture of self-reliance, can interfere with help-seeking behaviors and limit effective adaptation to changed circumstances...”(Vins et al., 2015, p. 13253).

The idea for my research was inspired by my earliest personal experience with drought. I had known the definition of drought and its effects on the environment and natural resources, but during the summer of 2012, the true meaning of drought struck home. I remember sitting in my grandparents’ kitchen listening to them talk about how dry it was becoming that summer and how stunted the crops were. I remember my grandmother walked me outside and together we stuck our hands down into the cracks in the earth. They were so wide that our hands disappeared up to our wrists. I had never seen my family under such duress, and I could hear the pain and worry in my grandmother’s voice when she expressed her concern for my grandfather’s well-being and his connection to the crops he had planted and nurtured. This innate connection between the natural environment and people’s well-being has fascinated me since I was a child, along with mankind’s interactions with natural resources. Through my research, I was able to

identify themes specifically about rural Nebraskans' perception of drought and the toll that it takes on the well-being and health of the individual. This is what surrounds me, it is my family's livelihood, and a large part of what our land management strategies in the Midwest have been developed to mitigate. Drought.

The life of a person who gleans their livelihood from the land is riddled with risks, uncertainties, and challenging conditions. Although they are relatively well conditioned to deal with uncertainty, increased climate variability and changes to known patterns may increase these stressors and diminish their ability to cope with some environmental degradation.

Drought is a climatic disaster that creates substantial costs for farmers and affects their agricultural systems extensively. It is the most complex of all natural hazards. Although drought has not been well documented, resource-dependent sectors such as agriculture are the most vulnerable to the impact of this phenomenon (Keshavarz and Karami, 2014).

The aforementioned study by Keshavarz and Karami studied farmers in Iran to understand why they chose to take the coping measures that they did during a period of drought. A "paired comparisons" technique was used to help elicit the most accurate list of actions possible, which asked the farmers why they chose to take one action over another. The method brought to light "5 principal criteria that were consistently considered by the farmers" (Keshavarz & Karami, 2014, p. 46).

- 1) Severity of water scarcity
- 2) Constraints that are imposed by natural, legal, economic, and psychological forces
- 3) Willingness to continue agriculture (instead of withdrawing from farming)
- 4) Economic ability of farmers to compensate for the expenses that are associated with some strategies
- 5) Access to other financial resources to cope with drought (Keshavarz & Karami, 2014).

Water scarcity was the most commonly noted variable in farmers' decision-making process. Through the decision-making tree provided in this study, the reader is able to see how drought can impact farmers at different stages depending on when they make certain decisions. Some examples include farmers having to change their farming methods to unfamiliar ones, borrowing money, or selling goods in depressed economic conditions. "The drought led to great losses in their agriculture and livelihood" (Keshavarz & Karami, 2014, p. 52).

The mental health impacts of drought conditions are more complex than basic profitability impacts. Multiple scholarly articles cite additional outcomes that have caused mental health concerns. One article found a connection between increased suicide rates of farmers and drought years in Australia. One plausible mechanism for this may be increased financial stress on farmers, which may be exacerbated if conditions within the broader economy are depressed. Another cause could be the stress and pain of having to sell livestock, land, or other assets that are part of a generational established enterprise; additionally, it may become necessary to exterminate livestock that they invest themselves in caring for on a daily basis. Another reason this article cites is the pressure on rural economic activity, not only the farms but also the rural towns and even the urban economy. A variable I had not considered until I began my research was rural de-population and the toll that it places on those who remain. "Rural downturns associated with droughts are also likely to accelerate migration to urban areas, enhancing rural de-population (especially of young women) and leading to reduced social interaction and ever more stressed support systems" (Nicholls et al., 2005, p. 142).

A 2017 article compared emotional responses of Brazilian people living in a drought-prone area compared to those living in a non-drought-prone area. This study also compared the responses between women and men. In general, those living in the drought-prone area showed "significantly higher levels of anxiety and emotional distress" than those participants living in

the area with no drought (Coêlho et al., 2004, p. 95). It was found that women were significantly more anxious and emotionally distressed than men, and they accounted for much of the difference between general levels of these two factors in the drought-stricken area vs the non-drought-stricken area. The study reflects on the Brazilian cultural dynamic that men are not to express their emotions (Coêlho et al., 2004).

Stain et al. (2008) summarizes a study of 449 adults living in rural areas. 56% of the total sample reported high stress levels due to the drought that was occurring at the time. Of that sample, 72% of those who were either farm workers or farmers also reported high stress levels due to that drought. This article also emphasizes a connection between rural stressors and measures of mental health, suggesting that the social factors that go into the community's identity may play a mediating role (Stain et al., 2008).

In review of the impact of drought on the emotional well-being of children and adolescents in remote New South Wales, it was obvious to the school-age children how the drought impacted their daily living. They reported the stress that it put on their parents, but they had no trouble identifying positive aspects of their life in a rural setting. Based on the Emotional Symptom Scale in the survey they were given, no strong emotional impact of the drought was recorded from these children. In fact, the children seemed to enjoy the open barren expanses where they could maintain their emotional well-being and run and enjoy the open spaces. One child even went as far as to say that it was not the rural residents who take on the burden of stress, but the city dwellers. "People living in the city are stressed – it's a hole with heaps of traffic – people are relaxed in the country" (Dean & Stain, 2007, p. 362). This response seemed counterintuitive to me. I have hypothesized that it's the schooling and the social atmosphere it creates for the students that maintains a positive general mindset for these young people.

Many of my findings focus on drought in Australia. The following 2020 article briefly touches on the topic of ‘topophilia,’ which is a descriptive term for the positive, ‘affective’ bond that a person has for a physical place. “Having a connection with the land is known to promote mental health and well-being for many agricultural families and Indigenous peoples” (Lawrence-Bourne et al., 2020, p. 4 of 13). It is not surprising that those who have a connection to the land, who have an affective bond with it, are the most affected when conditions turn poor. This article begins to dive into the idea that public policy (at least in Australia) is finally beginning to track with the needs of those rural dwellers (Lawrence-Bourne et al., 2020).

A startling article by the National Library of Medicine touches on the impacts of drought on women in developing countries. It has been found that drought may deepen labor divisions between the sexes, and in conditions of reduced child labor, the burdens fall more heavily on the mothers, who are tasked with compensating for that lost work (Gray, 1994). In another study, the difference in distress levels experienced between men and women is attributed to women’s symptoms being “more strongly related to the social demands placed upon them rather than the traumatic experience itself” (Solomon et al., 1987). With the findings of this article and the findings of Coêlho et al., I’m intrigued by the possibility that Midwestern women in the agricultural sector may have different perceptions or take on the burden of stress differently than men in the farming community.

Retraining focus on the 2012 drought that sparked my consideration of the issue of emotional stress, this ScienceDirect article states that the influence of this drought event on farmers is unknown. I struggle with this assertion because I heard the pain in the stoic people’s voices. At this time, the drought extended across 61.8% of the mainland United States, and agricultural losses amounted to over \$30 billion. Economic assistance was doled out through

crop insurance, credit, and water conservation tools (Berman et al., 2021). This is where I want my study to come into play.

Those who live in rural areas, in addition to the common stoic and self-reliant attitudes, often find barriers when they do seek help for the stress in their life. Rural dwellers are at a disadvantage as there are fewer psychiatrists, counselors, psychologists, and social workers, and general infrastructure to help people. “This combination of both perceived stigma and a lack of clinical resources for mental health care makes agricultural communities a highly vulnerable subpopulation for psychological distress” (Berman et al., 2021, p. 2).

Another article found that experiencing drought in the springtime leads to “a substantial loss in life satisfaction for residents of rural areas” (Carroll et al., 2007, p. 459). This is a direct statement, and it is supported by the researchers’ determination that the cost of drought includes the psychological costs of the uncertainty attached to a year of drought.

A significant amount of research has been conducted on how humans deal with fast-onset disasters such as blizzards, floods, heat waves, tornadoes, hurricanes, volcanic eruptions, etc. But a much less studied area is the idea of slow-onset disasters. This term, “slow onset disaster” will be defined using the United Nations Framework Convention on Climate Change definition. These events “evolve gradually from incremental changes occurring over many years or from an increased frequency or intensity of recurring events.” In their definition of a rapid-onset event the timeline is specified as a “single, discrete event that occurs in a matter of days or even hours” (United Nations Framework Convention on Climate Change, 2012). Because the type of drought I am investigating occurs over months or years within a particular region, I will be applying the UN Framework’s definition in the scope of my research. Most research on natural disasters has focused on the effects of fast-onset disasters with an “endpoint.” This allows for a recovery phase for the community affected by the natural disaster, but drought has more chronic

tendencies and it's difficult for those affected by it to be able to declare that the drought has come to an end. This article highlights that the main concerns raised by drought included finance, pressure from business, social life, and family time.

As described, rural populations, and farmers, in particular, are at-risk populations for many reasons. They are isolated, have limited access to mental health care, and their livelihood depends on the unpredictable nature of the climate. A 2017 article from USA Today touched on the topic of farmer suicide in the Midwest stating that suicide rates have “plagued agricultural communities across the nation, but perhaps nowhere more so than the Midwest, where extreme weather and falling prices have bludgeoned dairy and crop producers in recent years” (Wedell et al., 2020). Although not every state records the data, more than 450 US farmers took their own lives between 2014-2018. Interestingly, a crisis hotline operated by Farm Aid received nearly double the number of calls during times of drought. Farmers' suicide rates in the United States are starting to become common knowledge statistics (Wedell et al., 2020).

The National Drought Mitigation Center at the University of Nebraska-Lincoln acknowledges that drought is a common climate event across the Midwest. Specifically, we can call to mind the prolonged droughts of the 1930s, 1950s, and 1980s, but it's important to recall the shorter-term events of 2005, 2012, and 2020-2021. In the past two to three decades, the incidence of drought has decreased, as compared to the late 1800s due to an increase in precipitation across the Midwest. Not only this but also the duration of droughts has been on the decline (Andresen et al., 2012). This is a positive outlook for the sake of producers across the region, we can hope that these trends of decreased incidence, intensity, and duration continue. This repetitive history of drought, which can be explored in Figure 1.3 in the appendix, is why interviewees were aged 35+. This population is more likely to have had stronger personal experiences with drought and may have witnessed its effects on those around them at the time.

Interviewees were asked which droughts were particularly impactful in their lives, what their feelings and emotions were, and how it may have impacted daily life. They were also asked to recall the impacts they saw on their family members who worked the land and were directly impacted by drought, particularly parents, grandparents, and immediate family.

Through my interviews with rural Nebraskans, I hoped to discover the answer to my research question, “Can we identify negative effects of drought on rural Nebraskans’ mental health and/or well-being?”

The impacts reflected in my interviews parallel the existing global research. The data collected may point to solutions that already exist to help mitigate these effects and provide insight as to what we can do to prevent it, as well as remediate any existing problems. I hope to generate a broader conversation about the impacts of drought and contribute to the advancement of solutions regarding this issue. By listening to the stories that they have to tell and the way that they remember drought, I have gained an understanding of how drought affected them emotionally, their mental health, and their well-being.

Methods

To find an answer to this research question, an interviewing approach was used to gather remembered experiences and perceptions of drought from those rural Nebraskans working within the agricultural sector. The sample consisted of rural community members from Lancaster County and adjacent counties in southeastern Nebraska. Figure 1.2 in the appendix shows a map of the counties where the dataset was derived. Do they recall mental health impacts or strain, from droughts? Do their perceptions lend any information about how droughts have impacted not only their self but also others?

The interviewees consisted of men and women 35 years and older who have direct connections to ranching and or farming experience. This group includes those who are currently

farming, children of those who've farmed, family members of farmers, and pastors of farming communities, to name a few. This was the demographic of interest because this population has experienced drought in some capacity throughout their lives, due to the frequency of drought in Nebraska.

The effects of having multiple people contribute during one single interview were considered. Multiple persons such as husbands and wives may spark memories and deeper reflection during conversation, providing more thorough responses. It is possible, however, that this approach could have a negative impact on responses. Out of the need to give more socially acceptable responses, they may present answers that are acceptable to their partner or align with what they know their partner feels. "An advantage of separate interviews, therefore, is that participants are more freely able to express their own individual views than when interviewed jointly" (Taylor & de Vocht, 2011, p. 1577). To verify that this research applies to the demographic being interviewed, an anonymous source who falls into this exact demographic was contacted. Not only does this person fall into that demographic, but they have observed the interactions between partners within the demographic for decades. This source confirmed that each method does have its positives and drawbacks and suggested that the best way to glean the most data is to interview any farm/ranching couples together, to spur more memory and recollection of drought, and then afterward, an interview with each individually, so that they can build off of what was said before, have the ability to add their own input, or even to correct the record if something was inaccurate in their own perception of the information. However, as the interview process began, it quickly became apparent that separating the interviewees for any reason would likely result in the interviewees feeling uncomfortable and hesitant. Therefore, interviews were conducted with partners together, if they had one.

The data was very qualitative in nature, as the goal was not to find statistics about the research population, but to find threads of commonality in lived experiences, and in stories that have been passed down to the interviewees. These stories help define the connection that they have to the idea and experience of drought. It was anticipated that a large portion of the data comes from stories and memories, and this was confirmed. Often, memories are retained due to the emotions that they evoke. The snowball sampling method is common in sociological research and the technique is defined by the way in which new participants are introduced into the study. The researcher contacts one or multiple initial participants to recruit. These initial participants then provide names of possible future participants that the researcher can reach out to for more information. This method is commonly used when the target population is relatively hidden, or the population is relatively difficult to reach, and this is why it was chosen. One important limitation of snowball sampling is that because it is not based on random selection, it is not proper to make generalizations, and it should be known that snowball samples “should not be considered to be representative of the population being studied” (Sharma, 2017, p. 752). It is important that each interview be relatively in-depth and collect information effectively because a series of interviews necessitates a greater investment of time than distributing a simple yes or no answer-based survey.

Another important aspect of the methodology was the use of purposive sampling. It is important to note that the goal of this sampling is to place focus on specific characteristics of a population that allow the researcher to answer the research question. Just like snowball sampling, the purpose of this type of sampling is NOT to be able to take randomized samples and make generalizations about the population. The intent of purposive sampling is to “select respondents that are most likely to yield appropriate and useful information” (Kelly, 2010, p. 317).

To complement the snowball sampling method, a flexible and evolving interview guide was developed that elicited interviewees' memories, thoughts, and feelings based on the following topics:

1. How long have you farmed here?
2. Do you remember going through any periods of drought?
3. Can you tell me a little about this time? Is there anything in particular that stands out in your memory?
4. Did anyone talk about the droughts that you can remember?
 - a. What did they have to say about it?
5. Can you recall ways in which the drought has impacted you?
6. Did you notice any negative emotions or stress around you as a result of the drought conditions?
7. What do you think it is about drought that takes a toll on people, specifically (farmers, e.g.)?
8. Have you seen drought impact other people's wellbeing? (for example)
9. Do you think it impacted older generations differently than it does today?
 - a. Why do you think that is?
10. 10. What aspect of drought do you think takes the biggest toll on you/those around you?
 - a. Water scarcity
 - b. Impact on livestock
 - c. Economic/income
 - d. Connection to the land
 - e. Anything else
11. How does drought make you feel?

12. Do you think drought impacts your decision making (example)?
13. Is drought a big topic of conversation in your community or in your family? What is the general conversation like with those in the community during drought or about drought?
14. How do you keep going, or keep yourself well during drought?
15. How do you recover (mentally, physically, economically, etc.) afterward?
16. Is there anything else you would like to share about your experiences with drought or otherwise?

All interviews were conducted in person, at a location where the interviewees felt most comfortable, including their places of residence and a church's fellowship hall. In the event that an in-person meeting was not feasible, the option was provided of conducting the interview over Zoom or telephone. The Voice Memos app for iPhone was used to record the meetings and the otter.ai transcription service was utilized to make an initial transcription. Each transcription was proofread to ensure accuracy and converted into a Google document.

The interview process was projected to conclude once saturation in responses was reached or the interview window had closed. It was estimated that the number of interviews with farm couples would fall between 5 to 20. At project completion, 3 couples and 2 individuals were interviewed.

The data analysis process began with reviewing each interview and extrapolating common themes. Once identified, commonalities in these themes were quantified. Data was then deidentified and the code list was put in a separate document for anonymity. To ensure that the original coding was reliable, the assistance of a peer was used. The peer coded a couple of interviews for common themes, and the similarity between the researcher's coding was compared to the peer's. The results were similar.

Results

Rural Nebraskans in Lancaster County and adjacent counties were interviewed. In total, five interviews took place, and eight individuals contributed to the results. The interviewee group consisted of one University of Nebraska-Lincoln Extension Educator (individual), three farm families (three couples), and one farmer (individual). The Extension Educator grew up on a farm and now works with farmers every day to support them. The three farming couples were very connected to their generational farming background, and all had multiple decades of farming experience. The oldest farming couple has been farming before the 1960s and is now exclusively in the cattle business. The middle-aged couple has been farming since 1986 and exclusively grows crops. The youngest couple has been farming since the mid-1990s and exclusively grows crops. The individual farmer also exclusively grows crops.

When asked to call to mind which droughts they had experienced, all participants were able to call to mind at least one particularly impactful drought regardless of how much additional information they provided during the interview. It is interesting to note that the oldest farming couple spoke extensively about their ancestors and recalled droughts from the 1950s onward, while the younger two couples mainly focused on the droughts of the 21st century, including those in 2001-2003, 2012, and 2021-2024. The droughts of the Dust Bowl were referenced regardless of age and the drought of 2021-2024 was brought up by every interviewee in every interview.

The goal of the interview process was to find an answer to the research question: Can we identify negative effects of drought on rural Nebraskan mental health and/or well-being? In order to elucidate an answer to this question, interviewees were asked about their experiences with drought in Nebraska and how it may or may not have impacted them. Their responses were able to be categorized into a few common themes and are organized in the tables below.

What impacts (mental health) did the interviewees mention?

Table 1.1 – Mental Health impacts mentioned by interviewees

Impact	Explanation	Mentions	Example
Stress	They expressed that they felt stress and it impacted them in some capacity. Stress seemed to be synonymous with worry.	13	"[You're] stressed out, you're not, you're not your normal self, of course, which is understandable. But so year, the stress level is way up."
Disheartened	They expressed that they felt stress and it impacted them in some capacity. Stress seemed to be synonymous with worry.	5	"And that was disheartening, too, because, you know, obviously, you know, yourself, well, it hasn't rained, and of course, it's going to get worse, but then when you see it, it just emphasizes the point that you know, hey, this is long term here. And it's going nowhere fast really. Especially when you saw the forecast many times they would say 'Well, no, no rain for the next two weeks.' Well, yeah, two weeks on to what you've been through already. You know, it ain't gonna get better."
Breaking down/ crying/not thinking clearly	Extension educator witnessed farmers breaking down, crying in their fields, or having thoughts that were unhealthy	6 (only one from extension educator)	"I've, I've been called out on two situations. And those guys are both still living. And it's not due to me, it's due to them reaching out for help and I'm so grateful for that. And the thing is I mean it's real, the stress and the pressure, I've had so many guys tell me, "Jenny, I'm like at this point right now." And that and those are not ones that I felt like were gonna, they weren't calling for help. Those moments, the other two, we got them the help that they needed. But the other guys, they're just like, "My stress level is like, right to this point." And so it's really real." "Then too often I see them go a different route, and they turn to substances or they turn to other things that take them in another spiral. And we've had people it's been really hard, for some people. And that's a reality."
Said they had ways to deal with things	Interviewee mentioned some way method or thought process they had to get through drought time, such as faith, a realist attitude, gratitude, etc.	10	"And seek out positive people because they're negative Nellies around every corner. And it's easy to get sucked into that. But by the same token, if you hang out with positive people, they can elevate you and bring you up. And then in turn, you can do the same for others."
"Other people didn't handle it well"	Rather than speak about how drought may affect them, they point out how they've seen it impact others wellbeing	7	"I'm sure there's some, some farmers that have mental problems with the, with the drought and handling it." "[I] figured out something to do. I held it together. There were a lot of them [that] didn't." "I think it has led to divorce. We know it [has]. We know one couple that went through drought and stress and financial stress afterwards that left the country. And the IRS was after him. They took their farm, took everything away from [them], told them to deliver their tractor back to the PCA. He did, right through the front window, right up to his desk. So, then he had the law on top of him, on top of that, so they fled to Belize."
Interactions with loved ones		3	"I, when, if I got a problem, I'll lay awake at night thinking 'okay, how can I work through this?' Well, of course that's when you're supposed to be resting and sleeping. And so of course that affects other things, including your health and your interaction with your loved ones."

What aspects of drought took the largest toll on interviewees' well-being?

In the following questions, interviewees were asked what aspects of drought were the most difficult and took the biggest toll on their well-being. They were readily able to connect this to the type of farming that they are engaged in to earn their income but were also able to describe what the worst factors would be for other farmers who had different earning methods. When water scarcity was present, it was reported to be the biggest cause of stress/worry. It's interesting to note that interviewees commonly recounted how "hot and dry" the conditions were.

Table 1.2 – Causes of Worry/Stress

Cause of worry/stress	How many interviews was it mentioned in (out of 5 total interviews)	Example quote
Crop or livestock specific	5	"Of course, you know, if anybody that has livestock you worry about that the pastures never really even got started this year. And it was like in the spring when normally you'd be sending your cattle herd out to pasture for the summer. It's like okay, see in August. Some people didn't even send them out there because there was nothing there to even start with. So yeah, that that factored in of course."
Wells drying up	2	"And then in 2012, as an extension educator, that's when the farmers actually would start breaking down in their fields, like they would actually start crying at times. Or situations where they weren't... their wells were no longer able to pump water, like they had wanted. That was just a hard thing to tell them, 'Okay, you can only water this much in the field, and you're gonna have to sacrifice this part.'"
It's beyond your control	1	"And I think the worst of it is just the fact that it is all beyond your control. You know, I think in human nature, I think we're all kind of control freaks to some extent. And to know what you need, but not being able to obtain it and not be able to make it happen when and where you want, I think is probably stressful, too. It's not that you don't want things to go well, it's not that you haven't planned accordingly. It's just dumb luck."

Was mental health/well-being more impacted in the past than currently? Or differently?

When asked whether drought impacted other generations differently, and perhaps why, interviewees often mentioned the tenacity and toughness, out of necessity, that past generations had. Often coupled with this was a comment about how grateful they are to have the comforts that we do today such as air conditioning, running water, and even crop insurance. Although multiple interviewees did mention how hard the Dust Bowl was on their parents and how painful it was for them to talk about, it was difficult for the respondents to make the determination as whether or not it mental health and well-being were impacted more in previous generations. It is noteworthy that the interviewees always spoke in a tone of reverence for those who had gone before them.

Table 1.3 – Interviewees responses to whether previous generations were tougher

Category	Reason	Example quote
Yes	<p>A) They were tougher B) They had less comforts</p>	<p>A) "I don't know, I always think that past generations were better people than we are today. They were tougher. And so I think they, they maybe got through it a little bit better because they were tougher, almost out of necessity. Nowadays, with each generation, it seems like it's losing a little bit of that toughness." B) "Yeah, but likewise, you can't miss what you never had. So they never had those creature comforts, so it wasn't a thought in their mind that 'oh my gosh, it's miserably hot and I can't sleep tonight.' I mean, that was just the way it was and everybody was in the same boat. So I think, I think you're right, we are much softer, much more accustomed to, to being better taken care of than they were in those days."</p>
No	<p>A) Impact is due to perspective</p>	<p>A) "I think, I think as people, I don't know, if it's a generation thing. I think it's more of an ability to have perspective thing, no matter how old we are. If we're able to look at things with perspective of whether it's through their faith, or whatever it was, that got them through this, then they can also get through this. . . I don't know that I, I personally haven't seen anything specific on generations. Although I mean, my grandparents generation, they're so tough. They saw so much, and they dealt with so much. But to me, it's the perspective and the gratitude that I see as a bigger factor."</p>

What did they do to deal with the stress?

When asked about how they dealt with the stress of a drought, interviewees focused on different mechanisms of support, including children's roles, women's roles, spousal roles, and general support, as well as dealing with stress in ways such as faith and communication. The Nebraska Extension Educator provided valuable information as to how she lends support to the farmers.

Table 1.4 - Stress management

Dealing with Stress	
Different mechanisms of support	Quote
General/other	“And so you have to keep that in mind, and just try and support each other as best you can. And like [interviewee’s wife] said, a lot of times, I do have a lot of people stop in just to chit chat or whatever.”
Spouse additional role	“But there was no rain, so nothing grew. So mom had to go to work when I was about 10 or 11, when she [mother] went to work, and until we got some rain, she stayed and worked in town.”
Children taking on roles	“And so [interviewee’s wife] had to make lunch, and we didn’t call it lunch, we called it dinner, and it was a full meal. And so at 10 or 12 years old, she had to... her dad had two hired men and him and two brothers to feed. So she became the lady of the house and you do the washing you clean house. Yeah. But you had to have that meal at noon, because those guys would work hard all the time. That’s their big meal on the farm.”
Ways to personally deal with stress	Quote
Faith	“I will say to that end too that anybody that doesn’t have faith in God. I don’t know. I think they’d have a harder time getting through it. I know I would. You know, so you kind of lean on your faith that God will provide and he promises never to make it harder than what you can take. So.” “And when Mom and Dad would just say over and over, “Kids, we just gotta keep praying, we gotta keep praying [for rain].”
Acceptance/Realism	“I guess I’m pretty much a realist, you know, on what it is. Like I said, the old saying is, “Change the things you can, and those the things you can’t, accept that... or somewhere along there.”
Look for positives/gratitude	“But you just have to I guess, some way, find some positives. And there is, there always is. Sometimes you got to really look hard, but there usually is and, you know, we did get that rain in July. And the crops did respond. I mean, a little bit and kept ‘em going. So. So that helped me kind of got to look for the positives.”
Extension provided support	Quote
Educator gained extra skills	“I will say to that end too that anybody that doesn’t have faith in God. I don’t know. I think they’d have a harder time getting through it. I know I would. You know, so you kind of lean on your faith that God will provide and he promises never to make it harder than what you can take. So.” “And when Mom and Dad would just say over and over, “Kids, we just gotta keep praying, we gotta keep praying [for rain].”
Wellness Website	“Yes, actually, we’re doing a lot regarding mental health, mental wellness, is we call it. We do a lot in extension but I talk about every single winter meeting, it is that important. Just to show you how important it is, I get get goosebumps about this. Our number one... So our website is cropwatch.unl.edu, all crop and water related information from the University. The number one article in 2023 was ‘mental wellness.’ ... Number one article. Yeah, versus any thing we talked about corn, drought, soybeans, wheat, anything else. Number one, and it was like a major, like 10,000 plus difference between that one article versus everything else. And if that doesn’t say something about where the mental wellness for farmers is right now, I don’t know what does. I, I send out a weekly email every week, and it always has wellness, mental wellness resources, or I try and put encouraging things in my in my things, but what I’m grateful for is that by talking about it, and by helping, helping farmers see that we gotta keep talking to each other, because I’m gonna keep stressing that all the time.”

Table 1.4 – Stress Management (continued)

Extension provided support - continued	Quote
Listening Ear	<p>"I've been called out on two situations. And those guys are both still living. And it's not due to me, it's due to them reaching out for help and I'm so grateful for that. And the thing is I mean it's real, the stress and the pressure, I've had so many guys tell me, 'Jenny, I'm like at this point right now.' And that and those are not ones that I felt like were gonna, they weren't calling for help. Those moments, the other two, we got them the help that they needed. But the other guys, they're just like, my stress level is like, right to this point. And so it's really real."</p>

Discussion

This research involved interviews with rural residents in southeastern Nebraska who work in the agricultural sector to gauge whether we can identify negative mental health impacts/well-being due to drought. Themes throughout did indicate negative mental health/well-being impacts. Each individual in the study was able to speak to their experiences with drought and how it impacted them. Stress was the most frequently mentioned mental health impact. It was apparent that stress and worry were perceived by the interviewees to be similar descriptors. This stress seemed to connect to their economic stability and impacted their decision-making. As mentioned in the research of Nicholls et al., the increased suicide rates of farmers during drought years in Australia is theorized to be due to increased financial stress on farmers. The interviewees shared compelling responses that they became disheartened and no longer enjoyed farming. Furthermore, they expressed that their interactions with their loved ones suffered and even their physical health was impacted. They reported their rural friends and family suffering from similar experiences.

The Extension Educator was able to shed a unique light on impacts that she has seen in her time working with producers and provide an outside, but dependable perspective. She has helped farmers who were struggling with stress, loss, and the pressure to carry on the generational livelihood of farming the land. Some resorted to substance abuse when they didn't have any other mechanism to fall back on. She even described being called out to help two different individuals back away from the edge of self-harm and possibly suicide. These are the real-life stories of Nebraska farmers. Drought and peoples' responses to it can be extremely individualized, in part, because of different types of impacts that it can create.

Agricultural producers are uniquely positioned to face these impacts daily as they struggle to feed their livestock or observe their failing crops. This aligns with the overarching finding that the impact of drought on mental health impacts is more significant in rural

communities because the impacts have less of an immediate and measurable impact on the well-being, livelihood, and comfort of city dwellers. Other aspects of drought that took the largest toll on the interviewees' well-being included water scarcity and drying up of wells. These factors are particularly challenging because there is nothing that they can do to influence the drought conditions. The latter reason aligns with Kesavarz and Karami's study of Iranian farmers to understand what helped shape their decision-making process during drought; severity of water scarcity was the foremost reason (2014.) Water scarcity may be a key determinant in exactly how the drought impacts the farmer.

Responses were mixed as to whether previous generations were "tougher" than those today. The interviewees spoke with reverence toward those who had come before them, continually emphasizing the difficulties faced during the Dust Bowl. Multiple interviewees reflected on asking their parents and grandparents about that period. They explained that it was painful for their loved ones to discuss their experience. I theorize that this could be a form of PTSD seen in the previous generation. Due to land management strategies, crop genetics, and federal crop insurance, conditions are much different for farmers today, and it may shelter them from some of the adverse well-being impacts of drought. I believe that the research, focus, and storytelling of the Dust Bowl may overshadow any current conversation, therefore contributing to the lack of research on the impact of more recent drought on Midwestern farmers' mental health impacts and well-being.

Another major aspect of the research was to consider how the subject group dealt with the stress that drought produced. Many of them mentioned general support such as communication and bolstering each other, many talked about both men and women taking on additional jobs outside the home to help ease the financial burden, and children taking on more responsibilities when times were tough. Some picked up more farm chores while others helped

with food preparation at very young ages. Faith was a very common theme and propelled a great deal of conversation. Also frequently mentioned was an air of realism, accepting that there isn't anything that can be done about the situation, so they just keep going. This response was common for those farmers who were financially stable or may not have wanted to speak more on the subject. The final common theme was looking for positives and finding gratitude in their situation. From my observations, the interviewees expressed feelings of gratitude for the amenities that we have today (such as air conditioning, running water, insulated houses, etc) compared to those who came before and didn't have those comforts. Some interviewees stressed the importance of engaging in positive support networks.

The perspective of the Extension Educator is quite valuable. She spoke about the University of Nebraska-Lincoln's efforts to address 'mental wellness', as they refer to it. In 2023, their crop watch website received the most visits to the article 'mental wellness.' This topped all other topics which included soybean, corn, and drought articles. She said, "Number one, and it was like a major, like 10,000 plus difference between that one article versus everything else. And if that doesn't say something about where the mental wellness for farmers is right now, I don't know what does."

The voices of the farmers interviewed, coupled with the experience of the Extension Educator provide strong evidence that Midwestern farmers experience mental health impacts and declines in well-being due to drought. Further research is needed to more accurately assess how this demographic chooses to internalize stresses, and whether they classify them as part of daily life or as true mental health impacts. A study that investigates the true meaning behind specific words used by interviewees would shed light on a deeper meaning of the impacts. It would also be beneficial to search through historical data and reports by people who lived through the Dust

Bowl period to determine if the mental health impacts and well-being are less directly impacted by drought today as compared to previous generations.

It is imperative to begin researching the gap in the data that exists for the mental health and well-being of our own farmers, those who provide our food and drive our state economy. The stigma that exists around pursuing mental health resources, the stoic and self-reliant attitudes of this demographic, and the shortage of mental health professionals in rural areas can lead to a dangerous combination for our farming communities, driving up mental health impacts and decreasing solutions. We need to close this data gap to take care of the producers that feed us.

The scope of this exploratory study was limited. Due to the purposive sampling and snowball sampling nature of the study, results should not be considered conclusive. Rather, they serve as a starting point. Eight individuals were interviewed, composed of three farm couples, one farmer individual, and one Extension Educator. Time and resource allocations prevented the interview of more rural Nebraskans to determine how prevalent the interviewees' sentiments were across the population. In the methods section, I had originally intended to either reach saturation in my interview results or be bounded by time constraints. I estimated that I would interview between 5 to 20 couples. However, due to the volatility of interviewees' schedules, inaccessibility of the demographic, weather, illness, and a death in the family of a scheduled interviewee, I was only able to interview 8 individuals.

For future studies, it may be beneficial to ask questions using the terms 'mental health impacts,' 'mental health,' and 'well-being.' Although it may lead to more hesitation in response, if many more individuals from the ag sector are represented, we may see definite confirmation using preferred language.

Summary & Conclusions

The purpose of my study was to help answer my research question: Can we identify negative effects of drought on rural Nebraskan mental health and/or wellbeing? In order to elucidate the answer to my research question, I asked rural Nebraskans involved with the agricultural sector to speak about their experiences with drought in Nebraska, their memories of it, and how it may or may not have impacted them. Data indicate that there have been impacts on mental health. For example in each interview “stress” was mentioned. A quote from a Seward County, male interviewee provides a poignant example. “[You’re] stressed out, you’re not, you’re not your normal self, of course, which is understandable. But so yeah, the stress level is way up.”

Common themes arose throughout the interviews including mental health impacts mentioned by interviewees, including stress, disheartenment, negative impacts on interactions with loved ones, and many descriptions of others who didn’t handle the stress as well as the interviewee did. Another common topic of discussion was which aspects of drought were the most difficult and took the biggest toll on their well-being. The interviewees were readily able to connect this to the type of farming that they do to earn their income but were also able to describe what the worst factors would be for other farmers who had different earning methods. When water scarcity was present, it was reported to be the biggest cause of stress or worry. It’s interesting to note that interviewees commonly recounted how “hot and dry” the conditions were. The interviewees may be empathizing with the land, the cattle that pant in the sun, the deep cracks in the ground, and the stunted corn with its leaves curled up. Many interviewees commented on how they felt that previous generations were “tougher” than theirs and their reverence for those who came before.

Finally, when asked about how they dealt with the stress of drought, interviewees focused on different mechanisms of support, including children’s roles, taking on additional jobs, and

general support, as well as dealing with stress in ways such as faith and positive support networks. The Nebraska Extension Educator provided valuable information as to how she lends support to the farmers.

Through the interviews, it is evident that there exist negative mental health impacts and/or negative well-being impacts for rural Nebraskan community members due to drought. Even those interviewees who felt that they were less impacted mentioned others who were unable to get through it quite so well, and they mentioned divorce, fleeing the country due to financial trouble, arguing, and poor decision-making. It is common knowledge within the community.

Because I used snowball sampling and purposive sampling, this study is limited in that it cannot be considered conclusive and cannot apply to a wider population. Time restrictions and its qualitative nature limited the sample size. Recommendations for future studies include using more standard language, and directly asking the interviewees questions using the terms “mental wellness” and “negative mental health impacts” for more clarity in answers. Given additional time, I would continue the interview process and compare, more closely, the answers between irrigating farmers and non-irrigating farmers, and interview other rural community members such as pastors and children within the community.

This experience has been rewarding and has pushed me to grow in different ways of thinking. I have enhanced my general critical thinking, specifically creative thinking, research skills, and writing and communication. This research has helped shape my understanding of sustainability as it relates to sociological research. For decades, science has focused on two main aspects of drought: the environmental impacts of drought - how it affects the health of Earth’s systems, such as soil health and water availability- and economics, visible in crop failures and

financial losses for farmers. But where the importance lies is in the stewardship ethic found throughout the rural farming communities, the idea of leaving the land better than you found it.

Sustainable practices aim to minimize negative impacts on future generations and ensure resilience during times of drought. Sustainability is more than managing resources with consideration to the well-being of those who have yet to inhabit the earth, it is about realizing the innate interconnectedness of social, economic, and environmental systems. It's prioritizing an equitable, healthy, and safe world for all individuals.

In addition to the care, concern, and research that we do for our environment, let us also extend these efforts to those who tend it, sustain it, work it, and know it: the farmer.

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Appendix

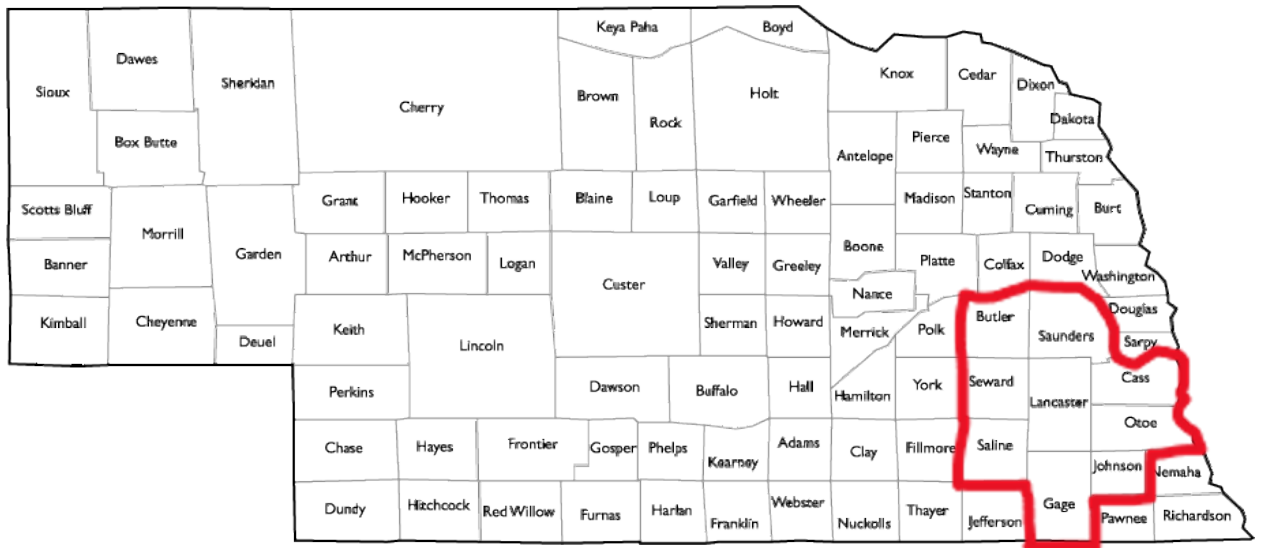


Figure 1.2

This is an image of the State of Nebraska and outlined in red Lancaster County and adjacent counties. These are the boundary lines for where my interviewees are located. I decided these boundaries in order to gauge the experiences of those connected to farming communities without having too much travel expense (Genealogy Trails).

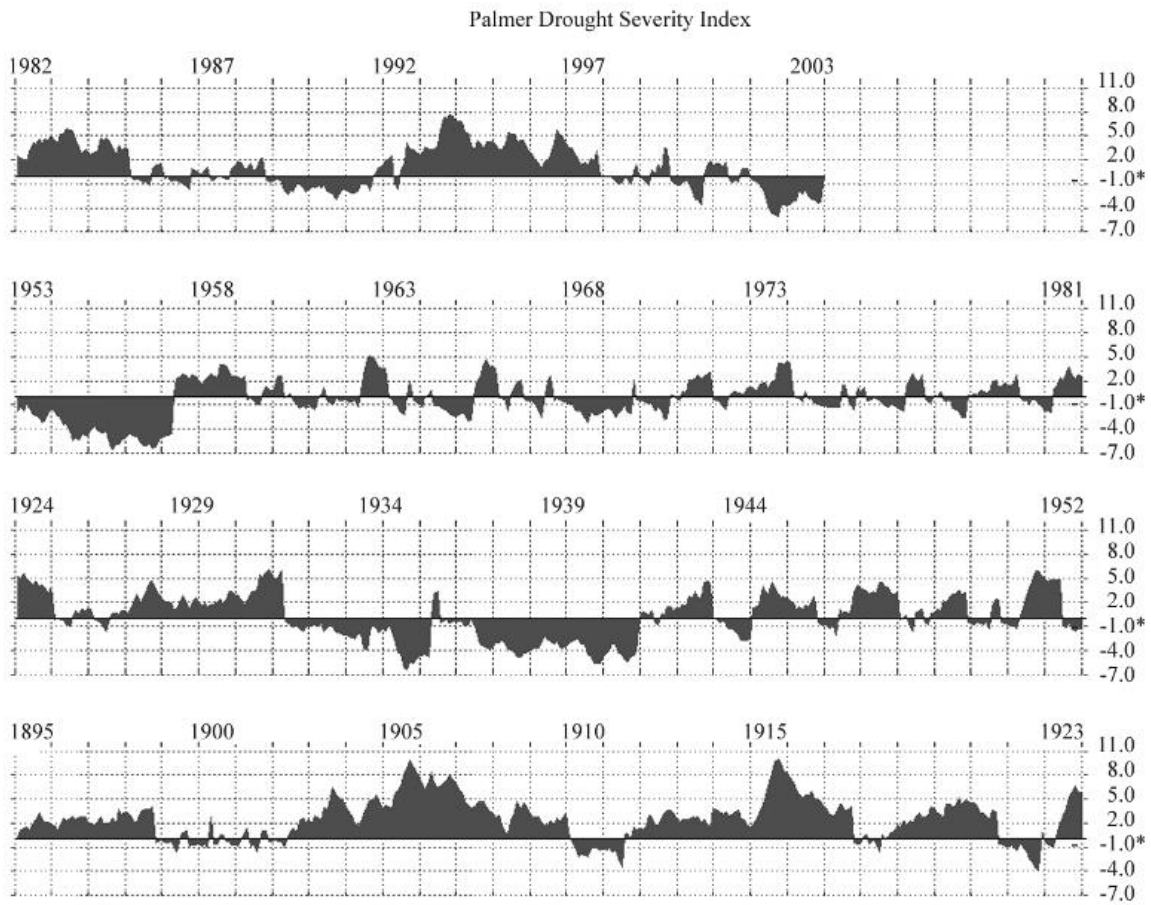


Figure 1.3

This is the Historical Palmer Drought Severity Index for Nebraska Climate Division 7, generated by the National Climatic Data Center's CLIMIS computer graphic program. In this image values below zero indicate dry conditions. Values below -3 represent severe to extreme drought (Hayes, et al.). (Dai, 2023).