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FROM SUNRISE TO SUNSET: A LIFESPAN APPROACH TO UNDERSTANDING THE MENTAL HEALTH OF A SUBSET OF AMERICAN FARMERS

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at Virginia Commonwealth University.

by

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Dedication & Acknowledgements

Words do not exist that can truly express my gratitude and appreciation for those in my life who have helped me make this project a success and given me the strength to finish graduate school and obtain a Ph.D. in Counseling Psychology. First and foremost, my faith and spirituality has been essential while completing this journey. I am continually reminded that each event in my life happens for a reason and whether good or bad, at the end of the day, life remains beautiful: "To everything there is a season and a time to every purpose under the Heaven: a time to be born and a time to die; a time to plant and a time to pluck up that which has been planted." – Ecclesiastes 3:1-2

This dissertation is dedicated to my parents, Kenneth and Pamela Imel, who have encouraged me throughout my studies and given me the strength to be who I am today. Thank you, mom and dad, for your unconditional love and showing me the value of hard work and education. I am continually impressed by how hard you work and your ability to persevere through difficult times in the farming and greenhouse business. I am grateful that I was able to grow up as a farmer's daughter and learn the value of being compassionate, mindful, and determined. I cannot put into words how appreciative I am for the sacrifices you have made for my education.

I would also like to dedicate this dissertation to my Mamaw Imel, as well as other family members who were an integral part of my childhood, but have already passed: Papaw Imel, Papaw Howard, Mamaw Howard, and my great-aunt, Poodie. I have fond memories of working with all of you at the greenhouse, in the garden, and on the farm. Throughout my lifetime, all of you have fully supported my efforts and I know that you would be proud of this project. We are connected through generations of farming and each time I return home to the farm, I am reminded of warm memories and your love.

My final dedication of this dissertation is to my life partner, Jerome Golden. You have supported me throughout graduate school during both accomplishments and disappointments. Your continuous encouragement throughout this process and sacrifices has not gone unnoticed. I am privileged to share my achievements with you and I look forward to continuing to build our life together (especially since I will now have weekends free from writing).

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To the Farmers who made this study possible: I am grateful that you chose to participate in my project and have trusted me to tell your story. Your courage and perseverance is undeniable. I am hopeful that this project will bring awareness to your continuous work and the sacrifices you make to ensure others have food to eat and access to necessary agricultural products.

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Abstract

FROM SUNRISE TO SUNSET: A LIFESPAN APPROACH TO UNDERSTANDING THE MENTAL HEALTH OF A SUBSET OF AMERICAN FARMERS

By JANNA LYNN IMEL, M.S.

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at Virginia Commonwealth University.

Virginia Commonwealth University, 2019

Major Director: Natalie Dautovich, Ph.D.
Assistant Professor of Counseling Psychology, Department of Psychology

Prior research has indicated higher risk of suicide for farmers and identified depression and anxiety as mental health concerns, though the majority of research was conducted in the 1980s-1990s. In today's economic, social, and political climate, farmers are exposed to situations and stressors reminiscent of the 1980s Farm Crisis. An added risk is the aging workforce of farmers, as age-related conditions can make farming even riskier. This study investigated the mental health of a subset of American farmers by exploring farm-related stressors, coping mechanisms, and mental health outcomes. Dispositional mindfulness was explored as a specific coping mechanism. Participants (N = 158) were recruited through in-person and online surveys. All participants were farmers in the United States at the time of the study, with the majority farming in the state of Kentucky (48.7%). Participants were predominantly female (55.4%), White (98.1%), married (77.1%), and multi-generation farmers (69.2%). Participants completed measures of farm stress, general stress, depressive and anxious symptoms, coping, resilience, and dispositional mindfulness. Hierarchical linear regressions and moderation analyses were used to examine study aims. Results showed that farmers in this sample experience rates of depressive symptoms 1.5 times to 4.5 times higher than the national population, as well as rates of anxiety

symptoms 1.5 times higher than the national population. Results also revealed that farmers with higher levels of farm stress are at a higher risk for anxious and depressive symptomology. Age appeared to be a protective factor, as older farmers reported the lowest levels of farm stress. Being a female was associated with higher farm stress. Regarding coping, over half of farmers endorsed using "planning" as the top strategy for coping with farm-related stressors. Farmers higher in dispositional mindfulness had better mental health ratings and lower farm stress. Further results and implications of the findings are discussed.

Introduction

Farming is the frontrunner among hazardous occupation ratings, with current statistics showing 22.2 deaths per 100,000 farmers (Leigh, Du, & McCurdy, 2014; UBLS, 2014b). This statistic is not surprising given that farmers are exposed to the elements while engaging in physically demanding work for long work hours (McCurdy & Carroll, 2000). There are well-established physical health risks associated with farming including: (1) respiratory conditions resulting from exposure to dusts and pesticides, (2) skin diseases and skin cancer from continual exposure to the elements, (3) sensory loss, such as hearing loss, from loud machinery, and (4) increased risk of osteoarthritis, neuropathy, and chronic lower back pain resulting from strenuous and repetitive work (Donham & Thelin, 2006). However, physical stressors are not the only type of stressors plaguing American farmers.

American farmers are subject to shifting commodity markets, increasing cost of machinery with lower return rates, unpredictable issues with crops or production that could result in the loss of the farm (e.g., having a crop failure due to drought or a blight), and changing governmental policies and regulations pertaining to farmers (Elkind, Carlson, & Schnabel, 1998). Chronic stressors include working alone, putting in long hours, and never being able to control the weather or commodity prices (Kutner, 2014). As a result of these stressors, it is not surprising that researchers are beginning to identify psychological hazards in an occupation often viewed by the public as "peaceful." A small body of recent research has identified depression and anxiety as mental health concerns among farmers, while research from the 1980s to 1990s provided a more extensive picture, indicating significantly higher risk of suicide for farmers (Browning, Westneat, & McKnight, 2008; Eisner, Neal, & Scaife, 1998). Difficulties accessing mental health care and increased suicide risk are still a problem for the current generation of

farmers. Farm Aid, a U.S. agricultural organization, reported a 30% increase in calls to its Farmer Resource Network Hotline in 2018, with farmers seeking help for financial, legal, and emotional stress (Farm Aid, 2018). Farm Aid cites that in 2018 the average income for farmers was 50% lower than what farmers made in 2013, a factor that increases concern for farm families, in addition to confusion regarding trade, immigration, and healthcare.

Although farmers of all ages continue to be subjected to unrelenting stressors, the aging workforce of farmers also compounds the current state of America's farmers. Between 2007 and 2012, older adult farmers increased by 7%, while the amount of middle-aged and young farmers declined 16% (USDA, 2014). With a median age of 56.1 years, the American farming workforce is one of the oldest in the United States (UBLS, 2014a; USDA, 2014). Older farmers are increasingly delaying retirement (O'Neill, Komar, Brumfield, & Mickel, 2010). As age-related conditions can make farming even riskier, it is imperative that research investigates the unique circumstances of the aging American farmer (Snodgrass, 2015). America's older farmers are central to maintaining US agriculture and continue to manage their farms despite risks to both their mental and physical health. Farmers are resilient and resourceful in that they find ways to keep their farms running despite hardship and increasing age. However, without the proper assistance, older farmers are susceptible to a host of adverse conditions (Hildebrand, 2015). Consequently, it is essential to identify factors that promote healthy outcomes for farmers across the lifespan.

The Current Study

The current study addressed the mental health needs of a subset of American farmers by examining farm-related stressors, coping mechanisms, and mental health outcomes among a lifespan sample. In particular, the study goals were to: describe working conditions that factor

into the stress and mental health of the current generation of farmers (Aim 1), examine the stressors farmers face and how they relate to mental health outcomes (Aim 2), investigate how age and resilience factor into coping with farm-related stressors (Aim 3), and investigate dispositional mindfulness as a potential coping mechanism in the association between farm-related stressors and mental health outcomes in American farmers (Aim 4).

Literature Review

Aging, Farming, and Mental Health

As agriculture became more industrialized in the United States, farmers were required to make changes in production. Competition, the decline of small farms, and an increase in larger farms resulted in the specialization of a single crop for many farmers (Zerbe, 2010). Without multiple crops, farmers became increasingly vulnerable to commodity prices and economic downturns. In the 1980s, the United States witnessed the "Farm Crisis," where farmers went bankrupt as crop prices dropped dramatically. This period of United States agriculture negatively impacted farmers and rural communities at large. Farming communities witnessed marked increases in rates of suicide and substance addiction (Huntley, 1986; McBride, 1986). It was at this time that the bulk of interdisciplinary teams of researchers studied the mental health of farmers. Since this period, the majority of research on the mental health of farmers has been conducted outside of the United States, where evidence has accumulated to indicate that farmers are exposed to adverse risk factors internationally (Fraser et al., 2005). Unfortunately, although current research on mental health in America's farmers is lacking, research explicitly exploring mental health among aging and older American farmers appears to be non-existent.

The Aging Farmer. Despite the age of the farming workforce steadily increasing, older farmers are significantly less likely to retire than non-farming counterparts of the same age

(O'Neill, Komar, Brumfield, & Mickel, 2010). Factors delaying retirement or affecting retirement decisions include self-employment, lack of financial stability for retirement, and an inability to have work-life separation (McDonald, 2000; Murphy, 1992; O'Neill et al., 2010). Interestingly, health is not a factor in the retirement decision of most farmers as indicated by a study of Canadian farmers, which showed that 83% of farmers continued to work even after having a disabling injury (Molyneaux-Smith, Townsend, & Guernsey, 2003). Continuing to work after health changes may be a particularly relevant concern for older farmers.

Traditionally, farms have been passed on to younger generations at a rate five times that of other family businesses, with the more strenuous tasks passed from the older farmer to younger farmers within the family as the eldest farmer aged (O'Neill et al., 2010; Voaklander, Day, Dosman, Hagel & Pickett, 2012). With the redistribution of tasks, farming in older age was more manageable. However, this is not always an option for today's older farmer. It is not uncommon for farmers to continue working at age 70, 80, and even older (Myers, 1990; Purschwitz & Fields, 1990). Even at these older ages, farmers continue to engage in physical labor, dangerous tasks (i.e., working with tractors and other machinery), and long workdays (Lizer & Petrea, 2007; Voaklander et al., 2012). A 2007 study of Illinois farmers showed that in the spring season, farmers ages 55 to 59 averaged 58 hours of work per week, while farmers ages 60 to 64 and ages 65 and above worked an average of 66.37 and 59.63 hours, respectively (Lizer & Petrea, 2007). In fall, the age groups worked an average of 58.02, 65.83, and 60.34 hours, respectively (Lizer & Petrea, 2007).

Older age can also bring changes in stamina, alertness, and physical ability, which may prove more difficult for the long days of farm work. Specifically, older age increases the risk for changes in health, including the development of arthritis, impairment in vision and hearing, and

cardiovascular disease (Donham & Thelin, 2006). In addition to being susceptible to these age-related health conditions, older farmers are also at risk for further health problems because of their occupation (Donham & Thelin, 2006). Exposure to dust and gasses increase the likelihood of developing problematic respiratory conditions and being consistently exposed to the elements increases the risk of skin diseases, particularly skin cancer (Donham & Thelin, 2006). Sensory loss is common, with over half of farmers age 55 years and older suffering from hearing loss due to loud machinery (Donham & Thelin, 2006). Farm work is often strenuous and repetitive, increasing the risk of osteoarthritis, neuropathy, and chronic lower back pain (Donham & Thelin, 2006).

Yet, despite the risks to physical health that coincide with being a farmer, it is important to note that farmers ages 65 to 74 do score better than their non-farming counterparts in the areas of physical function, vitality, general health, and social function, showing resilience in the midst of arduous labor (Lizer & Petrea, 2007). However, when compared to non-farmer counterparts of the same age, older farmers (65-74) and middle-aged farmers (55-59) fair worse in one area: mental health (Lizer & Petrea, 2007). However, before discussing the connections between farming, aging, and mental health, it is important to first explore the characteristics of normal aging and mental health.

Normal Aging and Mental Health. Individuals tend to experience better emotional wellbeing as they age, which includes greater emotional stability and emotional control, and less negative affect (Carstensen et al., 2011, Hay & Diehl, 2011; Lawton, Kleban, Rajagopal, & Dean, 1992). Two theoretical models, the Socioemotional Selectivity Theory (SST; Carstensen & Mikels, 2005), and the Strength and Vulnerability Integration (SAVI; Charles, 2010) model, provide conceptual insight into age related emotional changes. Per the SST, an individual's

perspective on time changes across the lifespan, which in turn changes their overall goals (Carstensen & Mikels, 2005). At younger ages, individuals see their lifetime as vast and make goals for their future. However, as individuals continue to age, their perspective changes and they realize time is limited. This realization drives older adults to set more emotional goals, such as enhancing relationships with loved ones. This perspective of limited time also helps older individuals focus more on the positives and emotionally gratifying information (Carstensen & Mikels, 2005). This "positivity effect" is the change from focusing mainly on negative stimuli in younger adulthood and middle-age to attending more to the positive material in older adulthood (Carstensen & Mikels, 2005).

However, despite the positivity effect, older adults are still exposed to negative events and must cope with them. The SAVI model explains how older individuals regulate their emotions when confronted by negative stimuli (Charles, 2010). If an older adult faces a negative emotional event, their physiological vulnerabilities can reduce their ability to regulate their emotions. This process means that if an older adult is exposed to the same negative emotional event as a younger adult, the older individual will have greater difficulty returning to homeostasis afterward (Charles, 2010). As such, older adults try to limit how often they are exposed to events that are highly arousing and negative. Unfortunately, older farmers often cannot limit their exposure to stressful and negative stimuli, which can be detrimental to their mental health.

Mental Health of Aging Farmers. Research regarding the mental health of aging and older farmers has been limited primarily to countries outside of the United States. For example, Australian researchers have found negative changes in the mental health of their farmers with age. Specifically, older Australian farmers reported being inundated with a sense of loss. The

farmers felt they had lost their professional successes, profitability, status among community members, good physical health, the ability to engage with modern technology, and most significantly, relationships with family and friends who have moved away from the rural areas (Polain, Berry, & Hoskin, 2011). Despite feeling overwhelmed, these farmers refused to take advantage of available mental health services because they did not want others to label them as "crazy" (Polain et al., 2011).

Like older Australian farmers, older farmers in the United States are also subject to chronic and severe pressures that can undermine good mental health. Studies have consistently found the highest rate of suicide in farmers to occur among those 55 and older (Pickett et al., 1993; Pylka & Gunderson, 1992). Yet, research examining the association between farm stressors and mental health outcomes in older American farmers is lacking. Farmers report a strong emotional tie to their land, and with fewer younger generations entering farming or taking over farms, older farmers have an increased chance of watching their land change ownership, particularly if they are unable to care for the land (Marotz-Baden, Keating, & Munro, 1995). Additionally, data from the United States Census of Agriculture (years 1978, 1982, and 1987) show that increases in the age of farmers predicted decreasing farm sizes (Gale, 1994). This loss, or impending fear of loss, could be a factor in poor mental health outcomes, especially given that most farmers have a family history tied to their land and can still see the results of previous generations (Marotz-Baden et al., 1995; Rosmann, 2008). This tie to the land and connection with the family may be a driving reason for older farmers to continue working despite being at a higher risk for injury than younger farmers (Garkovich, Bokemeier, & Foote, 1995; NSC, 1999; Myers & Hard, 1995).

Changes in farming objectives with older age could be another factor contributing to mental health outcomes in older farmers. A sample of older farmers reflected on their younger days in farming and reported that it seemed more enjoyable and less stressful in their younger years because the financial pressure was not as strong (McDonald, 2000). They reported that over the years farming has turned into more of a “money game,” possibly due to changes in governmental policy, commodity prices, and the prioritization of large-scale farms over smaller operations (McDonald, 2000). Despite these changes, samples of older farmers report focusing more on intrinsic and social goals above financial goals (Robinson, 1984). Across the years, as a result of financial stressors, farmers may slowly lose the reason why they entered farming. With age, however, they are able to reflect more on why they value farming. In older age, farmers appear to prioritize the intrinsic value of their profession and the social ties created in the agricultural community, which is consistent with findings of the Socioemotional Selectivity Theory (Robinson, 1984). Nonetheless, at older ages, farmers report an increase in "mental stress" due to negative changes in farming throughout their lifetime (e.g., smaller profit margins and a smaller gap between surviving a bad season or going into financial ruin; McDonald, 2000). Notably, the farmers discussed feeling less able to cope with stress now that they were older, which appeared to be attributed to less available coping resources:

> “The burden of having all the responsibility is on you. And that’s, I mean, you know, of making money and paying your bills. You’ve got all that on you. Now, back when I was younger I didn’t have all that on me or it was not as big or something, you know.” (Joe Green, 66 years, p.189, McDonald, 2000).

Stress and Coping Among Farmers

Stressors. A farmer is prey to unrelenting stressors throughout their lifetime. Farming once engaged communities in work together and provided a stable social structure (Donham & Thelin, 2016). However, over the last century, farming has shifted away from a community task to a task individual to the farmer and family. Changes in this social structure have reduced opportunities for social engagement and coping mechanisms once anchored in the social support of the farming village (Donham & Thelin, 2016). Though modern farming no longer creates a social institution, some research has suggested that the majority of farmers appear to have positive social networks (Rosmann, 2010). However, the actual act of farming today is more independent and isolating due to changes in crop production (e.g., specializing in one crop versus raising small amounts of various crops, and needing to increase crop production to make a profit) and increases in technology (e.g., equipment to help with gathering crops versus needing the help of community members to gather crops; Donham & Thelin, 2016). In addition to this isolation, farmers face mounting stressors.

One of the most common stressors for a farmer is finance. Farmers tend to have marginal cash resources, despite putting in more work than average employees (Donham & Thelin, 2016). Unpredictable changes in weather and market prices create an underlying and unending source of worry, as in a matter of minutes a farmer's investment could be ruined (Donham & Thu, 1993). In comparison to workers in other occupations, farmers have higher debt, more limitations on loan size by banks, more financial losses, and salary cuts (Swisher, Elder, Lorenz, & Conger, 1998). Other external stressors reported by farmers include government policies and laws regarding agriculture, machinery breakdown, physical injuries, farm and business management, using new technology, bad weather, sick animals, and little to no time off work (Donham & Thelin, 2016; Murray, 1995; Weigel, 1981).

Fewer studies have examined reported stressors of interpersonal origin in the farming population. However, the existing research does suggest that role-related stressors and interpersonal conflicts are significant contributors to the stress experienced by farmers (Hovey & Seligman, 2006). Conflict among family members, neighboring farmers, and friends predict increased depressive symptoms and higher rates of substance abuse (Murray, 1995). Role-related stress (i.e., who manages the farm and its interests, who has the most input into how the farm operates, and who spends more time working on the farm versus making important decisions) in farming families is common, as older farmers have been the lead operator of the farm for many decades, but must "give up" the role for the younger generation to have a larger stake in the farm. As a result, it is unsurprising that prominent stress occurs during intergenerational transfer of the farm (Hedlund & Berkowitz, 1979; Russell, Griffin, Flinchbaugh, Martin, & Atilano, 1985). Role transitions abound when a family relieves the older generation of their farming roles and brings in the newer generation. Specifically, conflict arises around the issue of who is in control, as the younger farmers try to obtain autonomy and equality in farm responsibilities, and the older farmers strive for respect earned from years of experience and the ability to still have input in decision making (Hedlund & Berkowitz, 1979; Russell et al., 1985).

Other role-related stressors result from farmers contemplating their overall role in society. Farmers may feel obligated to continue pushing forward for past, present, and future farmers, which magnifies already existent stressors and adds even more pressure to succeed (Davis-Brown & Salamon, 1987). Also, within society farmers can often be made to feel inferior. Farming continues to lose its status among other occupations and farmers often feel underappreciated (Donham & Thelin, 2016; Stiernström, Holmberg, Thelin, & Svärdsudd, 2001).

Effects of Stress. In general, stress has been linked to numerous negative physical and mental health outcomes in the general population. Individuals undergoing chronic stressors are more likely to display irritability and aggressiveness, which can later manifest in anxious and depressive symptomology, as well as exhaustion (e.g., burnout; Donham & Thelin, 2016). A direct relationship between stress and depression has been established, with stress causing changes in neurotransmitters responsible for depression (Bjorntorp, 1996; Sapolsky, 2000). Similarly, neurotransmitter imbalances brought upon by stress likely contribute to anxiety disorders (Donham & Thelin, 2016). Prolonged periods of stress also contribute to increases in insomnia and substance addiction (Heim, Owens, Plotsky, & Nemeroff, 1997; Kryger, Roth, & Dement, 1994). Exposure to high levels of cortisol is associated with impairment of memory as prolonged stress can actually decrease the size of the hippocampus and the amount of synapses, dendrites, and nerves needed to both memorize and disremember information (Bremner et al., 1995; McGaugh, 1989; Piazza & Le Moal, 1998; Robinson & Berridge, 1993). These negative changes can result in lower processing speed, difficulty learning new information, and impairment in working memory (Bremner et al., 1995; McGaugh, 1989; Robinson & Berridge, 1993). In addition to these general negative outcomes, stress can also uniquely affect farmers.

For farmers, increased stress has been associated with more farm-related injuries and accidents (Reis & Elkind, 1997; Thu, Lasley, & Whitten, 1989). Farmers with higher levels of stress were more likely to have a farm-related injury at 3.5 times the rate of less stressed farmers (Thu et al., 1989). The increase in injury is attributed to cognitive and physiological changes that happen during stress. For example, farmers with higher levels of stress can have diminished concentration, be careless or impaired when making decisions, feel more fatigued, and endure

physical effects such as an impaired immune system, physical pain, and chronic medical problems (Hovey & Seligman, 2006; Folkow, 1997).

One of the most studied outcomes of stress and poor mental health in farmers is suicide. Farmers in the Mid-Western United States reporting "severe stress and depression" had a suicide rate over two times the national average in the years 1980 to 1988 (Gunderson et al., 1993). Kentucky farmers had a suicide rate of 42.2 out of 100,000 farmers, compared to 19.2 out of 100,000 non-farmers nationwide in the years 1979 to 1985 (Stallones, 1990). In the 1990s, the rates of suicide for white male farmers in Kentucky, North Carolina, and South Carolina surpassed the rates of suicide in their non-farming counterparts (Browning et al., 2008). In this population, farmers ages 25 to 34, 75 to 84, and 85 and older, had a significantly higher rate of completing suicide. The oldest farmers died by suicide at a rate 2.5 times the other farmers in the study. A more recent 2018 study examined data from the Census of Fatal Occupation Injuries from years 1992 to 2010 and found that suicide rates were highest among farmers in comparison to all other workers (Ringgenberg, Peek-Asa, Donham, & Ramirez, 2018). Notably, in this more recent population study, the highest rates of suicide were among 35 to 54-year-old U.S. male farmers. Social isolation, underutilization of medical services, undiagnosed mental health conditions, owning *and* operating a farm, chronic disease and injury, use of pesticides, economic crises, and lack of mental health services have been cited as factors in the elevated risk of suicide among farmers at these times (Browning et al., 2008; Gunderson et al., 1993; Ringgenberg et al., 2018; Stallones, 1990).

Although higher rates of suicide among farmers versus the general population and other workforces have been documented over the past few decades, it is still unclear whether the higher suicide rate is a result of easier access to lethal means to end one's life or increased

psychological distress in comparison to general populations (Booth et al., 2000; Ringgenberg et al., 2018; Thomas et al., 2003). International research indicates that farmers outside of the United States often suicide after having accumulated difficulties, rather than ending their life as the result of an immediate crisis (Malmberg, Simkin, & Hawton, 1999). This finding adds support to the theory that compounding stressors negatively impact the mental health of farmers. Additionally, farmers in one study reported that their life was not worth living more so than non-farmers, despite reporting less psychiatric morbidities (Thomas et al., 2003). However, mental disorders have been strongly linked to rates of suicide in farmers, with the highest disorder being depressive disorder (Malmberg et al., 1999). With the detrimental effects of farm stress on farmers' mental health and wellbeing, researchers must explore effective coping mechanisms.

Coping Mechanisms. Two strategies for coping with stress are problem-focused and emotion-focused coping. In problem-focused coping, the individual attempts to modify the problem, often resulting in the creation of problem-solving strategies and working to solve the problem causing stress (Lazarus & Folkman, 1984). In contrast, emotion-focused coping centers on the individual working to manage emotional distress resulting from the stressor (Lazarus & Folkman, 1984). Emotion-focused coping is frequently used in situations where a stressor cannot be eliminated (e.g., the death of a friend; Hovey & Seligman, 2006).

Farmers are subject to both stressors that they can overcome through problem solving (e.g., a piece of equipment breaks and needs fixed), and stressors that they cannot fix, but must endure (e.g., droughts, changes in commodity prices, the death of livestock, and the loss of a crop, etc.). Understanding how farmers cope with stress is an area of research that has been neglected (Hovey & Seligman, 2006). In the available literature on farmers, the stressors of farming and the risks associated with farming are discussed, but few studies examined how

farmers cope outside of social support and did not examine these variables in older farmers. In one study, Iowa farmers experiencing uncontrollable stressors (i.e., financial losses, increase in debt, and inability to get needed loans) relied mainly on the emotion-focused strategy of seeking out social support through their families (Swisher et al., 1998). Other Iowa farmers identified their faith, engagement in fun activities, discussing the stressors with others, and avoidance as additional emotion-focused strategies often used (Weigel & Weigel, 1987). The farmers sought out these coping strategies in an attempt to better deal with the stressors on an emotional and cognitive level because the stressful situation could not be changed.

Since most farmers feel confident in their ability to control (e.g., problem-focused coping) their day-to-day farming duties, dealing with long-term external stressors out of their control can be particularly demanding. If farmers try to apply problem-focused coping strategies to uncontrollable external stressors (e.g., government regulations and economic changes), they can end up feeling powerless and experience learned helplessness, which can increase anxious and depressive symptoms (Lefcourt & Martin, 1983). However, in situations that a farmer can control (e.g., career change), engaging in emotion-focused coping instead of problem-focused coping predicts more stress and depression (Heppner, Cook, Strozier, & Heppner, 1991).

Emotion-focused coping can take on many forms including reaching out to social support networks, reinterpreting events in a positive light, focusing on and venting of the emotions associated with the stressor, denial, acceptance, and using religion (Baker & Berenbaum, 2007; Carver, Scheier, & Weintraub, 1989). Given the variety of emotion-focused coping strategies available, it is understandable that the helpfulness of the coping would depend on which emotion-focused approach is used (Carver, Scheier, & Weintraub, 1989). While some strategies encourage the individual to avoid the stressor, others ask the individual to approach (Roth &

Cohen, 1986). Strategies encouraging approaching the stressor help individuals actively engage with their emotions through identification, processing, and expression. Reinterpreting events is an example of emotion-focused coping where the individual does not become passive or avoid the stressor as one would when using denial as a coping mechanism. Current literature shows that the emotion-focused strategies centered on emotion-approach coping appear to have increased benefits for farmers facing uncontrollable stressors when compared to problem-focused coping (Hovey & Seligman, 2006).

Above all, farmers across the board in coping studies consistently mention using their social support network to cope with stressors. However, with the changing landscape of rural areas and farm families (e.g., rural population increasingly moving to cities) farmers may see a loss of in-person social networking and need to adopt other ways of coping. Although coping strategies used by farmers in response to stress have been investigated, the research was conducted decades ago and may not apply to the current cohort of aging and older farmers (i.e., baby-boomer generation). This study examined both problem-focused and emotion-focused strategies used by current American farmers ages 18 and older. Additionally, this study explored dispositional mindfulness as a potential coping mechanism for farmers, which can be applied by an individual when social support is unavailable. To our knowledge, no study had explored dispositional mindfulness in a population of farmers prior to this study.

Dispositional mindfulness. Mindfulness can occur in two forms: an enduring trait (dispositional mindfulness) or state mindfulness. Mindfulness interventions and mindful meditation can temporarily induce openness and acceptance in the present moment, in what is termed *state mindfulness* (Rau & Williams, 2006). In contrast, a dispositionally mindful individual possesses a natural tendency to experience the present without invoking evaluations or

defenses even in the absence of meditation or mindful interventions (Brown & Ryan, 2003). The present study focused on dispositional mindfulness as a variable of interest to assess how farmers generally cope and respond in stressful situations, rather than assessing how they cope at just one point in time (i.e., after a mindfulness intervention or meditation).

Dispositionally mindful individuals have certain traits that can be beneficial in dealing with stressors. Specifically, when present stressors occur, the dispositionally mindful person confronts the stressful situation with curiosity and openness, overriding the mind's tendency to make quick judgments (Garland, Gaylord, & Fredrickson, 2011). Individuals higher in dispositional mindfulness are more apt to draw their attention to the present without ruminating on past or future events (Brown & Ryan, 2003). The more an individual uses this style of coping, the more automatic it becomes and the more likely it will be the primary response when facing future stressors (Garland et al., 2011).

Dispositional mindfulness has been shown to decrease distress and rumination while increasing positive mood and better emotional regulation (Brown & Ryan, 2003; Tomlinson, Yousaf, Vittersø, & Jones, 2018). Individuals engaging in cognitive rumination and catastrophizing have higher levels of longer-lasting psychological distress (Nolen-Hoeksema, 2000). Dispositional mindfulness can interrupt the maladaptive coping processes of rumination and catastrophizing, which has the potential to bring about positive reappraisal (i.e., individuals can reinterpret their stress so that instead of viewing stress as overbearing, the stressful situation becomes meaningful or benign), which has been linked to better mental health and lower levels of distress (Helgeson et al., 2006). When a stressful situation or stressor occurs and negative cognitions arise, individuals higher in dispositional mindfulness are more likely to disengage from the stressor and depart from the negative cognition. This decentering process increases the

individual's mindful awareness, which can be described as less narrow attention and more cognitive flexibility (Garland et al., 2011). Being able to view stressors from different vantage points could lead to reappraisal and reframing of the stressful situation and stressor. Such reframing has been shown to lead to lower stress levels and increased positive affect (Garland et al., 2011).

Overall, dispositional mindfulness may have the ability to empower farmers in the face of uncontrollable stressors by providing more cognitive flexibility and allowing farmers to decenter from negative thoughts that automatically arise out of stressful situations. Farmers are regularly exposed to stressors beyond their control, so dispositional mindfulness has the potential to be a powerful tool just as it has been for others. For example, other populations experiencing unresolved or uncontrollable stressful events (e.g., being diagnosed with cancer or being a caregiver for a loved one with a terminal disease), experienced positive outcomes when they were able to step back from their automatic thoughts and reactions (Manne, Ostroff, Winkel, Goldstein, Fox, & Grana, 2004; Moskowitz, Folkman, Collette, & Vittinghoff, 1996).

Though we are not aware of dispositional mindfulness as a coping mechanism being explicitly studied in a sample of American farmers before this study, prior research does show the importance of dispositional mindfulness in combatting stressors. Per Garland et al. (2011), "Mindfulness and reappraisal may be linchpins of resilience, unlocking the basic human potential to thrive amidst the unrelenting demands of living" (p. 8). Dispositional mindfulness shows potential as a tool for farmers to help them thrive in even one of the most demanding and challenging professions that is also inseparable from their lives.

Statement of the Problem

Prior research has consistently shown higher levels of negative mental health outcomes among farmers (Eisner et al., 1998; Lizer & Petrea, 2007; Rosmann, 2008). Although the mental health crisis among farmers was a burgeoning area of research in the 1980s, research into the mental health of today's American farmers has subsided, with the majority of current research concerning international farmers (Berry, Hogan, Owen, Rickwood, & Gragar, 2011; Fraser et al., 2005; Malmberg et al., 1999; Polain et al., 2011). Given that farmers are still experiencing high rates of suicide decades later, and continuing to report negative mental health outcomes (i.e., stress, depressive symptoms, anxious symptoms, and alcohol abuse, etc.), it is imperative to extend our understanding of the mental health crisis to today's American farmers.

Prior research can inform hypotheses regarding today's farmers in America, yet a key factor is still missing. The farming workforce is rapidly aging, as farmers of the Baby Boomer generation age and younger farmers decline (USDA, 2014). Americans 65 years of age and older will comprise 20% of the population by 2030 and the aging of the population will be reflected among farmers, as the median age of the American farmer is already at 56.1 years (Colby & Ortman, 2014; UBLS, 2014a; USDA, 2014). Even with increasing age, farmers continue to work and delay retirement beyond their non-farming counterparts (O'Neill et al., 2010). Increasing age brings unique challenges to an already demanding occupation *and* lifestyle. Increasing age can increase susceptibility to age-related health conditions (e.g., arthritis, cardiovascular disease, and impairment in vision and hearing, etc.), which may also be amplified by pre-existing conditions resulting from exposure to dust and gasses, excessive sunlight, and loud machinery over one's farming tenure (Donham & Thelin, 2006). Even into older age, farmers must continue to work long hours and engage in physical labor (Myers, 1990; Purschwitz & Fields, 1990). Interestingly, despite age related increases of risk for certain conditions, older farmers excel in areas of

physical function when compared to the general population (Lizer & Petrea, 2007). Yet, the same age group of farmers (55 and above) experience worse mental health outcomes than the general population, though this has not been fully explored (Lizer & Petrea, 2007).

Throughout their lifetime, farmers are subjected to chronic stressors like isolation, financial instability, unpredictable weather, changes in market prices, operation stress, and governmental policies, etc. (Donham & Thu, 1993; Murray, 1995; Weigel, 1981). Little to no research has examined the potential implications of such stress on mental health in an older population of farmers. Further, age has not been explored as a factor affecting the ability of farmers to cope with unending stressors. Per the SAVI model, regulation of emotions in the face of negative emotionally tinged events becomes increasingly difficult with age (Charles, 2010). Older farmers may find emotion regulation to be even more challenging due to their unique experience of unending stressors. Although poorer mental health outcomes have been recorded for farmers across the lifespan, the highest rate of suicide in farmers is consistently found to be among those age 55 and older, suggesting that age is an important factor to consider (Pickett et al., 1993; Pylka & Gunderson, 1992). As stressors may be particularly detrimental for older farmers, there is a need for research to explore effective coping mechanisms, an area of research that has been neglected (Smith et al., 2005). Considering the current gaps in existing research, the following aims and hypotheses were proposed.

Method

Aims and Hypotheses

Age was examined as factor differentiating the experience of American farmers across the lifespan. Based on prior research, we know that older adults present with better emotional wellbeing, stability, and control in comparison to younger adults (SST, Carstensen & Mikels,

2005), except when exposed to highly arousing, negative events (SAVI, Charles, 2010). Older adults report more difficulty returning to "normal" after an arousing event due to physiological vulnerabilities. To fully investigate the effect of age, we also assessed for the effect of resiliency, which is the ability for an individual to "bounce back" after a stressful or difficult event (Smith et al., 2008). As the changes in vulnerability and resilience can make it more difficult to cope with stressors, exploring both resilience and age allowed us to create a clearer image of what farmers in this sample experienced.

Aim 1: Describe the working conditions that may factor into the stress and mental health of the current generation of farmers.

Research has consistently shown that farmers continue to work well into older age despite disability or changes in health (Molyneaux-Smith et al., 2003; Myers, 1990; Purschwitz & Fields, 1990). Even at older ages, farmers have been reported to work well above a 40-hour workweek, particularly during spring and fall (i.e., 58 to 66 hours a week) when crops are planted and harvested (Lizer & Petrea, 2007). However, existing U.S. research on older farmers has focused on earlier generations of farmers and there is a need to understand the work experiences of current farmers. This study expected to find data consistent with previous studies despite changes occurring for today's farmer in comparison to farmers past (e.g., increases in technology). The following hypotheses were proposed to address Aim 1:

Hypothesis 1.1. Farmers will report workweeks with long hours (e.g., mean number of hours above the average 40 hour workweek), with the highest mean hours per week occurring in the spring and fall when planting and harvesting occur.

Hypothesis 1.2. The majority of farmers will report working alone on their farms without receiving assistance from others.

Hypothesis 1.3. A negative correlation between the size of land and age will be found, such that higher ages will be associated with smaller land holdings reflecting a downsizing of the size of land with age.

Aim 2a: Understand age differences in farm-related stressors.

This aim sought to explore a potential association between increasing age and stress in farmers. As resiliency tends to increase with age, this aim also included resiliency as a predictor of farm stress. The following hypothesis was proposed:

Hypothesis 2a.1. Increasing age will predict higher levels of farming stress among farmers.

Aim 2b: Understand the association between farm-related stressors and mental health among farmers across the lifespan.

Although the majority of older adults show better emotional wellbeing and control of emotions in older age, it was hypothesized that farmers may not follow the same trajectory (Carstensen et al., 2011, Hay & Diehl, 2011; Lawton, Kleban, Rajagopal, & Dean, 1992). Specifically, older farmers are confronted by compounding stressors that are often unresolvable in addition to typical aging-related stressors such as social losses and declining health. According to the SAVI model, older individuals can have increased difficulty in regulating emotions when faced with negative emotional stimuli, as it takes them longer to achieve homeostasis afterwards. Although non-farming older adult counterparts may be able to focus more on positive material in older age, this could be increasingly difficult for older adult farmers. International studies have found that farmers experience more negative changes in mental health as they age (Polain et al., 2011). Given that American farmers experience some of the same stressors as farmers internationally, it was hypothesized that older adult farmers in America would also report

negative associations between stress and their mental health. Additionally, these analyses examined resiliency in predicting stress and mental health, as well as which farm-related stressors were better predictors of anxious and depressive symptoms among farmers. Considering previous literature, the following hypotheses were proposed for Aim 2b:

Hypothesis 2b.1. Increasing age will predict higher symptoms of anxiety and depression among farmers.

Hypothesis 2b.2. Higher levels of farm-related stress will predict higher levels of depressive and anxious symptomology among farmers.

Hypothesis 2b.3. Age will moderate the association between farm stress and depressive and anxious symptomology. Specifically, with increasing age, the relationship between stress and negative mental health outcomes will become stronger, as older age makes it more difficult to return to homeostasis following stressful events. Additionally, resiliency will moderate the association between farm stress and depressive and anxious symptomology. Specifically, with increasing resiliency, the relationship between stress and negative mental health outcomes will become weaker.

Hypothesis 2b.4. (Exploratory). Specific farm-related stressors will predict higher levels of depressive and anxious symptoms. It is expected that the most uncontrollable stressors (i.e., finances, government and external stress, operation stressors, and isolation more so than work stressors) will be stronger predictors of negative mental health outcomes.

Aim 3a: Understand how farmers across the lifespan cope with farm-related stressors.

Prior research has shown that a subset of farmers in Iowa relied mostly on emotion-focused strategies when dealing with stressors out of their control, though this research was

completed two decades ago and had a limited sample of older farmers. In their sample, some of the farmers sought social support, while others used avoidance (Swisher et al., 1998; Weigel & Weigel, 1987). Avoidance and denial have been shown to predict negative mental health outcomes, in comparison to emotion-focused coping strategies that encourage the individual to actively engage with their emotions, which is associated with more desirable mental health outcomes (Baker & Berenbaum, 2007; Carver et al., 1989). Problem-focused coping can also be helpful, but primarily in situations when an individual can do something about the situation. In situations where stressors are uncontrollable, the use of problem-focused coping can make the individual feel powerless and experience more anxious and depressive symptoms (Lefcourt & Martin, 1983). Considering this information, the following hypotheses were proposed:

Hypothesis 3a.1. Farmers will report using multiple coping strategies.

Hypothesis 3a.2. Farmers reporting higher usage of the emotion-focused coping strategies of positive reframing, emotional support, and acceptance will report less depressive and anxious symptoms than farmers who predominantly use the emotion-focused coping strategies of denial, self-blame, and substance use.

Aim 3b (Exploratory): Explore the relationship between coping strategies and specific farm stressors.

Little is known about which coping strategies are used for specific factors of farm stress. Aim 3b was purely exploratory and examined which farm stressors were associated with emotion-focused versus problem-focused coping mechanisms. The following hypotheses were made:

Hypothesis 3b.1. Higher levels of work stress will predict higher usage of problem-focused coping, as this type of stressor is more controllable in comparison to financial stress, government and external stress, operation stress, and isolation.

Hypothesis 3b.2. In comparison to work stress, higher levels of financial stress, government and external stress, operation stress, and isolation will predict higher usage of emotion-focused coping strategies, as these stressors appear to be mainly uncontrollable.

Aim 4: Investigate dispositional mindfulness as a specific emotion-focused coping mechanism for farm-related stressors in farmers across the lifespan.

Dispositional mindfulness is linked to a variety of positive mental health outcomes, especially for individuals dealing with uncontrollable stressful events. Specifically, mindfulness allows an individual to interrupt stress and cognitive rumination, which may lead to reinterpretation of the stressor (Garland et al., 2011; Helgeson et al., 2006). Individuals with higher levels of dispositional mindfulness are able to engage with rather than avoid the stressful event, decreasing distress and rumination (Brown & Ryan, 2003; Kong, Wang, & Zhao, 2014). Prior to this study, research had not yet directly examined the benefits of dispositional mindfulness in the farming population, but it was hypothesized the benefits would likely extend to farmers in times of stress. In order to better understand the association between dispositional mindfulness and stressors, age and resiliency were investigated as separate moderators within the relationship. Based on what is already known regarding dispositional mindfulness, stress, and mental health outcomes, the following hypotheses were proposed:

Hypothesis 4.1. Farmers higher in dispositional mindfulness will report better mental health outcomes in the form of less depressive symptoms, less anxious symptoms, and better self-rated mental health.

Hypothesis 4.2. Farmers higher in dispositional mindfulness will report lower levels of farm-related stress.

Hypothesis 4.3. Higher levels of dispositional mindfulness will be more strongly associated with the emotion focused coping strategy of positive reframing above and beyond other strategies.

Hypothesis 4.4. Dispositional mindfulness will moderate the relationship between farm stress and mental health in American farmers. Specifically, the association between farm stress and negative mental health outcomes will be weaker in farmers with higher levels of dispositional mindfulness. Conversely, the association will be stronger for farmers with lower levels of dispositional mindfulness.

Hypothesis 4.5. Dispositional mindfulness will be particularly important for older adult farmers because of increased susceptibility to experiencing the negative effects of stress (i.e., SAVI) and in turn, potential negative mental health outcomes. As such, it is predicted that age will moderate the association between dispositional mindfulness and farm-related stress so that the relationship is stronger with increasing age. Additionally, farmers who report higher levels of resilience, even into older age, will likely be less susceptible to experiencing the negative effects of stress. Resiliency is predicted to have an enhancing effect on the association between dispositional mindfulness and farm-related stress, so that an increase in resiliency will increase the effect of dispositional mindfulness on stress.

Hypothesis 4.6. Age will moderate the associations between dispositional mindfulness and mental health outcomes, reflecting an association between dispositional mindfulness and mental health that is also stronger with increasing age. Additionally, resiliency will moderate the associations between dispositional mindfulness and mental health outcomes, reflecting an

association between dispositional mindfulness and mental health that is stronger with increasing resiliency.

Participants

Participants were recruited for the current study through both online and in-person recruitment. In-person recruitment took place at the Kentucky Farm Bureau (KFB) Federation's Annual Meeting in Louisville, Kentucky in December 2018 and at two county farm bureau meetings in Kentucky (53 participants filled out a paper survey in person). Participants were also recruited online through blog posts on farming websites, as well as Facebook posts on farming Facebook pages (105 participants filled out an online survey). Information about the study was also distributed to farming organizations and businesses throughout Kentucky, including County Extension Offices, farm supply stores, and greenhouses. Word of mouth helped to spread information about the study and led to 158 farmers completing surveys. There were no significant differences between online and in-person results.

In order to participate, participants had to be 18 or older, self-identify as a farmer, and be able to complete the questionnaire in English. For their participation, all farmers were given the option to opt into a drawing for 2 prizes of $100. If participants by mail chose to participate in the drawing, they completed an entry form that was immediately separated from their questionnaire responses upon receipt. Participants could also choose to mail the drawing form separately. Participants who entered the drawing in-person at the KFB Annual Meeting were able to place their drawing form into a secured box after handing in their questionnaire. Internet participants completed an online drawing form separate from their questionnaire.

Full participant characteristics are listed in Appendix A. The sample consisted of 158 farmers living in the U.S. with ages ranging from 18 to 86 (M = 47.62, SD = 15.31). The average

age of this sample was a few years younger the median age of the American farmer at this time (i.e., 56.1 years; UBLS, 2014a; USDA, 2014). Participants were predominantly female (55.4%), White (98.1%), and married (77.1%). The majority of participants were farmers from the state of Kentucky (48.7%; see Table 2 for full listing of participants by state). Years farming varied widely from 1 to 68 years (*M* = 30.18, *SD* = 18.77) and land size varied from .25 acre to 20,000 acres (Table 3). Of the sample, only 30.8% of farmers are first-generation, while others ranged from 2nd to 10th generation farmers (breakdown of generation can be found in Table 4). The most predominant type of farming reported was raising beef cattle (54.8%), with Arable farming endorsed as the second highest (34.2%). Full listing of which types of farming were endorsed can be found in Table 5.

Self-rated mental health and self-rated physical health both fell predominantly in the "good" to "very good" range (Table 6). Reported mental health differed widely in screeners assessing anxious and depressive symptoms, which will be discussed further in the results and discussion write-up. Regarding physical health, 68.6% of the same endorsed taking medications for physical health and 73.9% reported visiting a healthcare provider in the past 12 months for a physical health concern (Table 7). In contrast, only 29.9% of farmers in this sample endorsed taking medications for mental/emotional health and 30.6% reported visiting a healthcare provider in the past 12 months for mental/emotional concerns (Table 7). On a measure of general perceived stress, the majority of farmers (60.1%) reported Moderate levels of stress (Table 6). On the Farm Ranch Stress Inventory (FRSI), financial stress was on average the greatest stressor, followed by operational stress, work stress, governmental stress, and isolation stress. The top three items listed as most stressful were: (1) market prices for your crops/livestock, (2) the

weather, and (3) health care costs. Full individual item breakdown for the FRSI can be found in Table 8.

Procedure

All participants were provided a cover letter (Appendix B) and information sheet (Appendix B) at the beginning of the questionnaire. These documents explained the research study, including the purpose of the study, risks, discomforts, and benefits associated with being in the study, contact information for the principal investigator, and a clear statement that participants were not obligated to complete the questionnaire. Since participants read through the documents on their own, documents were assessed for readability and did not exceed an 8th grade reading level. Paper documents were adapted for online use.

Participants' anonymity was maintained and no identifying information was collected on questionnaires. Instead, participants were given identification numbers. Participants were given the option of electing to receive a summary letter with overall findings of the study once the study is completed.

Measures

Measures were chosen based on relevance, brevity, and reading level. Overall, the questionnaire consisted of 7 measures, totaling 132 questions. It is estimated the questionnaire took 15 to 20 minutes to complete. All measures can be found in Appendix B.

Demographic Questions. Participants completed a demographics form asking for basic information including, age, marital status, race/ethnicity, education, income, and specific farming operation questions.

Measure of Stress. The *Farm/Ranch Stress Inventory* (Welke, 2002; Welke, 2004) and the *10-item Version of the Perceived Stress Scale* (Cohen, Kamarck, & Mermelstein, 1994) were used to measure farm stressors and general stressors, respectively.

Farm/Ranch Stress Inventory. The Farm/Ranch Stress Inventory (FRSI; Welke 2002; Welke, 2004) is a 29 question self-report questionnaire measuring stressors specific to farmers and ranchers. Respondents rate each stressor on a scale of 1 to 4 where numbers correspond to: (1) No Stress, (2) A Little Stressful, (3) Moderately Stressful, and (4) Very stressful. Sample items include: "Market prices for your crops/livestock," "Working with bankers and loan officers," and "Concern over the future of the farm/ranch." Higher scores are indicative of higher levels of stress associated with being a farmer/rancher.

The measure provides five factor scores: government and external stress ($\boldsymbol{\alpha}$ = .84), finances ($\boldsymbol{\alpha}$ = .89), work ($\boldsymbol{\alpha}$ = .81), operating stress ($\boldsymbol{\alpha}$ = .76), and isolation ($\boldsymbol{\alpha}$ = .76). The overall scale was found to have a Chronbach's alpha of $\boldsymbol{\alpha}$ = .92 (Welke, 2004). FRSI items split into the five farm stress factors can be found in Appendix C. The FRSI has been shown to have "moderate convergence" with the Perceived Stress Scale (PSS) and the Center for Epidemiological Studies Depression Scale (Thomas, 2011).

10-item Version of the Perceived Stress Scale. The PSS is designed to measure the extent to which an individual feels their life has been out of control, overwhelming, and unpredictable within the past month (Cohen & Williamson, 1988). Items are written in a general nature, so that they can apply to any subpopulation group among community samples (Cohen et al., 1994). The original PSS is comprised of 14 items, though versions with 10 items and 4 items are also available. This study used the 10-item abbreviated version of the PSS not only to reduce burden on participants when taking the study, but also because the 10-item version has been

shown to be psychometrically superior to other versions (Lee, 2012). The 10-item PSS has been shown reliable in multiple populations (Chronbach's alpha ranging from **α** = .74 to .91) and valid (Cohen & Williamson, 1988; Lee, 2012; Mitchell, Crane, & Kim, 2008).

Sample items include: "In the last month, how often have you felt that you were unable to control the important things in your life?", "In the last month, how often have you felt confident about your ability to handle your personal problems?", and "In the last month, how often have you felt that things were going your way?" Items are rated on a scale from 0 to 4, which corresponds to: (0) Never, (1) Almost Never, (2) Sometimes, (3) Fairly Often, and (4) Very Often. Higher scores indicate higher levels of perceived stress.

Measure of Mental Health Outcomes.

Patient Health Questionnaire (PHQ-8). The 8-item Patient Health Questionnaire is a self-report measure used to assess for depressive symptoms. Participants were given the prompt, "Over the last 2 weeks, how often have you been bothered by any of the following problems?" Each item is rated from 0 to 3, where ratings correspond to (0) Not at all, (1) Several days, (2) More than half the days, and (3) Nearly every day. Example items include: "Little interest of pleasure in doing things," "Feeling bad about yourself—or that you are a failure or have let yourself or your family down," and "Feeling, down, depressed, or hopeless."

Total scores can range from 0 to 24. A score greater than or equal to 10 on the PHQ-8 has been shown to correspond with clinically significant depression (Corson, Gerrity, & Dobscha, 2004; Kroenke, Spitzer, & Williams, 2001; Kroenke & Spitzer, 2002). The 8-item PHQ omits the ninth question on the PHQ-9, which asks about suicidal and self-injurious thoughts. Researchers relying on self-administered questionnaires instead of a direct interview tend to use the PHQ-8 over the PHQ-9, as intervention cannot be provided if a participant endorses suicidal

thoughts or behaviors (Kroenke & Spitzer, 2002). The removal of the last item has minimal effect on scoring, so the thresholds for depression severity are the same for the PHQ-8 and PHQ-9 (Korenke & Spitzer, 2002). Scores of 0 to 4 correspond to *None—Minimal Depression*, 5 to 9 *Mild Depression*, 10 to 14 *Moderate Depression*, 15 to 19 *Moderately Severe Depression*, and 20 to 24 *Severe Depression*. The PHQ-8 has been established as a reliable and valid measure in both clinical practice and population-based studies (Kroenke et al., 2009).

Generalized Anxiety Disorder Screener (GAD-7). The GAD-7 is a self-report measure comprised of 7 items that assess symptoms of anxiety. GAD-7 scores range from 0 to 21, with scores 0 to 4 indicating *Minimal Anxiety*, 5 to 9 *Mild Anxiety*, 10 to 14 *Moderate Anxiety*, and 15 to 21 *Severe Anxiety*. The questionnaire asks the individual to rate each item from 0 to 3 based on the prompt, "Over the last 2 weeks, how often have you been bothered by the following problems?" The ratings correspond to (0) Not at all, (1) Several days, (2) More than half the days, and (3) Nearly every day. Sample items include: "Feeling nervous, anxious, or on edge," "Worrying too much about different things," and "Feeling afraid as if something awful might happen." The GAD-7 has been shown reliable (**α**= .92) and valid in assessing for severity of anxiety among clinical and research populations (Spitzer, Kroenke, Williams, & Löwe, 2006).

Self-Rated Mental Health (SRMH). When assessing self-rated mental health, survey research asks participants to rate their overall mental health on a scale from poor to excellent (Ahmad, Jhajj, Stewart, Burghardt, & Bierman, 2014). Participants in this study were given the prompt, "In general, would you say your mental health is:" and choose between (1) Poor, (2) Fair, (3) Good, (4) Very Good, or (5) Excellent. A review of 57 studies including a one-question measure of SRMH showed moderate correlations between SRMH and multiple prominent

mental health scales (e.g., Kessler Psychological Distress Scale, PHQ, and World Mental Health Clinical Diagnostic Interview Schedule, etc.; Ahmad et al., 2014).

Measure of Coping.

The Brief COPE. The Brief COPE (Carver, 1997) is comprised of 28 items that measure 14 different ways of coping: active coping (**α** = .68), planning (**α** = .73), positive reframing (**α** = .64), acceptance (**α** = .57), humor (**α** = .73), religion (**α** = .82), using emotional support (**α** = .71), using instrumental support (**α** = .64), self-distraction (**α** = .71), denial (**α** = .54), venting (**α** = .50), substance use (**α** = .90), behavioral disengagement (**α** = .65), and self-blame (**α** = .69). Each type of coping is measured via two items, which participants rate on a 4-point scale with the options, (1) I usually don't do this at all, (2) I usually do this a little bit, (3) I usually do this a medium amount, and (4) I usually do this a lot.

The Brief COPE was developed from the full 60-item COPE scale to alleviate burden on participants and collect the same information in less time. Just as with the full COPE, the Brief COPE can either be given in a situational format (i.e., pertaining to a specific stressor) or a 'dispositional coping style format' by modifying item verb tenses (Carver et al., 1989). For example, an item in the situational format would read, "I've been making jokes about it," while the dispositional format would read, "I make jokes about it." This study used the dispositional format to measure the typical coping style of participants. Overall, the brief version of the COPE scale has been shown reliable and valid, with reports of high convergent and discriminate validity (Carver, 1997; Carver et al., 1989).

Measure of Dispositional Mindfulness.

MAAS. The Mindful Attention Awareness Scale (Brown & Ryan, 2003) is a valid and reliable (**α** = .82) measurement of individual dispositional mindfulness (Brown & Ryan, 2003;

MacKillop & Anderson, 2007). Participants were asked to rate 15 items according to their everyday experience on a 6-point scale with the options, (1) Almost Always, (2) Very Frequently, (3) Somewhat Frequently, (4) Somewhat Infrequently, (5) Very Infrequently, and (6) Almost Never. Example items include: "I tend not to notice feelings of physical tension or discomfort until they really grab my attention," "I find myself preoccupied with the future or the past," and "I find myself doing things without paying attention." Higher MAAS scores are reflective of more dispositional mindfulness.

Measure of Resilience.

Brief Resilience Scale (BRS). The Brief Resilience Scale (BRS, Smith et al., 2008) is a valid and reliable (α = .80-.91) measure that assesses how well an individual is able to recover from stressful events or "bounce back." Participants rated 6 items based on how they feel overall with the options, (1) Strongly Disagree, (2) Disagree, (3) Neutral, (4) Agree, and (5) Strongly Agree. Example items include: "I tend to bounce back quickly after hard times," "I tend to take a long time to get over set-backs in my life," and "It does not take me long to recover from a stressful event."

Data Analysis and Analytic Strategy

Power analysis. A power analysis was conducted using G*Power (Faul, Erdfelder, Buchner, & Albert-Georg, 2009) to determine the minimum number of participants needed based upon the study's largest potential model (Hypothesis 2b.4). G*Power calculations revealed that for a hierarchical regression with 9 predictors, a sample size of at least 114 participants was needed to predict an R^2 of at least 0.15 at an alpha level of 0.05, with a power of 0.80. The sample for this study was adequately powered with a sample size of 158 participants.

Data analysis specific to Aim 1. To determine average hours worked on the farm per week in all four seasons (Hypothesis 1.1) and to determine how much help farmers receive from outside sources (Hypothesis 1.2), descriptive data was computed. In order to understand the association between size of land and age (Hypothesis 1.3), descriptive statistics and a Pearson correlation between age and reported land size was executed.

Data analysis specific to Aim 2a. To understand potential age differences in farm-related stressors, as well as the association between farm-related stressors and mental health among farmers, separate hierarchical regressions and a moderation analysis were conducted. To analyze Hypothesis 2a.1, six hierarchical regressions were completed with covariates (i.e., gender, generation, and resiliency) entered into Step 1 of the model and age added in Step 2, as predictors of (1) total farm stress, (2) financial stress, (3) work stress, (4) government stress, (5) operation stress, and (6) isolation stress.

Data analysis specific to Aim 2b. Three hierarchical linear regressions were conducted with covariates (i.e., gender, generation status, resiliency, and self-rated physical health) entered into Step 1, followed by age in Step 2, to predict mental health outcomes (Hypothesis 2b.1.). The three outcome variables were: (1) depressive symptoms, (2) anxious symptoms, and (3) self-rated mental health. Hierarchical linear regressions were also used to analyze Hypothesis 2b.2, with total farm stress entered into Step 2 as a predictor of depressive symptoms, anxious symptoms, and self-rated mental health above and beyond covariates.

For Hypothesis 2b.3, Hayes' SPSS PROCESS macro was used to test for age as a moderator in the following associations: (1) farm stress and anxious symptomology and (2) farm stress and depressive symptomology. The PROCESS output generates how much variance in depressive and anxious symptomology (Y) is uniquely attributed to the moderation of farm

stress's effect (X) by age (M). PROCESS also provides a regression coefficient (b_3) that if statistically different from zero, means the null hypothesis is rejected, inferring a significant moderation (Hayes, 2013).

Hypothesis 2b.4 was examined using three hierarchical regressions, with covariates entered into Step 1 and the five farm stressors (i.e., financial stress, government stress, work stress, operation stress, and isolation stress) entered in Step 2 as predictors of (1) depressive symptoms, (2) anxious symptoms, and (3) self-rated mental health.

Data analysis specific to Aim 3a. Descriptive statistics were used to identify the relative use of specific emotion-focused and problem-focused coping strategies (i.e., active coping, planning, positive reframing, acceptance, humor, religion, using emotional support, using instrumental support, self-distraction, denial, venting, substance use, behavioral disengagement, and self-blame) to analyze Hypothesis 3a.1.

Given the lack of precedent linking the specific coping strategies in this study to mental health outcomes in farmers, preliminary correlations were ran between all coping strategies and mental health outcomes before beginning the analysis of Hypothesis 3a.2. Variables from the significant associations were then used in separate hierarchical linear regressions. Covariates entered into Step 1 of the regressions are the same variables used in the analyses above with mental health variables as the outcome. Significant coping strategies were entered in Step 2 of the models for a total of 6 hierarchical linear regressions: (1) denial predicting depressive symptoms, (2) denial predicting anxious symptoms, (3) self-blame predicting depressive symptoms, (4) self-blame predicting anxious symptoms, (5) substance use predicting self-rated mental health, and (6) self-blame predicting self-rated mental health.

Data analysis specific to Aim 3b. Preliminary correlations were computed between all coping strategies and the five different farming stress variables to determine which variables would be entered into the analyses. Mean scores were calculated from the Brief COPE for overall problem-focused coping, active emotion-focused coping, and avoidant emotion-focused coping to be used as three outcome variables in separate hierarchical linear regressions. In total, two hierarchical regressions were completed for Hypothesis 3b.1 with the five farm stressors entered into Step 2 as predictors of problem focused coping. Similarly, for Hypothesis 3b.2, farm stressors were entered into Step 2 of the model as predictors of farmers' overall usage of active and avoidant emotion-focused coping.

Data analysis specific to Aim 4. Hypotheses 4.1, 4.2, and 4.3 were all analyzed using hierarchical linear regressions. Dispositional mindfulness was entered in Step 2 of models as a predictor of depressive symptoms, anxious symptoms, and self-rated mental health (Hypothesis 4.1), as well as a predictor of total farm stress, government stress, work stress, operation stress, isolation stress, and financial stress (Hypothesis 4.2). To analyze Hypothesis 4.3, preliminary correlations were run between dispositional mindfulness and coping strategies, with significant coping strategies entered as outcome variables in separate hierarchical linear regressions. Dispositional mindfulness was entered into Step 2 of the models predicting: (1) self-distraction, (2) self-blame, (3) denial, (4) substance use, and (5) behavioral disengagement.

Hayes' SPSS PROCESS macro was used to analyze the following moderations: (1) dispositional mindfulness as a moderator in the farm stress—anxious symptoms and farm stress—depressive symptoms associations (Hypothesis 4.4), (2) age and resiliency as moderators in associations between dispositional mindfulness and farm-related stress (Hypothesis 4.5), and

(3) age and resiliency as moderators in the dispositional mindfulness—mental health outcome associations.

Follow-up analyses. Given gender and generational effects found in some of the analyses, one-way ANOVAs were also completed to better understand different experiences based on gender and generational status (i.e., first-generation vs. multi-generation farmer). Full information regarding these effects can be found in the Results section.

Results

Meeting Regression-Based Assumptions

The assumptions of independence and linearity were met. Outliers were removed so that data met the assumptions of univariate and multivariate normality. Additionally, normally distributed errors were checked and met. Log-transformations were applied to the religion and substance use variables only.

Aim 1: Understanding Work Conditions for Farmers

1.1 Average work hours. On average, farmers reported working the longest hours on their farms in the summer, followed by spring and fall, and lastly, winter (Table 9). In summer, 66.7% of farmers reported working 8 or more hours/day, with 28.2% reporting 11 to 14 hour days, and 12.2% working 15 or more hours/day. In both spring and fall, 61.1% of farmers endorsed working 8 or more hours/day. In winter, time spent working on the farm decreased, with over half of farmers (66.7%) reporting working 1 to 7 hours/day.

Table 9. *Percentage of Farmers Working x Hours per Season*

	Spring	Summer	Fall	Winter
1 to 7 hours	38.9%	33.3%	38.9%	66.7%
8 to 10 hours	28.0%	26.3%	29.9%	18.6%
11 to 14 hours	23.6%	28.2%	21.7%	10.9%
15 or more hours	9.6%	12.2%	9.6%	3.8%

Out of this sample, 47.4% of farmers (70 participants) reported working a second job (Table 10) in addition to taking care of their farm. The time spent at the second job varied widely from 5 to 80 hours/week (*M* = 35.26, *SD* = 14.45).

Table 10. *Types of Second Jobs Listed by Farmers*

"Accountant"	"Haul sawdust"	"Real Estate Broker"
"Ag industry"	"Healthcare"	"Retired KY teacher"
"Ag journalist"	"Homecare"	"Riding for other ranches/building saddles"
"Agribusiness"	"Housing manager"	"Sales"
"APRN, nurse practitioner"	"IT"	"School, volunteer"
"Assistant"	"Teacher's aid"	"School administrator"
"Associate Professor"	"KY Department of Transportation"	"Seasonal retail"
"Babysit"	"Library Assistant"	"Seed sales"
"Bus driver"	"Local government"	"Self-employed lumber business"
"Soil conservation"	"Machinery"	"Software consulting"
"Chef"	"Manager"	"Software design"
"Concrete work"	"Medical"	"State government"
"Construction"	"Mining coal"	"Substitute teacher"
"Crop insurance adjuster"	"Night baker"	"Teacher"
"Crop insurance agent"	"Nursing/Nursing Assistant"	"Tool and dye maker"
"Delivery, storage sheds"	"Nutrient Management Advisor"	"Tree nursery"
"Education/Educator"	"Office manager"	"Truck driver"
"Electric Company"	"Own retail stores"	"Web design"
"EMS"	"Pastor"	"Welder"
"Extension Agent"	"Personal care attendant"	
"Family Caregiver"	"Phlebotomist"	
"Foster parent"	"Power plant"	
"General contractor"		
"Grocery"		

1.2. Working alone vs. receiving assistance. Almost half of farmers (49.7%) endorsed receiving help on their farm only 0-25% of the time. In contrast, only 11.5% reported receiving help 26 - 50% of the time, while 13.4% and 25.5% reported receiving help 51-75% and 76-100% of the time, respectively. Of the help received, family members helped out on the farm most (66.9%), while hired workhands made up the second highest majority of help received (25.5%). Table 11 shows the frequency of other types of help reported, but overall, farmers appear to complete the majority of work on their farms alone.

Table 11. *Percentage of Help Farmers Receive by Group*

Type of Group	Percentage of Help by Group
Family Members	66.9%
Hired Workhands	25.5%
Volunteers	3.1%
Friends	1.2%
Neighbors	0.6%
"Full time staff and interns"	0.6%
"Lease the land"	0.6%

1.1. Age and land size. Out of the farmers surveyed, 48.1% reported that their land has increased in size with age. In contrast, 12.8% reported a decrease with age, while 39.1% indicated that their land size has stayed about the same. No significant association was found between farm size and age (r = .010, n = 152, p = .903), or farm size and resiliency (r = -.101, n = 152, p = .215). When the sample is broken into groups according to their response on this question, the younger farmers reported an increase with age, while more middle-aged farmers reported their land size staying about the same or decreasing (Table 12).

Table 12. *Average Age of Farmers Reporting Changes in Land Size With Age*

	Age *M*	Age *SD*
Increased in size	43.17	13.71
Decreased in size	55.74	16.23
Stayed about the same	50.75	15.27

Aim 2a: Understanding Age Differences in Farm-Related Stressors

2a.1. Age predicting levels of farm stress. Age was a significant predictor of total farm stress (Table 13), financial stress (Table 14), and work stress (Table 15) above and beyond the covariates of gender, generation status (i.e., first-generation vs. multi-generational farmer), and resiliency. In these significant associations, increasing age predicted lower levels of total farm stress, financial stress, and work stress. Age was not a significant predictor of governmental stress (Table 16), operation stress (Table 17), or isolation stress (Table 18).

Table 13. *Hierarchical Linear Regression: Age predicting Total Farm Stress*

Step 1: $F(3, 150) = 7.41$, $p < .001$					Step 2: $F(4, 149) = 6.94$, $p < .001$				
$R^2 = .129$					$\Delta R^2 = .028$				
	B	SE B	β	t		B	SE B	β	t
Gender***	-.27	.07	-.30	-3.84	Gender**	-.25	.07	-.28	-3.54
Generation	.01	.07	.02	.19	Generation	.07	.08	.07	.86
Resiliency*	-.10	.05	-.16	-2.01	Resiliency	-.09	.05	-.14	-1.82
					Age*	-.01	.00	-.18	-2.22

Note. *$p < .05$, **$p < .01$, *** $p < .001$

Table 14. *Hierarchical Linear Regression: Age predicting FRSI Financial Stress*

Step 1: $F(3, 150) = 6.26$, $p < .001$					Step 2: $F(4, 149) = 6.61$, $p < .001$				
$R^2 = .111$					$\Delta R^2 = .039$				
	B	SE B	β	t		B	SE B	β	t
Gender*	-.32	.12	-.20	-2.59	Gender*	-.27	.12	-.18	-2.25
Generation	-.17	.13	-.10	-1.30	Generation	-.06	.13	-.04	-.46
Resiliency*	-.21	.08	-.20	-2.56	Resiliency*	-.19	.08	-.18	-2.35
					Age**	-.01	.00	-.21	-2.63

Table 15. *Hierarchical Linear Regression: Age predicting FRSI Work Stress*

Step 1: $F(3, 150) = 2.56$, $p = .058$					Step 2: $F(4, 149) = 4.48$, $p = .002$				
$R^2 = .049$					$\Delta R^2 = .059$				
	B	SE B	β	t		B	SE B	β	t
Gender	-.18	.09	-.16	-1.98	Gender	-.14	.09	-.13	-1.57
Generation	-.07	.10	-.06	-.72	Generation	.03	.10	.02	.25
Resiliency	-.08	.06	-.11	-1.30	Resiliency	-.07	.06	-.08	-1.03
					Age**	-.01	.00	-.26	-3.13

Table 16. *Hierarchical Linear Regression: Age predicting FRSI Government Stress*

Step 1: $F(3, 150) = 2.31$, $p = .001$					Step 2: F(4, 149) = 4.16, p = .003				
$R^2 = .100$					$\Delta R^2 = .001$				
	B	SE B	β	t		B	SE B	β	t
Gender*	-.26	.11	-.19	-2.40	Gender*	-.26	.11	-.19	-2.41
Generation**	.39	.11	.27	3.43	Generation**	.38	.12	.26	3.17
Resiliency	-.05	.07	-.05	-.61	Resiliency	-.05	.07	-.05	-.63
					Age	.00	.00	.03	.30

Table 17. *Hierarchical Linear Regression: Age predicting FRSI Operation Stress*

Step 1: $F(3, 150) = 6.39$, $p < .001$					Step 2: $F(4, 149) = 4.80$, $p = .001$				
$R^2 = .113$					$\Delta R^2 = .001$				
	B	SE B	β	t		B	SE B	β	t
Gender***	-.34	.08	-.33	-4.14	Gender***	-.34	.08	-.32	-4.04
Generation	.12	.09	.11	1.37	Generation	.13	.09	.12	1.41
Resiliency	-.03	.06	-.03	-.44	Resiliency	-.02	.06	-.03	-.40
					Age	-.00	.00	-.03	-.36

Table 18. *Hierarchical Linear Regression: Age predicting FRSI Isolation Stress*

Step 1: $F(3, 150) = 6.89$, $p < .001$					Step 2: $F(4, 149) = 5.48$, $p < .001$				
$R^2 = .121$					$\Delta R^2 = .007$				
	B	SE B	β	t		B	SE B	β	t
Gender**	-.26	.09	-.24	-3.05	Gender**	-.25	.09	-.23	-2.87
Generation	-.16	.09	-.14	-1.76	Generation	-.13	.09	-.11	-1.34
Resiliency*	-.12	.06	-.16	-1.99	Resiliency	-.11	.06	-.15	-1.88
					Age	-.00	.00	-.09	-1.11

To further understand differences in significant variables for gender and generation status, follow-up analyses were conducted. Specifically, a follow-up one-way ANOVA was conducted to compare potential differences in levels of total farm stress, financial stress, governmental stress, operation stress, and isolation stress between male and female farmers. Female farmers reported significantly higher levels of total farm stress, $F(1, 155) = 17.40$, $p < .001$, financial stress, $F(1, 155) = 11.26$, $p = .001$, operation stress, $F(1, 155) = 17.30$, $p < .001$, and isolation stress, $F(1, 155) = 12.91$, $p < .001$. Male and female farmers did not differ significantly in levels of governmental stress, $F(1, 155) = 3.20$, $p = .076$. Table 19 presents mean information for different stress levels by gender.

Table 19. *Mean Farm Stress for Females vs. Males*

	Female: *M* (*SD*)	Male: *M* (*SD*)
Total Farm Stress*	2.54 (.41)	2.26 (.43)
Financial Stress*	2.81 (.71)	2.41 (.79)
Operation Stress*	2.79 (.51)	2.45 (.49)
Isolation Stress*	1.67 (.60)	1.37 (.42)
Governmental Stress	2.51 (.68)	2.32 (.66)
Work Stress	2.63 (.57)	2.43 (.55)

Note. *significant difference between means

An independent samples t-test was performed to compare levels of government stress associated with farming between first generation and multi-generation farmers. There was a significant difference in the scores of first generation farmers ($M = 2.20$, $SD = .61$) versus multiple generation farmers ($M = 2.54$, $SD = .67$), $t(154) = -3.04$, $p = .003$. These results suggest that first generation farmers experience less stress dealing with government-related stressors on the farm, while multi-generation farmers experience higher stress for this issue.

Aim 2b: Understanding The Association Between Farm-Related Stressors and Mental Health

Given known associations between gender, resiliency, self-rated physical health and mental health outcomes, these variables were included as covariates in all analyses with mental health outcome variables. Within this sample, generation status was significantly correlated with mental health outcomes, and as such, has also been included as a covariate.

2b.1. Age predicting anxious and depressive symptoms. Increasing age was significantly correlated with less depressive symptoms (Table 20), less symptoms of anxiety (Table 21), and better self-rated mental health (Table 22), above and beyond covariates. In all associations, better self-rated mental health and higher levels of resiliency were also associated with more positive mental health outcomes.

Table 20. *Hierarchical Linear Regression: Age predicting Depressive Symptoms*

Step 1: $F(4, 146) = 16.05$, $p < .001$					Step 2: $F(5, 145) = 15.71$, $p < .001$				
$R^2 = .305$					$\Delta R^2 = .046$				
	B	SE B	β	t		B	SE B	β	t
Gender*	-1.87	.82	-.16	-2.30	Gender	-1.52	.80	-.13	-1.90
Generation*	-2.13	.87	-.17	-2.45	Generation	-1.34	.88	-.11	-1.53
Resiliency***	-2.82	.59	-.36	-4.82	Resiliency***	-2.58	.57	-.33	-4.49
SRPH**	-1.34	.45	-.22	-2.99	SRPH**	-1.51	.44	-.25	-3.44
					Age**	-.09	.03	-.23	-3.21

Note. SRPH = Self Rated Physical Health

Table 21. *Hierarchical Linear Regression: Age predicting Anxious Symptoms*

Step 1: $F(4, 146) = 11.95$, $p < .001$					Step 2: $F(5, 145) = 13.39$, $p < .001$				
$R^2 = .247$					$\Delta R^2 = .069$				
	B	SE B	β	t		B	SE B	β	t
Gender	-1.26	.81	-.12	-.156	Gender	-.85	.78	-.08	-1.01
Generation*	-2.16	.86	-.18	-2.51	Generation	-1.24	.86	-.11	-1.45
Resiliency***	-2.77	.53	-.37	-4.75	Resiliency***	-2.48	.56	-.33	-4.41
SRPH	-.74	.45	-.13	-1.67	SRPH*	-.94	.43	-.16	-2.19
					Age***	-.10	.03	-.28	-3.83

Table 22. *Hierarchical Linear Regression: Age predicting Self-Rated Mental Health*

Step 1: $F(4, 148) = 26.67$, $p < .001$					Step 2: $F(5, 147) = 29.65$, $p < .001$				
$R^2 = .419$					$\Delta R^2 = .083$				
	B	SE B	β	*t*		B	SE B	β	*t*
Gender	.12	.12	.06	1.00	Gender	.04	.11	.02	.40
Generation**	.44	.13	.22	3.48	Generation*	.27	.12	.13	2.16
Resiliency***	.57	.09	.44	6.57	Resiliency***	.51	.08	.40	6.34
SRPH***	.28	.07	.29	4.30	SRPH***	.32	.06	.33	5.22
					Age***	.02	.00	.31	4.96

A follow-up independent samples t-test was performed to compare levels of self-rated mental health between first generation and multi-generation farmers. There was a significant difference in the scores of first generation farmers ($M = 3.06$, $SD = 1.01$) versus multi-generation farmers ($M = 3.45$, $SD = .86$), $t(153) = -2.46$, $p = .015$. These results suggest that first generation farmers subjectively report poorer mental health in comparison farmers belonging to a multi-generational farming family.

2b.2. Farm-related stress predicting anxious and depressive symptoms. Above and beyond the covariates gender, generation status, resiliency, self-rated physical health, and age, higher total farm stress levels predicted higher levels of depressive (Table 23) and anxious (Table 24) symptoms. Subjective rating of total farm stress was not a significant predictor of self-rated mental health scores (Table 25). Even with total farm stress added to the models, better self-rated physical health, higher levels of resiliency, and older age continued to predict less depressive and anxious symptoms, as well as better self-rated mental health.

Table 23. *Hierarchical Linear Regression: Total FRSI predicting Depressive Symptoms*

Step 1: $F(5, 145) = 15.71$, $p < .001$					Step 2: $F(6, 144) = 14.84$, $p < .001$				
$R^2 = .351$					$\Delta R^2 = .031$				
	B	SE B	β	*t*		B	SE B	β	*t*
Gender	-1.52	.80	-.13	-1.90	Gender	-.93	.81	-.08	-1.14
Generation	-1.34	.88	-.11	-1.53	Generation	-1.48	.86	-.12	-1.72
Resiliency***	-2.58	.57	.33	-4.49	Resiliency***	-2.37	.57	-.30	-4.17
SRPH**	-1.51	.44	-.25	-3.44	SRPH**	-1.48	.43	-.24	-3.45
Age**	-.09	.03	-.23	-3.21	Age**	-.07	.03	-.20	-2.77
					Total Farm Stress**	2.44	.91	.19	2.67

Table 24. *Hierarchical Linear Regression: Total FRSI predicting Anxious Symptoms*

Step 1: $F(5, 145) = 13.39$, $p < .001$					Step 2: $F(6, 144) = 14.06$, $p < .001$				
$R^2 = .316$					$\Delta R^2 = .054$				
	B	SE B	β	t		B	SE B	β	t
Gender	-.85	.78	-.08	-1.08	Gender	-.10	.78	-.01	-.13
Generation	-1.24	.86	-.11	-1.45	Generation	-1.42	.83	-.12	-1.71
Resiliency***	-2.48	.56	-.33	-4.41	Resiliency***	-2.22	.55	-.30	-4.05
SRPH*	-.94	.43	-.16	-2.19	SRPH*	-.90	.41	-.16	-2.19
Age***	-.10	.03	-.28	-3.83	Age**	-.09	.03	-.24	-3.31
					Total Farm Stress**	3.08	.88	.25	3.50

Table 25. *Hierarchical Linear Regression: Total FRSI predicting Self-Rated Mental Health*

Step 1: $F(5, 147) = 29.65$, $p < .001$					Step 2: $F(6, 146) = 24.88$, $p < .001$				
$R^2 = .502$					$\Delta R^2 = .003$				
	B	SE B	β	t		B	SE B	β	t
Gender	.04	.11	.02	.40	Gender	.01	.12	.01	.10
Generation*	.27	.12	.13	2.16	Generation*	.27	.12	.14	2.22
Resiliency***	.51	.08	.40	6.34	Resiliency***	.50	.08	.39	6.16
SRPH***	.31	.06	.33	5.22	SRPH***	.32	.06	.33	5.20
Age***	.02	.00	.31	4.96	Age***	.02	.00	.30	4.70
					Total Farm Stress	-.13	.13	-.06	-1.00

2b.3. An exploration of the farm stress and mental health associations in relation to age and resiliency. No significant moderating effects of age were found for the total farm stress—depressive symptoms association [-.1139, .1359], total farm stress—anxious symptoms association [-.0724, .1472], or the total farm stress—self-rated mental health association [-.0204, .0124]. The lack of age as a moderator shows that the associations between total farm stress and mental health outcomes does not differ based on age and is similar across the lifespan.

Additionally, resiliency was not a significant moderator of the three associations, total farm stress—depressive symptoms [-2.7495, 2.0175], total farm stress—anxious symptoms [-2.2901, 2.3108], and total farm stress—self-rated mental health [-.3078, .3731]. Since resiliency was not a significant moderator, it can be assumed that strength of the associations between total farm stress and mental health outcomes does not change according to resiliency level.

2b.4. (Exploratory) Farm-related stress as predictors of mental health outcomes.

Farm Ranch Stress Inventory (FRSI) subscale factors (i.e., financial stress, governmental stress, work stress, operation stress, and isolation stress) were included as predictors of mental health outcomes. Above and beyond covariates, work stress was the only significant predictor of depressive (Table 26) and anxious symptoms (Table 27). Specifically, higher levels of work stress were associated with higher levels of depressive and anxious symptoms. No FRSI subscale variable was a significant predictor of self-rated mental health (Table 28).

Table 26. *Hierarchical Linear Regression: Farm-Related Stress Predicting Depressive Symptoms*

Step 1: $F(4, 148) = 18.07$, $p < .001$					Step 2: $F(9, 143) = 9.61$, $p < .001$				
$R^2 = .328$					$\Delta R^2 = .049$				
	B	SE B	β	t		B	SE B	β	t
Gender	-1.51	.80	-.13	-1.89	Gender	-1.15	.84	-.10	-1.38
Resiliency***	-2.70	.57	-.34	-4.71	Resiliency***	-2.48	.58	-.32	-4.32
SRPH**	-1.38	.44	-.23	-3.14	SRPH**	-1.35	.44	-.22	-3.10
Age**	-.09	.03	-.24	-3.46	Age*	-.07	.03	-.18	-2.38
					Financial Stress	.04	.58	.01	.07
					Gov. Stress	-.22	.74	-.03	-.31
					Work Stress*	2.33	.92	.23	2.54
					Operation Stress	.15	.96	.01	.16
					Isolation Stress	.19	.75	.02	.26

Table 27. *Hierarchical Linear Regression: Farm-Related Stress Predicting Anxious Symptoms*

Step 1: $F(4, 148) = 15.38$, $p < .001$					Step 2: $F(9,143) = 9.44$, $p < .001$				
$R^2 = .294$					$\Delta R^2 = .079$				
	B	SE B	β	t		B	SE B	β	t
Gender	-.82	.78	-.08	-1.05	Gender	-.26	.80	-.02	-.33
Resiliency***	-2.64	.56	-.35	-4.70	Resiliency***	-2.33	.55	-.31	-4.22
SRPH	-.80	.43	-.14	-1.87	SRPH*	-.85	.42	-.15	-2.04
Age***	-.10	.03	-.29	-4.05	Age**	-.09	.03	-.24	-3.18
					Financial Stress	-.23	.56	-.03	-.42
					Gov. Stress	.47	.71	.06	.66
					Work Stress*	2.20	.88	.23	2.49
					Operation Stress	.09	.92	.01	.09
					Isolation Stress	.90	.72	.09	1.25

Table 28. *Hierarchical Linear Regression: Farm-Related Stress Predicting Self-Rated Mental Health*

Step 1: $F(4, 150) = 34.98$, $p < .001$					Step 2: $F(9, 145) = 15.81$, $p < .001$				
$R^2 = .483$					$\Delta R^2 = .013$				
	B	SE B	β	t		B	SE B	β	t
Gender	.06	.11	.03	.49	Gender	.07	.12	.04	.56
Resiliency***	.52	.08	.41	6.50	Resiliency***	.52	.08	.41	6.31
SRPH***	.31	.06	.31	4.95	SRPH***	.31	.06	.32	4.95
Age***	.02	.00	.34	5.64	Age***	.02	.00	.34	5.02
					Financial Stress	.05	.08	.04	.57
					Gov. Stress	-.08	.11	-.06	-.72
					Work Stress	-.16	.13	-.10	-1.21
					Operation Stress	.05	.14	.03	.36
					Isolation Stress	.08	.11	.05	.74

Aim 3a: Understanding How Aging Farmers Cope With Farm-Related Stressors

3a.1. Farmers' use of coping strategies. Farmers reported using planning, a problem-focused type of coping the most, followed by acceptance, an active emotion-focused type of coping. Several avoidant emotion-focused coping mechanisms had the lowest reported usage: behavioral disengagement, denial, and substance use. As a whole, problem-focused coping variables incurred the highest usage, with active emotion-focused and avoidant emotion-focused variables following next (Table 29). Specific percentages and means for all coping variables can be found in Tables 30-32.

Table 29. *All Coping Variables in Order of Highest Use*

Coping Variable	Mean	Type of Coping
1. Planning	3.08	Problem Focused
2. Acceptance	3.07	Emotion Focused (Active)
3. Active Coping	3.05	Problem Focused
4. Religion	2.74	Emotion Focused (Active)
5. Positive Reframing	2.71	Emotion Focused (Active)
6. Self-Distraction	2.69	Emotion Focused (Avoidant)
7. Self-Blame	2.66	Emotion Focused (Avoidant)
8. Humor	2.37	Emotion Focused (Active)
9. Venting	2.30	Emotion Focused (Active)
10. Emotional Support	2.20	Emotion Focused (Active)
11. Instrumental Support	2.16	Problem Focused
12. Behavioral Disengagement	1.58	Emotion Focused (Avoidant)
13. Denial	1.47	Emotion Focused (Avoidant)
14. Substance Use	1.33	Emotion Focused (Avoidant)

Table 30. *Descriptive Statistics: Problem Focused Coping*

	Active Coping	Planning	Instrumental Support
N	158	157	158
Not at all (%)	3.2%	.6%	29.8%
A little bit (%)	31%	26.1%	49.4%
A medium amount (%)	46.2%	56.1%	17.7%
A lot (%)	19.6%	17.2%	3.2%
Mean (SD)	3.05 (.70)	3.08 (.62)	2.16 (.74)

Table 31. *Descriptive Statistics: Emotion Focused Coping (Active Emotion)*

	Positive Reframing	Acceptance	Humor	Religion	Emotional Support	Venting
N	158	157	157	157	158	158
Not at all (%)	10.7%	3.8%	25.5%	24.8%	31%	24.7%
A little bit (%)	38.6%	22.3%	43.3%	18.4%	43.6%	51.3%
A medium amount (%)	39.9%	57.9%	19.8%	27.4%	20.9%	18.3%
A lot (%)	10.8%	15.9%	11.5%	29.3%	4.4%	5.7%
Mean (SD)	2.71 (.78)	3.07 (.64)	2.37 (.93)	2.74 (1.15)	2.20 (.81)	2.30 (.74)

Table 32. *Descriptive Statistics: Emotion Focused Coping (Avoidant Emotion)*

	Self Distraction	Denial	Substance Use	Behavioral Disengagement	Self Blame
N	158	158	157	158	158
Not at all (%)	10.1%	70.3%	75.2%	62.6%	17.1%
A little bit (%)	43.7%	25.4%	22.9%	33.6%	39.3%
A medium amount (%)	34.9%	1.9%	1.9%	3.8%	25.9%
A lot (%)	11.4%	2.5%	0.0%	0.0%	17.7%
Mean (SD)	2.69 (.80)	1.47 (.59)	1.33 (.53)	1.58 (.60)	2.66 (.90)

Given the gender differences on many variables within this sample, a follow-up one-way ANOVA was performed to assess whether female and male farmers differ in use of coping mechanisms. The ANOVA revealed a significant difference in the use of positive reframing, $F(1, 155) = 21.27$, $p < .001$, emotional support $F(1, 155) = 12.85$, $p < .001$, instrumental support, $F(1, 155) = 6.00$, $p = .015$, self distraction, $F(1, 155) = 9.10$, $p = .003$, and self blame, $F(1, 155) = 7.34$, $p = .007$. Female farmers reported higher usage of instrumental support, a problem focused coping strategy, as well as higher usage of the following active emotion-focused coping strategies: positive reframing and emotional support (Table 33). Additionally, female farmers reported using the avoidant emotion-focused coping strategies of self distraction and self blame

more so than male farmer counterparts (Table 33). There were no significant differences between groups for the remaining coping skills.

Table 33. *Descriptive Statistics for Statistically Significant Use of Coping Mechanisms Between Female and Male Farmers*

Form of Coping	Female: *M* (*SD*)	Male: *M* (*SD*)
Instrumental Support*	2.29 (.76)	2.00 (.70)
Positive Reframing*	2.96 (.68)	2.41 (.80)
Emotional Support*	2.41 (.86)	1.96 (.68)
Self Distraction*	2.84 (.76)	2.47 (.78)
Self Blame*	2.83 (.84)	2.44 (.94)
Religion	2.88 (1.14)	2.58 (1.13)
Substance Use	1.32 (.51)	1.35 (.57)
Active Coping	3.10 (.71)	2.99 (.69)
Planning	3.16 (.63)	2.97 (.61)
Acceptance	3.15 (.55)	2.97 (.74)
Humor	2.33 (.95)	2.43 (.89)
Denial	1.49 (.60)	1.45 (.59)
Venting	2.34 (.75)	2.24 (.73)
Behavioral Disengagement	1.62 (.57)	1.52 (.63)

Note. *significant difference between means

A second follow-up one-way ANOVA was completed to assess for differences in coping styles between first generation and multi-generation farmers. The ANOVA revealed significant differences in use of religion, $F(1, 153) = 5.59$, $p = .019$, instrumental support, $F(1, 154) = 4.46$, $p = .036$, self distraction, $F(1, 154) = 4.84$, $p = .029$, venting, $F(1, 154) = 5.17$, $p = .024$, and self blame, $F(1, 154) = 4.76$, $p = .015$. Multi-generation farmers reported a significantly higher use of religion as a coping variable, while first generation farmers reported higher usage of instrumental support, self distraction, venting, and self blame (Table 34). There were no significant differences between groups for the remaining coping skills.

Table 34. *Descriptive Statistics for Use of Coping Skills Based on Farmer Generation Status*

Form of Coping	First Generation *M* (*SD*)	Multi-Generation *M* (*SD*)
Religion	2.42 (1.18)	2.88 (1.12)
Instrumental Support	2.34 (.83)	2.07 (.69)
Self Distraction	2.90 (.75)	2.60 (.80)
Venting	2.50 (.77)	2.21 (.71)
Self Blame	2.91 (.82)	2.53 (.91)

Note. Non-transformed Religion variable is reported for more meaningful interpretation of Mean and SD.

3a.2. Association between use of coping strategies and mental health outcomes.

Given the lack of precedent linking the specific coping strategies in this study to mental health outcomes in farmers, I first ran preliminary correlations between all coping strategies and mental health outcomes. Variables from the significant associations were used below in separate hierarchical linear regressions. Results revealed that higher usage of denial as a coping mechanism predicted higher levels of depressive (Table 35) and anxious symptoms (Table 36), above and beyond age and resiliency levels.

Table 35. *Hierarchical Linear Regression: Denial Predicting Depressive Symptoms*

Step 1: $F(5, 145) = 15.71$, $p < .001$					Step 2: $F(6, 144) = 16.54$, $p < .001$				
$R^2 = .351$					$\Delta R^2 = .057$				
	B	SE B	β	t		B	SE B	β	t
Gender	-1.52	.80	-.13	-1.90	Gender	-1.34	.77	-.12	-1.74
Age**	-.09	.03	-.23	-3.21	Age***	-.10	.03	-.27	-3.80
Generation	-1.34	.88	-.11	-1.53	Generation	-1.60	.84	-.13	-1.90
Resiliency***	-2.58	.57	-.33	-4.49	Resiliency***	-2.05	.57	-.26	-3.61
SRPH**	-1.51	.44	-.25	-3.44	SRPH***	-1.57	.42	-.26	-3.75
					Denial***	2.40	.65	.25	3.71

Table 36. *Hierarchical Linear Regression: Denial Predicting Anxious Symptoms*

Step 1: $F(5, 145) = 13.39$, $p < .001$					Step 2: $F(6, 144) = 13.44$, $p < .001$				
$R^2 = .316$					$\Delta R^2 = .043$				
	B	SE B	β	t		B	SE B	β	t
Gender	-.85	.78	-.08	-1.08	Gender	-.70	.76	-.06	-.92
Age***	-.10	.03	-.28	-3.83	Age***	-.11	.03	-.31	-4.31
Generation	-1.24	.86	-.11	-1.45	Generation	-1.46	.84	-.12	-1.74
Resiliency***	-2.48	.56	-.33	-4.41	Resiliency***	-2.04	.57	-.27	-3.62
SRPH*	-.94	.43	-.16	-2.20	SRPH*	-.99	.42	-.17	-2.39
					Denial**	2.00	.64	.22	3.11

Likewise, the higher usage of self-blame as a coping mechanism was associated with increasing levels of depressive (Table 37) and anxious symptoms (Table 38), above and beyond the potential protective effects of age and resiliency.

Table 37. *Hierarchical Linear Regression: Self-Blame Predicting Depressive Symptoms*

Step 1: $F(5, 145) = 15.71$, $p < .001$					Step 2: $F(6, 144) = 17.43$, $p < .001$				
$R^2 = .351$					$\Delta R^2 = .069$				
	B	SE B	*β*	*t*		B	SE B	*β*	*t*
Gender	-.52	.80	-.13	-1.90	Gender	-1.14	.76	-.10	-1.49
Age **	-.09	.03	-.23	-3.21	Age*	-.06	.03	-.15	-2.15
Generation	-1.34	.88	-.11	-1.53	Generation	-.94	.84	-.08	-1.12
Resiliency***	-2.58	.57	-.33	-4.49	Resiliency***	-2.04	.56	-.26	-3.66
SRPH**	-1.51	.44	-.25	-3.44	SRPH**	-1.24	.42	-.20	-2.95
					Self-Blame***	1.89	.46	.30	4.15

Table 38. *Hierarchical Linear Regression: Self-Blame Predicting Anxious Symptoms*

Step 1: $F(5, 145) = 13.39$, $p < .001$					Step 2: $F(6, 144) = 15.54$, $p < .001$				
$R^2 = .316$					$\Delta R^2 = .077$				
	B	SE B	*β*	*t*		B	SE B	*β*	*t*
Gender	-.85	.78	-.08	-1.08	Gender	-.46	.75	-.04	-.62
Age***	-.10	.03	-.28	-3.83	Age**	-.07	.03	-.20	-2.76
Generation	-1.24	.86	-.11	-1.45	Generation	-.84	.82	-.07	-1.02
Resiliency***	-2.48	.56	-.33	-4.41	Resiliency**	-1.95	.55	-.26	-3.56
SRPH*	-.94	.43	-.16	-2.19	SRPH	-.67	.41	-.12	-1.64
					Self-Blame***	1.91	.45	.32	4.28

In the prediction of self-rated mental health scores, both substance use (Table 39) and self-blame (Table 40) were not significant predictors, revealing no significant association between any coping variable and self-rated mental health within this sample.

Table 39. *Hierarchical Linear Regression Substance Use (Log) Predicting Self-Rated Mental Health*

Step 1: $F(5, 146) = 32.98$, $p < .001$					Step 2: $F(6, 145) = 28.64$, $p < .001$				
$R^2 = .530$					$\Delta R^2 = .012$				
	B	SE B	*β*	*t*		B	SE B	*β*	*t*
Gender	.08	.11	.04	.75	Gender	.11	.11	.06	.98
Age***	.02	.00	.31	5.01	Age***	.02	.00	.27	4.34
Generation	.22	.12	.11	1.84	Generation	.20	.12	.10	1.71
Resiliency***	.53	.08	.42	6.77	Resiliency***	.52	.08	.40	6.61
SRPH***	.34	.06	.35	5.69	SRPH***	.34	.06	.35	5.73
					Substance Use	-.72	.37	-.12	-1.94

Table 40. *Hierarchical Linear Regression: Self-Blame Predicting Self-Rated Mental Health*

Step 1: $F(5, 147) = 29.65$, $p < .001$					Step 2: $F(6, 146) = 24.71$, $p < .001$				
$R^2 = .502$					$\Delta R^2 = .002$				
	B	SE B	β	*t*		B	SE B	β	*t*
Gender	.04	.11	.02	.40	Gender	.04	.11	.02	.32
Age***	.02	.00	.31	4.96	Age***	.02	.00	.30	4.58
Generation*	.27	.12	.13	2.16	Generation*	.25	.12	.13	2.05
Resiliency***	.51	.08	.40	6.34	Resiliency***	.50	.08	.39	5.98
SRPH***	.32	.06	.33	5.22	SRPH***	.32	.06	.32	5.04
					Self-Blame	-.05	.07	-.05	-.71

Aim 3b: Exploring The Associations Between Coping Strategies and Farm Stressors

3b.1. Farm stressors associated with problem-focused coping strategies. Significant correlations between farm stressors and problem-focused coping strategies can be found in Table 41. Overall, planning was significantly correlated with work stress, while instrumental support was significantly correlated with both financial stress and isolation stress. The problem-focused coping strategy of active coping was not significantly correlated with any of the five farm stress factors.

Table 41. *Correlations Between Farm Stressors and Individual Problem-Focused Coping Variables*

Measure	1	2	3	4	5	6	7	8
1. Financial Stress	___	.34**	.42**	.39**	.20*	.01	.12	.17*
2. Gov. Stress	.34**	___	.52**	.54**	.14	.11	.10	.05
3. Work Stress	.42**	.52**	___	.54**	.31**	.13	.20*	.14
4. Operation Stress	.39**	.54**	.54**	___	.24**	.15	.16	.17*
5. Isolation Stress	.20*	.14	.31**	.24**	___	.03	.07	.24**
6. Active Coping	.01	.11	.13	.15	.03	___	.53**	.13
7. Planning	.12	.10	.20*	.16	.07	.53**	___	.09
8. Instrumental Support	.17*	.05	.14	.17*	.24**	.13	.14	___

*Note. **p < .01, *p < .05*

A hierarchical regression (Table 42) revealed that with covariates included, none of the five farm stress factors significantly predicted problem-focused coping as a whole (i.e., the mean of all problem-focused coping variables).

Table 42. *Hierarchical Linear Regression: Farm Stressors Predicting Problem-Focused Coping*

Step 1: $F(3, 152) = 8.84$, $p < .001$					Step 2: $F(8, 147) = 4.57$, $p < .001$				
$R^2 = .149$					$\Delta R^2 = .051$				
	B	SE B	β	t		B	SE B	β	t
Gender**	-.18	.08	-.19	-2.43	Gender	-.11	.08	-.12	-1.42
Age **	-.01	.00	-.23	-2.98	Age*	-.01	.00	-.20	-2.39
Resiliency**	.18	.05	.27	3.52	Resiliency***	.20	.05	.30	3.90
					Financial	-.00	.06	-.00	-.02
					Governmental	.03	.07	.04	.39
					Work	.07	.09	.08	.80
					Operation	.09	.09	.09	.96
					Isolation	.11	.07	.12	1.46

3b.2. Farm stressors associated with emotion-focused coping strategies. Table 43 is a correlation matrix showing the associations between *avoidant* emotion-focused coping and the five farm stress factors, while Table 44 contains associations between *active* emotion-focused coping and the five farm stress factors. Financial stress was significantly correlated with higher use of the avoidant emotion-focused strategies self-distraction, self-blame, and behavioral disengagement, as well as the active emotion-focused strategies of acceptance and positive reframing. Governmental stress was significantly associated with higher usage of the active emotion-focused strategies of acceptance, religion, and positive reframing, and also significantly correlated with the avoidant emotion-focused strategy of denial. Work stress was not significantly correlated with any of the active emotion-focused strategies, but was significantly related to higher levels of avoidant emotion-focused strategies, self distraction, self blame, behavioral disengagement, and substance use. Operation stress was only associated with the use of self-blame, an avoidant-focused strategy. Finally, isolation stress was associated with higher usage of emotional support (active) and self-blame (avoidant).

Table 43. *Correlations Between Farm Stressors and Individual Avoidant Emotion-Focused Coping Variables*

Measure	1	2	3	4	5	6	7	8	9	10
1. Financial Stress	___	.34**	.42**	.39**	.20*	.26**	.29**	.22**	.04	.03
2. Gov. Stress	.34**	___	.52**	.54**	.14	.05	.10	.10	.18*	-.05
3. Work Stress	.42**	.52**	___	.54**	.31**	.20*	.24**	.20*	.07	.18*
4. Operation Stress	.39**	.54**	.54**	___	.24**	.14	.19*	.13	.10	.01
5. Isolation Stress	.20*	.14	.31**	.24**	___	.08	.20*	.13	.07	.08
6. Self Distraction	.26**	.05	.20*	.14	.08	___	.26**	.27**	.10	.13
7. Self Blame	.29**	.10	.24**	.19*	.20*	.26**	___	.28**	.21**	.17*
8. Behavioral Disengagement	.22**	.10	.20*	.13	.13	.27**	.28**	___	.35**	.18*
9. Denial	.04	.18*	.07	.10	.07	.10	.21**	.35**	___	-.04
10. Substance Use	.03	-.05	.18*	.01	.08	.13	.17*	.18*	-.04	___

*Note. **p < .01, *p < .05*

Table 44. *Correlations Between Farm Stressors and Individual Active Emotion-Focused Coping Variables*

Measure	1	2	3	4	5	6	7	8	9	10	11
1. Financial Stress	___	.34**	.42**	.39**	.20*	.19*	-.09	.16*	.08	.15	.04
2. Gov. Stress	.34**	___	.52**	.54**	.14	.21**	.22**	.21**	.04	-.03	.09
3. Work Stress	.42**	.52**	___	.54**	.31**	.12	-.04	.10	.09	.09	-.02
4. Operation Stress	.39**	.54**	.54**	___	.24**	.12	.14	.20*	.12	.00	.10
5. Isolation Stress	.20*	.14	.31**	.24**	___	.07	-.10	.09	.14	.14	.27**
6. Acceptance	.19*	.21**	.12	.12	.07	___	.06	.21**	.06	.18*	.00
7. Religion	-.09	.22**	-.04	.14	-.10	.06	___	.30**	-.06	-.08	.17*
8. Positive Reframing	.16*	.21**	.10	.20*	.09	.21**	.30**	___	.22**	.05	.00
9. Humor	.08	.04	.09	.02	.14	.06	-.06	.22**	___	.10	.20*
10. Venting	.15	-.03	.09	.00	.14	.18*	-.08	.05	.10	___	.21**
11. Emotional Support	.04	.09	-.02	.10	.27**	.00	.17*	.30**	.20*	.21**	___

*Note. **p < .01, *p < .05*

A hierarchical regression (Table 45) revealed that higher governmental stress and isolation stress are predictive of increased usage of active emotion-focused coping above and beyond significant gender and age effects. Contrastingly, no farm stressor was a significant predictor of avoidant emotion-focused coping as a whole (Table 46).

Table 45. *Hierarchical Linear Regression: Farm Stressors Predicting Active Emotion-Focused Coping*

Step 1: $F(3, 152) = 5.82$, $p = .001$					Step 2: $F(8, 147) = 3.70$, $p = .001$				
$R^2 = .103$					$\Delta R^2 = .065$				
	B	SE B	β	t		B	SE B	β	t
Gender**	-.18	.06	-.24	-2.99	Gender*	-.13	.06	-.17	-2.04
Age*	-.00	.00	-.18	-2.29	Age*	-.01	.00	-.21	-2.40
Resiliency	.03	.04	.05	.62	Resiliency	.05	.04	.09	1.13
					Financial	.03	.04	.06	.64
					Governmental*	.13	.06	.23	2.25
					Work	-.09	.07	-.13	-1.28
					Operation	-.01	.07	-.02	-.15
					Isolation*	.12	.06	.18	2.13

Table 46. *Hierarchical Linear Regression: Farm Stressors Predicting Avoidant Emotion-Focused Coping*

Step 1: $F(3, 152) = 14.05$, $p < .001$					Step 2: $F(8, 147) = 6.46$, $p < .001$				
$R^2 = .217$					$\Delta R^2 = .043$				
	B	SE B	β	t		B	SE B	β	t
Gender	-.09	.06	-.12	-1.56	Gender	-.05	.06	-.07	-.83
Age **	-.01	.00	-.20	-2.70	Age	-.00	.00	-.15	-1.83
Resiliency***	-.20	.04	-.36	-4.91	Resiliency***	-.18	.04	-.32	-4.33
					Financial	.06	.04	.11	1.30
					Governmental	.01	.06	.01	.11
					Work	.08	.07	.11	1.15
					Operation	.03	.07	.05	.48
					Isolation	.01	.06	.01	.16

Aim 4: Investigating Dispositional Mindfulness as a Specific Emotion-Focused Coping Mechanism for Farm-related Stress

4.1. Dispositional mindfulness predicting mental health outcomes. Higher levels of dispositional mindfulness were associated with lower depressive (Table 47) and anxious symptoms (Table 48), above and beyond the positive effects of increasing age, higher levels of resiliency, and better self-rated health. Dispositional mindfulness was not a significant predictor of self-rated mental health, though increasing age, higher levels of resiliency, and better self-rated physical health continued to predict better self-rated mental health (Table 49).

Table 47. *Hierarchical Linear Regression: Dispositional Mindfulness Predicting Depressive Symptoms*

Step 1: $F(5, 145) = 15.71$, $p < .001$					Step 2: $F(6, 144) = 20.12$, $p < .001$				
$R^2 = .351$					$\Delta R^2 = .105$				
	B	SE B	*β*	*t*		B	SE B	*β*	*t*
Age**	-.09	.03	-.23	-3.21	Age**	-.08	.03	-.22	-3.34
Gender	-1.52	.80	-.13	-1.90	Gender	-.91	.74	-.08	-1.23
Resiliency***	-2.58	.57	-.33	-4.49	Resiliency**	-1.60	.56	-.20	-2.87
Generation	-1.34	.88	-.11	-1.53	Generation	-.26	.83	-.02	-.31
SRPH**	-1.51	.44	-.25	-3.44	SRPH***	-1.46	.40	-.24	-3.63
					Mindfulness***	-2.08	.39	-.37	-5.26

Table 48. *Hierarchical Linear Regression: Dispositional Mindfulness Predicting Anxious Symptoms*

Step 1: $F(5, 145) = 13.39$, $p < .001$					Step 2: $F(6, 144) = 19.83$, $p < .001$				
$R^2 = .316$					$\Delta R^2 = .137$				
	B	SE B	*β*	*t*		B	SE B	*β*	*t*
Age ***	-.10	.03	-.28	-3.83	Age***	-.10	.02	-.27	-4.09
Gender	-.85	.78	-.08	-1.08	Gender	-.19	.71	-.02	-.26
Resiliency***	-2.48	.56	-.33	-4.41	Resiliency**	-1.42	.54	-.19	-2.65
Generation	-1.24	.86	-.11	-1.45	Generation	-.06	.80	-.01	-.08
SRPH*	-.94	.43	-.16	-2.19	SRPH*	-.89	.39	-.15	-2.30
					Mindfulness***	-2.27	.38	-.42	-5.99

Table 49. *Hierarchical Linear Regression: Dispositional Mindfulness Predicting Self-Rated Mental Health*

Step 1: $F(5, 147) = 29.65$, $p < .001$					Step 2: $F(6, 146) = 24.89$, $p < .001$				
$R^2 = .502$					$\Delta R^2 = .004$				
	B	SE B	*β*	*t*		B	SE B	*β*	*t*
Age***	.02	.00	.31	4.96	Age***	.02	.00	.31	4.91
Gender	.04	.11	.02	.40	Gender	.03	.11	.01	.23
Resiliency***	.51	.08	.40	6.34	Resiliency***	.48	.09	.38	5.66
Generation*	.27	.12	.13	2.16	Generation	.23	.13	.12	1.84
SRPH***	.32	.06	.33	5.22	SRPH***	.32	.06	.33	5.20
					Mindfulness	.06	.06	.07	1.02

4.2. Dispositional mindfulness predicting levels of farm-related stress. Dispositional mindfulness was examined as a predictor of total farm stress, as well as all five FRSI factors. Overall, higher levels of dispositional mindfulness significantly predicted lower total farm stress (Table 50), as well as lower levels of government-related stress (Table 51), work stress (Table 52), operation stress (Table 53), and stress from isolation (Table 54). Dispositional mindfulness was not a significant predictor of farm financial stress (Table 55).

Table 50. *Hierarchical Linear Regression: Dispositional Mindfulness Predicting Total Farm Stress*

Step 1: $F(5, 147) = 5.46$, $p < .001$					Step 2: $F(6, 146) = 7.01$, $p < .001$				
$R^2 = .157$					$\Delta R^2 = .067$				
	B	SE B	β	t		B	SE B	β	t
Age*	-.01	.00	-.18	-2.22	Age*	-.01	.00	-.17	-2.17
Gender**	-.25	.07	-.28	-3.51	Gender**	-.21	.07	-.23	-3.05
Resiliency	-.08	.05	-.13	-1.60	Resiliency	-.02	.05	-.03	-.41
Generation	.07	.08	.07	.84	Generation	.13	.08	.14	1.72
SRPH	-.01	.04	-.02	-.25	SRPH	-.01	.04	-.02	-.19
					Mindfulness***	-.13	.04	-.30	-3.55

Table 51. *Hierarchical Linear Regression: Dispositional Mindfulness Predicting Government Stress*

Step 1: $F(5, 147) = 3.42$, $p = .006$					Step 2: $F(6, 146) = 3.91$, $p = .001$				
$R^2 = .104$					$\Delta R^2 = .034$				
	B	SE B	β	t		B	SE B	β	t
Age	.00	.00	.04	.42	Age	.00	.00	.04	.51
Gender*	-.26	.11	-.19	-2.36	Gender*	-.22	.11	-.16	-2.00
Resiliency	-.07	.08	-.08	-.89	Resiliency	-.01	.08	-.01	-.07
Generation**	.39	.12	.27	3.20	Generation***	.46	.12	.32	3.75
SRPH	.05	.06	.07	.80	SRPH	.05	.06	.07	.86
					Mindfulness*	-.14	.06	-.21	-2.41

Table 52. *Hierarchical Linear Regression: Dispositional Mindfulness Predicting Work Stress*

Step 1: $F(5, 147) = 3.55$, $p = .005$					Step 2: $F(6, 146) = 5.49$, $p < .001$				
$R^2 = .108$					$\Delta R^2 = .076$				
	B	SE B	β	t		B	SE B	β	t
Age **	-.01	.00	-.26	-3.10	Age **	-.01	.00	-.25	-3.09
Gender	-.15	.09	-.13	-1.59	Gender	-.10	.09	-.08	-1.06
Resiliency	-.06	.07	-.08	-.88	Resiliency	.02	.07	.03	.34
Generation	.03	.10	.02	.25	Generation	.12	.10	.10	1.17
SRPH	-.01	.05	-.02	-.25	SRPH	-.01	.05	-.02	-.19
					Mindfulness***	-.18	.05	-.31	-3.70

Table 53. *Hierarchical Linear Regression: Dispositional Mindfulness Predicting Operation Stress*

Step 1: $F(5, 147) = 3.88$, $p = .002$					Step 2: $F(6, 146) = 4.43$, $p < .001$				
$R^2 = .117$					$\Delta R^2 = .037$				
	B	SE B	β	t		B	SE B	β	t
Age	-.00	.00	-.03	-.34	Age	-.00	.00	-.02	-.26
Gender***	-.34	.09	-.33	-4.07	Gender***	-.31	.08	-.30	-3.70
Resiliency	-.02	.06	-.03	-.32	Resiliency	.03	.06	.05	.52
Generation	.14	.09	.12	1.45	Generation*	.19	.09	.17	2.06
SRPH	-.01	.05	-.02	-.23	SRPH	-.01	.05	-.02	-.19
					Mindfulness*	-.11	.05	-.22	-2.53

Table 54. *Hierarchical Linear Regression: Dispositional Mindfulness Predicting Isolation Stress*

Step 1: $F(5, 147) = 4.36$, $p = .001$					Step 2: $F(6, 146) = 4.78$, $p < .001$				
$R^2 = .129$					$\Delta R^2 = .035$				
	B	SE B	β	t		B	SE B	β	t
Age	-.00	.00	-.09	-1.08	Age	-.00	.00	-.08	-1.00
Gender**	-.24	.09	-.22	-2.71	Gender*	-.20	.09	-.19	-2.34
Resiliency	-.12	.06	-.16	-1.88	Resiliency	-.07	.07	-.09	-.99
Generation	-.13	.10	-.12	-1.41	Generation	-.08	.10	-.06	-.77
SRPH	.02	.05	.04	.48	SRPH	.03	.05	.04	.54
					Mindfulness*	-.11	.05	-.21	-2.48

Table 55. *Hierarchical Linear Regression: Dispositional Mindfulness Predicting Financial Stress*

Step 1: $F(5, 147) = 5.50$, $p < .001$					Step 2: $F(6, 146) = 4.79$, $p < .001$				
$R^2 = .158$					$\Delta R^2 = .007$				
	B	SE B	β	t		B	SE B	β	t
Age**	-.01	.00	-.23	-2.77	Age**	-.01	.00	-.22	-2.73
Gender*	-.27	.12	-.18	-2.26	Gender*	-.25	.12	-.16	-2.06
Resiliency	-.16	.09	-.15	-1.77	Resiliency	-.12	.09	-.12	-1.32
Generation	-.08	.13	-.05	-.56	Generation	-.04	.14	-.02	-.28
SRPH	-.08	.07	-.09	-1.13	SRPH	-.08	.07	-.09	-1.11
					Mindfulness	-.07	.07	-.09	-1.08

4.3. Dispositional mindfulness and its association with emotion-focused and problem-focused coping strategies. Given the large number of potential associations between dispositional mindfulness and various coping strategies and the lack of precedent in this population, preliminary correlations between coping strategies and dispositional mindfulness were carried out, with significant coping strategies entered as outcome variables in the analyses below. Overall, higher dispositional mindfulness was associated with lower usage of self-distraction (Table 56), self-blame (Table 57), and denial (Table 58). Dispositional mindfulness was not a significant predictor of using substance use (Table 59) or behavioral disengagement (Table 60) to cope.

Table 56. *Hierarchical Linear Regression: Dispositional Mindfulness Predicting Self-Distraction*

Step 1: $F(5, 147) = 3.27$, $p = .008$					Step 2: $F(6, 146) = 4.70$, $p < .001$				
$R^2 = .100$					$\Delta R^2 = .062$				
	B	SE B	*β*	*t*		B	SE B	*β*	*t*
Age	-.01	.00	-.11	-1.35	Age	-.01	.00	-.10	-1.27
Gender*	-.29	.13	-.18	-2.23	Gender	-.22	.13	-.14	-1.76
Resiliency	-.07	.09	-.07	-.80	Resiliency	.03	.10	.03	.30
Generation	-.23	.14	-.14	-1.64	Generation	-.12	.14	-.07	-.82
SRPH	-.02	.07	-.02	-.24	SRPH	-.01	.07	-.02	-.19
					Mindfulness**	-.22	.07	-.28	-3.29

Table 57. *Hierarchical Linear Regression: Dispositional Mindfulness Predicting Self-Blame*

Step 1: $F(5, 147) = 8.92$, $p < .001$					Step 2: $F(6, 146) = 10.67$, $p < .001$				
$R^2 = .233$					$\Delta R^2 = .072$				
	B	SE B	*β*	*t*		B	SE B	*β*	*t*
Age**	-.02	.01	-.26	-3.35	Age**	-.02	.00	-.25	-3.36
Gender	-.17	.14	-.10	-1.27	Gender	-.09	.13	-.05	-.71
Resiliency**	-.29	.10	-.23	-2.97	Resiliency	-.17	.10	-.13	-1.67
Generation	-.24	.15	-.12	-1.59	Generation	-.10	.15	-.05	-.65
SRPH	-.14	.08	-.15	-1.87	SRPH	-.14	.07	-.14	-1.89
					Mindfulness***	-.27	.07	-.31	-3.89

Table 58. *Hierarchical Linear Regression: Dispositional Mindfulness Predicting Denial*

Step 1: $F(5, 147) = 3.02$, $p = .013$					Step 2: $F(6, 146) = 3.42$, $p < .001$				
$R^2 = .093$					$\Delta R^2 = .057$				
	B	SE B	*β*	*t*		B	SE B	*β*	*t*
Age	.01	.00	.14	1.59	Age	.01	.00	.15	1.76
Gender	-.06	.10	-.05	-.67	Gender	-.02	.10	-.02	-.19
Resiliency**	-.22	.07	-.27	-3.21	Resiliency*	-.15	.07	-.18	-2.10
Generation	.10	.11	.08	.93	Generation	.18	.11	.14	1.70
SRPH	.03	.05	.04	.51	SRPH	.03	.05	.05	.58
					Mindfulness**	-.16	.05	-.27	-3.14

Table 59. *Hierarchical Linear Regression: Dispositional Mindfulness Predicting Substance Use (Log) for Coping*

Step 1: $F(5, 146) = 4.49$, $p = .001$					Step 2: $F(6, 145) = 4.32$, $p < .001$				
$R^2 = .133$					$\Delta R^2 = .018$				
	B	SE B	*β*	*t*		B	SE B	*β*	*t*
Age ***	-.00	.00	-.32	-3.83	Age***	-.00	.00	-.31	-3.79
Gender	.04	.02	.12	1.44	Gender	.04	.02	.14	1.70
Resiliency	-.02	.02	-.10	-1.21	Resiliency	-.01	.02	-.05	-.59
Generation	-.03	.03	-.08	-.95	Generation	-.01	.03	-.04	-.47
SRPH	-.00	.01	-.00	-.04	SRPH	.00	.01	-.00	-.02
					Mindfulness	-.02	.01	-.15	-1.77

Table 60. *Hierarchical Linear Regression: Dispositional Mindfulness Predicting Behavioral Disengagement*

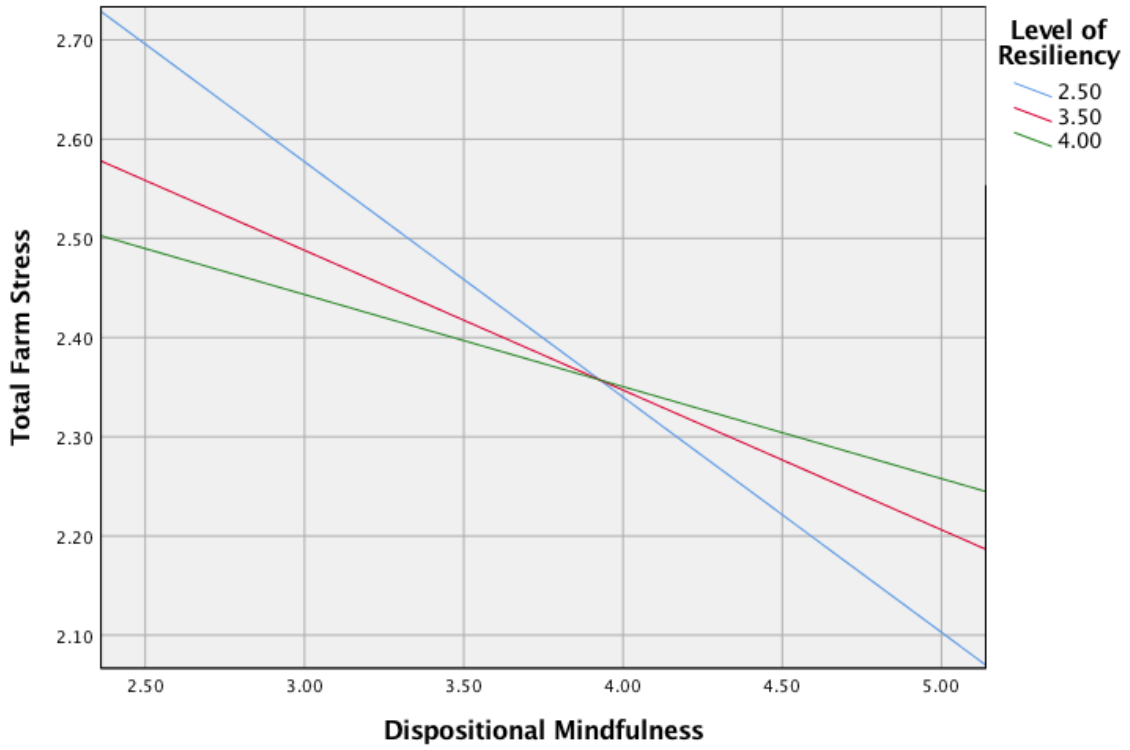
Step 1: $F(5, 147) = 6.97$, $p < .001$					Step 2: $F(6, 146) = 6.48$, $p < .001$				
$R^2 = .192$					$\Delta R^2 = .019$				
	B	SE B	β	t		B	SE B	β	t
Age	-.00	.00	-.09	-1.11	Age	-.00	.00	-.08	-1.04
Gender	-.01	.09	-.01	-.08	Gender	.02	.09	.02	.22
Resiliency***	-.35	.07	-.42	-5.21	Resiliency***	-.31	.07	-3.7	-4.35
Generation	.06	.10	.05	.61	Generation	.11	.10	.09	1.06
SRPH	.01	.05	.01	.12	SRPH	.01	.05	.01	.16
					Mindfulness	-.09	.05	-.16	-1.87

4.4. Exploring dispositional mindfulness as a moderator in the associations between farm stress and mental health outcomes. Dispositional mindfulness was not a significant moderator in the (1) total farm stress—depressive symptoms association [-1.1704, 2.0658], (2) total farm stress—self-rated mental health association [-.2245, .2742], or (3) total farm stress—anxious symptoms association [-1.3728, 1.7015]. Gender, generation status, resiliency, self-rated physical health, and age were included as covariates.

4.5. Exploring age and resiliency as potential moderators in associations between dispositional mindfulness and farm-related stress. Gender and generation status were included as covariates in all moderation analyses, with age added as a covariate for analyses with resiliency as moderator. Age did not significantly moderate any of the dispositional mindfulness—farm stress associations: total farm stress [-.0058, .0030], governmental stress [-.0060, .0080, work stress [-.0062, .0054], operation stress [-.0079, .0029], financial stress [-.0143, .0014], or isolation stress [-.0046, .0066]. Similarly, resiliency was not a significant moderator of the following dispositional mindfulness—farm stress associations: government stress [-.0282, .2628], operation stress [-.1087, .1170], financial stress [-.0453, .2834], or isolation stress [-.0821, .1500]. Resiliency did, however, appear as a significant moderator in two of the associations.

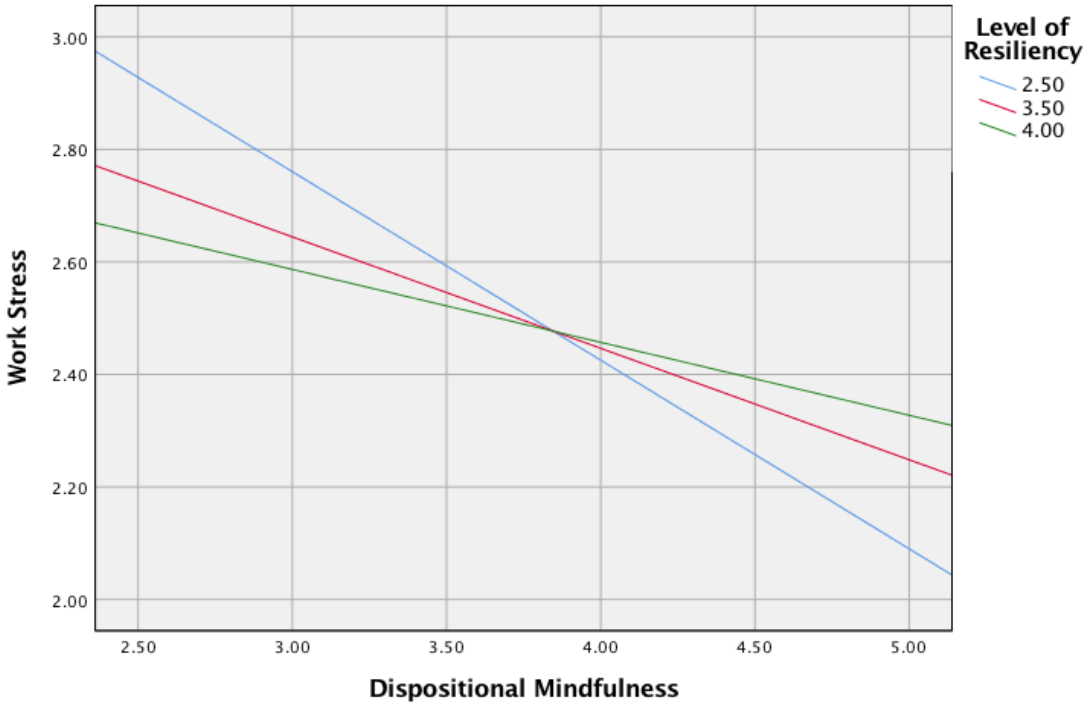
First, resiliency significantly moderated the dispositional mindfulness—total farm stress association among farmers [.0057, .1868, p = .037]. Plotting of the moderation (Figure 1) revealed that regardless of resiliency level, dispositional mindfulness did predict lower total farm stress. Within resiliency levels, farmers with the lowest resiliency saw the most benefit in reduction of total farm stress from higher dispositional mindfulness levels.

Figure 1. Resiliency as a Moderator of the Dispositional Mindfulness–Total Farm Stress Association



Second, resiliency significantly moderated the dispositional mindfulness—work stress association among farmers [.0437, .2795, p = .008]. Plotting of the moderation (Figure 2) revealed that regardless of resiliency level, dispositional mindfulness did predict lower work stress. Within resiliency levels, farmers with the lowest resiliency saw the most benefit in reduction of work stress from higher dispositional mindfulness levels.

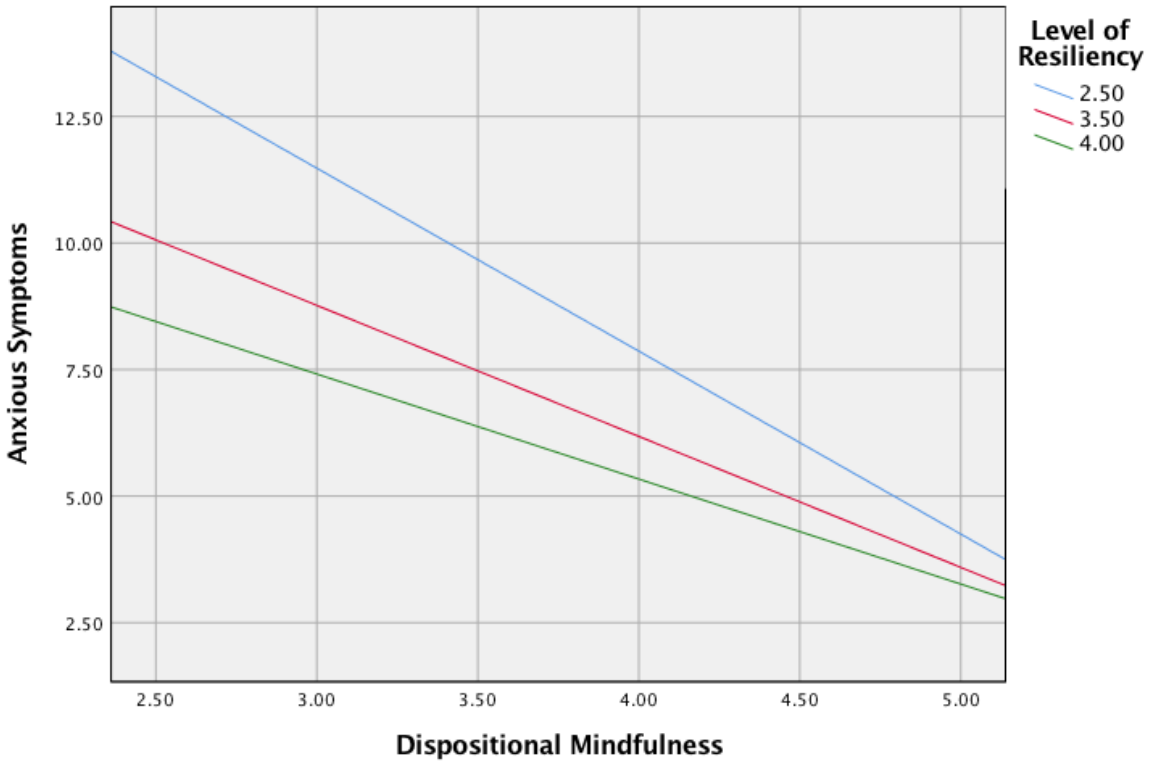
Figure 2. Resiliency as a Moderator of the Dispositional Mindfulness-Work Stress Association



4.6. Exploring age and resiliency as moderators in the associations between dispositional mindfulness and mental health outcomes. Gender, generation status, and self-rated physical health were included as covariates in all analyses. Resiliency was also included as a covariate for the analyses in which age was a moderator, and likewise, age was included as a covariate for analyses with resiliency as a moderator. In the dispositional mindfulness—mental health outcomes associations, age was not a significant moderator in all analyses: (1) dispositional mindfulness—depressive symptoms [-.0470, .0497], (2) dispositional mindfulness—self-rated mental health [-.0138, .0008], and (3) dispositional mindfulness—anxious symptoms [-.0605, .0321]. When entered into the same models, resiliency was not a moderator of the dispositional mindfulness—depressive symptoms association [-.2123, 1.7607] or the dispositional mindfulness—self-rated mental health association [-.2814, .0209]. However, resiliency did significantly moderate the dispositional mindfulness—anxious symptoms

association among farmers [.0362, 1.9153, p = .042]. Plotting of the moderation (Figure 3) revealed that regardless of resiliency level, dispositional mindfulness predicted lower levels of anxious symptoms. Within resiliency levels, farmers with the lowest resiliency saw the most benefit in reduction of anxious symptoms from higher dispositional mindfulness levels.

Figure 3. Resiliency as a Moderator of the Dispositional Mindfulness–Anxious Symptoms Association



Discussion

This study examined the mental health needs of American farmers by investigating farm-related stressors, coping mechanisms, and mental health outcomes in a select sample of American farmers across the lifespan. Specifically, this study aimed to describe how working conditions and stressors are associated with the mental health of farmers, as well as how age and resilience factor into coping with farm-related stressors. Lastly, dispositional mindfulness was

investigated as a potential coping mechanism in the association between farm-related stressors and mental health outcomes.

Overall, findings from this sample reveal that farmers who experience higher farm stress are at higher risk for anxious and depressive symptomology. However, older age and identifying as male and a multi-generational farmer is associated with more positive mental health outcomes. Notably, the farmers in this sample reported experiencing rates of depressive and anxious symptoms at 1.5 times to 4.5 times higher than the national prevalence rates, which will be discussed further below. In regards to coping, farmers in this sample appear to remain resilient across ages and those higher in dispositional mindfulness reported better mental health ratings and lower stress. A discussion of these findings will begin with a description of the overall farming experience of this sample, followed by an unpacking of mental health findings and differences in coping strategies. Next, the addition of age and resiliency to analyses will be examined, followed by individual differences of gender and farmer generation. Implications, future directions, strengths, and limitations of the study will also be discussed.

The Farming Experience

Insight into the overall farming work experience was provided by the current sample and included hours worked, farm assistance received, and the most common stressors associated with farming. Based on a study conducted with Illinois farmers and timing of production agriculture, it was predicted that farmers would spend the most time working in spring and fall, followed by summer (Lizer & Petrea, 2007). Consistent with prior studies, farmers within this sample predominantly work long hours in all seasons, with the least hours occurring in winter (i.e., only 14.7% of farmers worked 11+ hours/day and 18.6% worked 8-10 hours/day in winter). However, farmers in this sample reported the longest workdays in summer (i.e., 40.4% of farmers worked

11+ hours/day and 26.3% worked 8-10 hours/day), followed by spring and fall, which are typical planting and harvesting times. Working the longest hours in summer is expected when we consider that farmers in this sample are predominantly from Kentucky and other Southeastern states, where summer growing seasons are longer. In Eastern Kentucky, the last killing frost in spring occurs on average between May 5th-10th, with the first killing frost of fall occurring on average between September 27th-October 7th, allowing 145-150 growing days per year (Durham, Saha, Strang, Williams, & Wright, 2014). Western Kentucky and Central Kentucky have slightly longer growing seasons at 160-175 days and 150-160 days, respectively (Durham et al., 2014). Considering the timing of the last killing frost in spring and the first killing frost in fall, farmers in Kentucky have 93 days of summer, but only 41-61 days of spring, and 5-20 days of fall before frosts. Taken together with longer days and more hours of sunlight, it is not uncommon that the farmers in this sample would be working their longest days in the summer months.

In line with prior research, most farmers endorsed completing work on their farm either alone or with minimal assistance, indicating that the farmers sampled are working in isolation the majority of the time (Kutner, 2014). In addition to working long hours on the farm with minimal assistance, almost half of the farmers in this sample work a second job, which is consistent with prior research conducted with Illinois farmers (Lizer & Petrea, 2007). This study lends support to prior research that has examined subsets of American farmers in different states and found that on average farmers are working above the standard 40-hour workweek and often supplementing farm income with a second job (Lizer & Petrea, 2007). Regardless of the type of farming or location, American farmers in existing samples, including the farmers studied here, appear to have similar experiences in terms of time spent working, working alone, and necessity for some to have a second job (Donham & Thelin, 2006; Kutner, 2014; Lizer & Petrea, 2007).

Consistent with prior research indicating farmers experience stress from a multitude of sources, including finances, market prices, weather, long work hours, and equipment failure, etc. (Kearney, Rafferty, Hendricks, Allen, & Tutor-Marcom, 2014; Welke, 2004), farmers in this sample also endorsed various stressors. Farmers surveyed reported similar stress levels between operational duties, finances, work, and dealing with the government, indicating that these stressors are embedded almost equally into their farming experience. However, despite experiencing significant isolation in their work, farmers in this sample reported isolation to be the least stressful, albeit isolation stressors were endorsed by 21.5% to 51.9% of the sample (i.e., 51.9% endorsed stress associated with limited social interaction opportunities, 42% for distance from doctors/hospitals, 38.9% for distance from shopping/schools/recreation, and 21.5% for lack of close neighbors). It should be noted that less isolation stress might not be the experience of all farmers, as the farmers from this sample appear to be particularly socially connected and some research has suggested farmers retain positive social networks despite isolative work (Rosmann, 2010). Farmers were recruited via both online farming communities and at farm bureau meetings, both of which can provide support to buffer isolative effects. For example, farmers in the online communities appeared to make posts relating to their successes and difficulties in farming, using the online groups to share their stories. Similarly, at the farm bureau meetings, farmers convened to discuss information about their farms in the midst of social events (i.e., luncheons, dinners, and meetings).

Mental Health

Depressive and anxious symptomatology. The majority of farmers within this sample fell within the *mildly depressed* (34.6%) and *mildly anxious* (36.6%) ranges in terms of depressive and anxious symptomatology. A closer look at PHQ-8 and GAD-7 scores reveal that

only 5.1% of the sample endorsed no depressive symptoms and 9.6% endorsed no anxious symptoms, while 32.5% fell within the "moderately to severely depressed range" and 29.1% reported moderate to severe anxious symptoms. In comparison to the general population, farmers from this sample score significantly higher on levels of depressive and anxious symptoms. Data from 4,836 U.S. adults who participated in the "2005 to 2008 National Health and Nutrition Examination Survey" (Shim, Baltrus, & Rust, 2011) show that only 20.1% of the national sample had a PHQ-9 score of 5 or greater, which would indicate at least mild depressive symptoms. Further, only 16.97% fell within the "mildly depressed" range, 5.47% within the "moderately depressed" range, 2.33% in the "moderately severe" range, and 0.75% in the "severely depressed" range. In comparison to the national average, farmers in this sample had rates of depression as measured by the PHQ-8 (Table 6) ranging from *1.5 to 4.5 times higher* than the national average: (1) Mild depression: 1.5 times higher, (2) Moderate depression: approaching 3.5 times higher, (3) Moderately Severe depression: 4.5 times higher, and (4) Severe depression: almost 4 times higher. Regarding comparison rates for anxious symptoms, a national study reporting GAD-7 results for 2,128 U.S. adults that were recruited from 15 primary care sites in 12 states, showed that approximately 24.01% of adults fell in the "mildly anxious" range, 12.41% reported "moderate anxiety," and 8.04% endorsed "severe anxiety" (Spitzer et al., 2006). In comparison to this national sample, farmers in this study reported 1.5 to 1.7 times higher rates of anxious symptoms: (1) Mild anxiety: 1.5 times higher, (2) Moderate anxiety: 1.3 times higher, and (3) Severe anxiety: 1.7 times higher.

The rates of depressive and anxious symptoms reported by the farmers in this sample seem high in contrast to general population rates, but appear to be consistent with what researchers found among American farmers in the 1980s and 1990s, as well as what international

researchers are seeing among farmers across the globe currently (Berry et al., 2011; Fraswer et al., 2005; Malmberg et al., 1999; Polain et al., 2011; Rosmann, 2008). Although much of the current research has detected high rates of suicide, identified some of the potential risk factors for suicide, and higher rates of hotline calls, there is less research quantifying other mental health outcomes among farmers (Browning et al., 2008; Ringgenberg et al., 2018). As such, it is difficult to compare results from this study to farmers overall in 2019 America. However, conditions for the farmer today are similar to conditions during the 1980s farm crisis, so it is not surprising that within this study we see similar mental health outcomes to the farmers of 30 years ago.

Stress and mental health. Total farm stress and specific farm-related stressors were also related to mental health outcomes in the current sample. As predicted, farmers endorsing higher total levels of farm stress reported greater depressive and anxious symptoms. When specific farm-related stressors were assessed as better predictors of mental health outcomes, work stress was identified as a specific stressor associated with anxious and depressive symptoms. The potency of work stressors as a predictor of mental health outcomes could be explained by that fact that out of all of the farm stressors assessed within this study (i.e., financial, isolation, governmental, operational, and work stress), work stressors include the most examples of what farmers may see as something they "should be able to control." For example, not having the personnel to operate the farm, failing to spend enough time with family in recreation, balancing roles as a family member and farmer, working with non-relative and family help, and feeling concern over the future of the farm are all stressors that a farmer may feel like they can provide a solution for. This is in contrast to financial stress (e.g., working with bankers and not having enough money for expenses and unexpected problems), isolation (e.g., distance from doctors,

recreation, and social opportunities), governmental stress (e.g., government export policy and farm price supports, taxes, and health care), and operation stressors (e.g., farm accidents and injuries, the weather, and market prices), which likely seem less controllable. Although the other stressors may be easier to "leave up to God" or "fate," work stressors are more likely to incur a sense of personal responsibility due to perceiving that one has control over said stressors.

Perceived control is frequently cited as an adaptive mechanism linked to better self-regulation and wellbeing, but actually predicts poorer coping in situations that disconfirm an individual's control (Heidemeier & Göritz, 2013). When individuals with a strong sense of control experience a situation where they are unable to exert control despite feelings that they should, their strong sense of control can bring about frustration and self-blame for the result of the situation (Thompson, Sobolwe-Shubin, Galbraith, Schwankovsky, & Cruzen, 1993). As such, one hypothesized explanation for this study's findings is that when a farmer does not succeed in work stressors (e.g., the farmer cannot adequately balance personal roles or complete farm work), the result likely feels like a personal failure and disappointment, which may increase the likelihood of negative mental health outcomes. Further research is needed to assess farmers' sense of control related to different stressors to fully examine this hypothesis.

Potential implications for importance of work stress as a dominant stressor for mental health outcomes include the importance of helping farmers contextualize their experience of stress to make it less likely they will incur self-blame (Kubik & Moore, 2003). For example, when farm stress is considered solely as an individual problem and not in the context of pressures from outside forces, the farmer tends to internalize the stress, take blame for their current predicament, and can feel guilty for not "succeeding" (Kubik & Moore, 2003). Instead of solely asking farmers to change their perception of the situation by focusing on the personal

factors they can "control," a central focus of the narrative should also help farmers consider how social, economic, and political forces factor into their situation. Farmers are given advice by bankers, the government, and multinational companies, to change certain aspects of their farming practice in order to "better succeed," which has increased distress (Kubik, 1996). Placing this pressure solely on the farmer means that if something goes wrong with the farming operation, the farmer will see him/herself as the one to blame, which is an inaccurate representation of the true nature of the problem (Kubik & Moore, 2003). Although a farming "failure" (e.g., loss of a crop, not having help to run the farm, not having enough cash or capital for the farm, or not being assured of the farm's future, etc.) seems incredibly personal to the farmer, the reality is that aspects of the "failure" are also linked to economic, political, and social factors, yet the farmer is often internalizing the majority of the responsibility (Kubik & Moore, 2003).

Self-rated mental health. Interestingly, though ratings of total farm stress were associated with PHQ-8 and GAD-7 scores, total farm stress ratings were not associated with the one-item self-rated mental health variable. A potential explanation for the lack of association is the higher scores for self-ratings of mental health. When asked to rate their mental health as excellent, very good, good, fair, or poor, farmers from this sample rated their mental health on average to be in the *very good* range. However, as mentioned above, when asked more in-depth questions about depressive and anxious symptomology on the PHQ-8 and GAD-7, farmers in this sample fell on average within the *mildly depressed* and *mildly anxious* ranges, suggesting a discrepancy between the PHQ-8 and GAD-7 scores and the self-rated mental health scores.

In considering how farmers replied to the self-rated mental health question in this study, it is important to consider cultural factors. Members of agrarian societies have shown reluctance to seek traditional mental healthcare services, which may be attributed to cultural values of

independence and self-reliance (Hoyt, Conger, Valde, & Weihs, 1997; Logsdon, 1994). When asked to directly rate their mental health, farmers may be held back by stigma and fear of representing oneself as "weak" and choose to report their mental health as "very good" or above, which may have also happened in this sample (Booth et al., 2000). It is also possible that farmers in this sample reported their mental health as "very good" because they may be operating on a different scale of what constitutes "good mental health." Farmers are consistently facing unceasing stressors and despite this, they continue to work and care for their animals, land, and family. Being able to still "push through" despite hardships, stressors, depression, and anxiety, may mean to the farmers in this sample that they do in fact have "very good" mental health. In contrast, when given measures that assess specific symptoms of depression and anxiety without the label of "mental health questions," farmers reported higher symptomology that is more indicative of poorer mental health. Perhaps farmers have grown accustomed to chronic stress and associated depressive and anxious symptomology so that what the field of psychology identifies as *dysfunctional* is just a *normal* part of life for American farmers. Additionally, farmers in this sample were overall resilient according to their scores on the Brief Resiliency Scale, which likely helps them continue to work despite depressive and anxious symptoms.

Despite answering that their mental health is "very good," other data points from this study indicate that the majority of farmers sampled are likely experiencing "mild depression and anxiety," with others in the sample reporting "moderate to severe depression and anxiety" per the PHQ-8 and GAD-7 rating scales. Overall, despite a lack of association between stress and self-rated mental health, the farmers dealing with the most total farm stress and work-related farm stress were more likely to report depressive and anxious symptoms.

The Coping Style of Farmers

In addition to assessing farm stressors and associated mental health outcomes, another goal of the study was to describe the coping styles of this sample of farmers and investigate how different coping styles are related to mental health outcomes. When faced with farm-related stressors, over half of farmers endorsed using planning as the top strategy for coping. Acceptance, active coping (i.e., taking individual action to make the situation better), religion, and positive reframing were the next most common, respectively, and were endorsed by over 50% of farmers in this sample.

Planning and active coping are problem-focused types of coping that rely on the individual to generate a strategy and take action to make their situation better, which can be more applicable to controllable stressors. Acceptance, religion, and positive reframing are active emotion-focused coping strategies, which involve directly engaging with the stressor and (1) accepting what has happened and learning to live with the situation (acceptance), (2) finding comfort in religious beliefs/faith and discussing the situation with a higher power (religion), and (3) trying to also see the potential positives in the situation (positive reframing; Baker & Berenbaum, 2007; Carver et al., 1989; Garland et al., 2011). All three of these active emotion-focused coping strategies are applicable to a majority of uncontrollable farm stressors. The endorsement of religion as one of the top coping mechanisms was expected in this population due to findings in prior research (Weigel & Weigel, 1987). In addition to religion, it is not unsurprising that positive reframing ranked high, given that farmers have reported positive reframing to be helpful with managing stress in the past (Hovey & Seligman, 2006).

Previous studies have listed social support as a key form of coping reported by farmers (Swisher et al., 1998; Weigel & Weigel, 1987). However, in this study emotional support and instrumental support (i.e., both forms of social support) were the 10th and 11th most used

strategies out of fourteen coping strategies. Specifically, 25.3% of farmers sampled reported using emotional support "a medium amount" to "a lot," while only 20.9% of farmers endorsed using instrumental support "a medium amount" to "a lot." This is in contrast with the use of planning, which was the top coping strategy reported at 65.8% of farmers reporting usage from "a medium amount" to "a lot." In comparison to prior studies, these findings suggest that although social support is a strategy employed by this group of farmers, they rely less on reaching out to others for advice, understanding, and emotional support compared to other samples. Instead, farmers reported using more individualistic coping strategies such as planning, acceptance, and active coping. The agrarian cultural values of independence and self-reliance likely contributes to the use of individualistic coping strategies in favor of social support when dealing with farm stressors (Hoyt et al., 1997; Logsdon, 1994). Given that farmers have been shown hesitant to seek mental healthcare for fear of being seen as "weak," they may also be reluctant to reach out for help in social circles for the same reason (Booth et al., 2000)

As a whole, farmers endorsed little use of the avoidant emotion-focused coping strategies of behavioral disengagement, denial, and substance abuse. The percentage of farmers in this sample who reported usage from "a medium amount" to "a lot" for behavioral disengagement, denial, and substance abuse, is 3.8%, 4.4%, and 1.9%, respectively. Farmers did however, endorse higher usage of the avoidant emotion-focused coping strategies of self-distraction (46.3%) and self-blame (43.6%). It is possible farmers endorsed higher usage of these specific avoidant emotion-focused coping strategies over behavioral disengagement, denial, and substance abuse, due to the internalization of stress. As was mentioned earlier, if farmers are not given the proper context of economic, political, and social forces that factor into the successes and failures of their farms, they are left to internalize the majority of the responsibility (Kubik &

Moore, 2003; Kubik, 1996). This internalization has been shown to lead to self-blame and may also lead to attempted self-distraction from what the farmers see as their own failures (Kubik & Moore, 2003; Kubik, 1996).

In contrast to what was expected, less adaptive coping strategies (i.e., avoidant emotion-focused coping) were predictive of mental health outcomes, while adaptive strategies (i.e., active emotion-focused coping) were not. Although less likely to be employed by the farmers in this sample compared to active coping strategies, higher use of avoidant emotion-focused coping strategies (i.e., denial, self-blame, and substance use) was associated with higher levels of depressive and anxious symptoms. The cultural values of independence and self-reliance are particularly important to farmers, and may make it more likely for farmers to internalize stress and see themselves as responsible for problems (Hoyt et al., 1997; Kubik & Moore, 2003; Kubik, 1996; Logsdon, 1994). Thus, when farmers use avoidant emotion-focused coping such as denial, self-blame, and substance use, they do not engage with the stressor and/or work toward a solution, which may lead to even stronger internalization of responsibility for the problem.

In regards to active emotion-focused coping strategies not predicting mental health outcomes, it is possible other factors within this farming sample account for the most variance in positive mental health outcomes. This sample can be described as physically healthy and on average, resilient. As such, the covariates of self-rated physical health, resiliency, and age accounted for the most variance in positive mental health outcomes, leaving little room for active emotion-focused coping strategies (e.g., positive reframing, social support, or acceptance) to be significant predictors.

Coping strategies linked to specific farm stressors. In addition to examining coping in response to overall stress, this study also explored coping in response to specific farm-related

stressors. Contrary to expectations, no farm stressor significantly predicted the use of *avoidant* emotion-focused coping as a whole. Out of the five farm stressors examined, only higher levels of governmental stress and isolation were linked to a greater likelihood of farmers using overall *active* emotion-focused coping (e.g., the average use of positive reframing, acceptance, humor, religion, emotional support, and venting to cope). Governmental stressors consist of feeling like one has to challenge an entire system to bring change (e.g., changing export policy, taxes, and health care, etc.), which was associated with farmers in this sample employing active emotion-focused strategies (e.g., acceptance and religion). Similarly, isolation (e.g., lack of close neighbors and distance from social interaction, doctors, and recreation) also presents stressors that cannot necessarily be easily changed (i.e., inability to uproot family and farm to move to more populous area) and would likely invoke emotion-focused coping over problem-focused coping. Although the categories of financial stress and operational stress also contain unchangeable stressors, financial stress and operational stress were not linked to the use of emotion-focused coping. Perhaps this is due to farmers in this sample viewing the stress associated with the government and isolation as the most uncontrollable in comparison to finances and operation stressors, which would activate more emotion-focused coping strategies.

Dispositional mindfulness. In comparison to normative samples for the Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003), farmers in this sample (M = 3.69, SD = 1.01, range: 1.67-5.80) scored lower on the measure than previous samples (Adult Group: M = 3.97, SD = 0.64, Zen Meditators: M = 4.29, SD = 0.66, and Cancer Patients: M = 4.27, SD = 0.64), but still endorsed mindful traits. For this sample of farmers, dispositional mindfulness appears to be a particularly important coping mechanism as it predicted additional positive variance in mental health outcomes (i.e., lower depressive and anxious symptomology) above

and beyond the positive effects of older age, more resiliency, and better self-rated physical health. Additionally, farmers higher in dispositional mindfulness reported lower levels of (1) total farm stress, (2) government-related stress, (3) work stress, (4) operation stress, and (5) isolation stress. Contrary to predictions, moderation analyses showed that higher farm stress is still a significant predictor of worse mental health outcomes across all levels of dispositional mindfulness indicating that mindfulness did not buffer the association between farm stress and mental health. Nonetheless, farmers experiencing higher levels of dispositional mindfulness reported lower stress, which is predictive of better mental health outcomes. Consequently, mindfulness may indirectly promote better mental health outcomes for American farmers although further research is needed to probe these pathways.

Given that previous research has shown dispositional mindfulness to be beneficial in interrupting rumination and allowing individuals to view stressors from different vantage points, it was expected that higher dispositional mindfulness would significantly predict higher usage of the active emotion-focused coping strategy of positive reframing (Brown & Ryan, 2003; Garland et al., 2011). Results did not support this hypothesis and instead showed that greater dispositional mindfulness was associated with *lower* use of self-distraction, self-blame, and denial, all of which are avoidant emotion-focused coping strategies. Although dispositional mindfulness has the potential to bring about positive reappraisal, this is not guaranteed, as is shown in this sample. However, dispositional mindfulness does allow an individual to confront the stressful situation with curiosity and openness, rather than avoiding the situation and sticking with automatic judgments, which was shown in this sample as the farmers higher in dispositional mindfulness were significantly less likely to engage in avoidant coping styles (Garland, Gaylord, & Fredrickson, 2011).

Age and Resiliency: Do They Change Outcomes?

An additional objective of this study was to consider potential effects of age in all analyses, as the American farming workforce is rapidly aging and older age does not necessarily equate to retirement for farmers (O'Neill et al., 2010; USDA, 2014). Prior studies have shown farmers continue working into their 70s, 80s, and older, while working well above a 40-hour work week (Lizer & Petrea, 2007; Myers, 1990; Purschwitz & Fields 1990). Although older farmers generally excel in physical function and general health in comparison to the general population, older farmers are at a higher risk for negative mental health outcomes and continue to face farm-related stressors in addition to normal age-related stress (Lizer & Petrea, 2007; Pickett et al., 1993; Polain et al., 2011; Pylka & Gunderson, 1992). Given this information, age was examined to further understand potential connections between farming, aging, and mental health. However, age is a broad variable that can encompass many different individual processes or mechanisms that occur as age increases. Consequently, in addition to examining age as a factor, an additional goal was to examine resiliency as an alternative predictor of adaptability and coping. Of particular interest was examining how aging farmers react to being exposed to highly arousing, stressful events (i.e., how their resiliency buffered the effects of stress).

Contrary to predictions, older age was actually associated with *lower* levels of total farm stress, as well as lower financial stress and work stress among this sample of farmers. Additionally, older age was linked to less depressive and anxious symptoms and better self-rated mental health. Numerical age is often used as a gross marker of adaptability or ability to cope. However, for the farmers in this sample, age and resiliency were not correlated, suggesting that age does not reflect the entire picture. Though it would be expected that older farmers in this study would report lower resiliency, resiliency levels did not change across the lifespan. On

average, farmers in this sample reported normal levels of resiliency in accordance with the Brief Resilience Scale (BRS) normative sample that did not change with age (Smith, Epstein, Oritz, Christopher, & Tooley, 2013).

The hypotheses associated with age and resiliency were based upon the SAVI-model, which indicates that older adults generally have better emotional wellbeing than younger adults, except when dealing with difficult and/or repeated stressors (Charles, 2010). Core to the SAVI-model is the assumption that age-related vulnerabilities impair an older adult's ability to engage in high levels of sustained emotional arousal, which reduces any advantages to emotional well-being that occur with age. Specifically, the increase in physiological vulnerabilities with age (e.g., "greater increases in blood pressure and prolonged HPA and hemodynamic response," Charles, 2010, p. 1069) adds to time needed to recover from the arousing situation. Unrelenting stressors provide a situation where it becomes difficult to impossible for individuals to employ strategies to avoid or reduce the effects of a stressful or negative situation, which is amplified by physiological vulnerabilities (Charles, 2010).

Taking the SAVI model (Charles, 2010) into consideration, older farmers would be expected to report less resiliency (i.e., needing more time to recover from stressors), particularly given the large volume of stressors to which farmers are exposed. However, when faced with compounding stressors, older farmers in this study did not report lower levels of resiliency or having a harder time returning to normal following a stressful event. As with older age, farmers higher in resiliency reported less depressive and anxious symptoms, as well as better self-rated mental health. Perhaps the positive outcomes we see for the older farmers in this sample are due to their enduring resiliency combined with the better emotional wellbeing that occurs with age, as purported by the Socioemotional Selectivity Theory (SST; Carstensen et al., 2011; Carstensen

& Mikels, 2005). Though it can be expected that emotional wellbeing would improve with age, the question still exists of why the farmers in this sample experience similar levels of resilience regardless of age.

The sustained resilience levels for older farmers may be in part due to farmers' higher levels of physical functioning and/or perception of better physical functioning. Previous research has shown that farmers live an active lifestyle and continue to engage in physical labor well into old age, reporting their physical health to be in good condition (Lizer & Petrea, 2007; Myers, 1990; O'Neill et al., 2010; Purschwitz & Fields, 1990). In line with prior research, farmers in this sample rated their physical health on average as being "very good" and when farmers ages 55+ were examined specifically, 85.4% rated their physical health from "good" to "excellent" (n = 60, Poor = 1.6%, Fair = 12.9%, Good = 43.5%, Very Good = 30.6%, and Excellent = 11.3%). Notably, prior studies have found that in response to psychosocial stressors, individuals who regularly engage in physical activity evidence lower rates of cortisol and cardiovascular responses versus those who are less active (Claytor, 1991; Crews & Landers, 1987; Deuster & Silverman, 2013; Rimmelle et al., 2009). Being more physically fit has also been associated with decreased susceptibility to life stressors (Deuster & Silverman, 2013; Li & He, 2009; Steptoe, Edwards, Moses, & Matthews, 1989; 63). Continuing to engage in frequent (if not daily) physical labor into older age may serve as a protective factor and reduce physiological vulnerabilities to stress among farmers, though experimental research is needed to fully investigate this hypothesis.

Even though farmers in this sample remain resilient with age, which can be protective, it is still important to acknowledge the risks of exposure to farm stressors. One predicted stressor that was expected to be particularly salient to older farmers was experiencing a loss of land in

older age, which could cause undue stress as the farmer may experience a sense of loss tied to previous generations and a lifetime of work. However, the majority of farmers in this sample reported an increase in land size with age, showing that contrary to previous research, farmers in this study tended to increase or at least maintain their land holdings with age (Gale, 1994). It is important to note, however, that for the group reporting an increase in land holdings, the average age falls on the lower end of middle adulthood (M = 43.17, SD = 13.71). In contrast, those reporting a decrease in land size with age are on average over a decade older (M = 55.74, SD = 16.23). This information suggests the possibility of a non-linear association between age and land size and that there may be a period of time in middle age when farmers decide whether to increase, maintain, or decrease land holdings (which may not be fully of their choosing). However, further investigation is needed to probe this hypothesis. Overall though, most farmers in this sample did not see a decrease in land size with age and appeared to continue working on the land as they age. Although continuing to farm due to a tie to the land and connection with family has been cited as a potential problem due to higher risk for injury than younger farmers, perhaps this connection to the land and family also factors into the farmers' reported better mental health with increasing age (Garkovich et al., 1995; NSC, 1999; Myers & Hard, 1995).

However, though increasing age and higher levels of resiliency are associated with positive mental health outcomes (i.e., lower symptoms of depression and anxiety, and better self-rated mental health), interventions to help reduce stress will likely still be beneficial for older farmers. Results show that regardless of age, if a farmer is exposed to higher levels of farm stress, they are at higher risk for worse mental health outcomes as age did not emerge as a moderator of the stress—mental health associations. As such, it is important for older farmers to continue undertaking interventions to deal with stress, even if they experience less overall farm

stress than their younger counterparts. Additionally, higher farm stress predicted worse mental health outcomes regardless of a farmer's level of resiliency, showing that even farmers with higher levels of resiliency can experience poorer mental health if exposed to enough farm stress.

Individual Differences

Throughout the analyses, individual differences that were not included as original hypotheses or aims became apparent. Specifically, gender differences were observed in the experience of stress and coping, while differences in the experiences of first-generation farmers versus multi-generational farmers (i.e., generational effects) were observed in mental health outcomes, most common stressors, and coping.

The experience of female farmers. Few research studies have examined gender differences in mental health outcomes among farmers. Given the limited information, gender was not examined as a moderator in this study. However, throughout the analyses, it became apparent that gender differences do exist in this sample of farmers. Specifically, being a female farmer was associated with a higher risk for experiencing more stress. Female farmers reported significantly higher levels of farm stress overall, as well as more financial stress, operation stress, and isolation stress.

Women in the farm family are typically partners in the farm operation and also care for children and other family responsibilities (Carruth & Logan, 2002). Prior research has shown that women often hold disproportionally larger responsibility in the family and on the farm, in order to allow their husband (for heterosexual couples) and children opportunities to hold off-farm jobs to insure enough income for the farm's success (Carruth & Logan, 2002; Stueland et al., 1997). Taking this information into consideration can help us understand why farmwomen in this sample are reporting higher financial and operation stress than their male counterparts. In

terms of isolation stress, farm women have been shown to feel isolated due to increased rurality and the isolating nature of farm work (Carruth & Logan, 2002; Thelin, 1990). When rurality and isolating farm work are combined with taking care of family responsibilities (e.g., childcare), farmwomen may experience even more isolation due to spending less time off the farm engaging in off-farm work compared to partners and children.

Despite farmwomen in this sample reporting higher levels of stress, they did not report significantly greater depressive and anxious symptomatology compared to male farmers. Prior research has shown farmwomen to be at an increased risk for fatigue and higher levels of depressive symptoms in comparison to men (Stallones, Leff, Garrett, Criswell, & Gillan, 1995; Walker, Walker, & MacLennan, 1986), but we do not see those results replicated here. Although farmwomen endorsed higher use of the avoidant emotion-focused coping strategies of self-distraction and self-blame, which are associated with poorer mental health outcomes, they also reported higher use of instrumental support (problem-focused coping), as well as positive reframing and emotional support, both of which are active emotion-focused coping strategies. Despite having a mix of avoidant and engaging coping strategies, given that the farmwomen in this sample are not reporting significantly worse mental health outcomes than the male farmers, it is possible that the farmwomen are successfully employing coping flexibility. Coping flexibility refers to an individual's ability to modify their coping strategies based on unique stressful situations (Cheng, Lau, & Chan, 2014; Lazarus & Folkman, 1987). By coping according to context, the use of the adaptive strategies may be buffering the higher stress and compensate for the use of maladaptive strategies in different scenarios (Cheng, Lau, & Chan, 2014; Lazarus & Folkman, 1987). Future research may explore which types of coping are used in response to common stressful situations among farmwomen.

Generational effects. Prior research suggests that multi-generational farmers experience the stress of operating a farm and also have the family legacy to uphold, which can be a factor in poorer mental health outcomes (Marotz-Baden et al., 1995; Rosmann, 2008). However, in this sample, first-generation farmers appeared to experience poorer mental health in comparison to farmers belonging to multi-generational farming families. This result may be due to the challenges first-generation farmers face when starting up their new farms. First-generation farmers also indicated higher usage of instrumental support, venting, self-distraction, and self-blame, the last two of which are avoidant emotion-focused coping strategies.

Although seeking instrumental support can be an adaptive coping strategy, in the face of uncontrollable stressors such as dealing with the government's export policy, farm price supports, taxes, and health care costs, applying problem focused-coping (i.e., instrumental support) is associated with feeling powerless and can increase depressive symptoms, which may partly explain the poorer mental health outcomes for first-generation farmers (Lefcourt & Martin, 1983). Similarly, applying avoidant emotion-focused coping strategies like self-distraction and self-blame would encourage the farmer to become passive or avoid the stressor. Of the coping strategies endorsed most by first-generation farmers, venting appears to be the most beneficial. Venting is an active emotion-focused coping strategy, which allows an individual to engage with the stressor by expressing their negative feelings often in the presence of others, which would likely be more beneficial to first-generation farmers. However, despite using venting, first-generation farmers are still likely reporting worse mental health outcomes in part because of high usage of less beneficial coping styles (i.e., instrumental support, self-distraction, and self-blame), which are associated with poorer mental health outcomes (Carver et al., 1989; Lefcourt & Martin, 1983). In contrast to first-generation farmers, multi-generational

farmers were more likely to report using religion to cope. An active emotion-focused coping strategy like the use of religion can encourage the farmer to engage with the stressor, but not take personal responsibility for something that is uncontrollable, which may be more adaptive in this setting (Hovey & Seligman, 2006).

Implications and Future Directions

Farming remains one of the most hazardous occupations in terms of physical injuries and death, chronic stress, and psychological hazards (Browning et al., 2008; Eisner et al., 1998; Kutner, 2014; Leigh et al., 2014; UBLS, 2014b). Although international research on farmers has been burgeoning, recent research on the mental health of farmers in America has fallen behind. This study serves as one of the starting points to bridge the gap between farmer mental health and psychological science. Specifically, this study provides updated information regarding the current generation of American farmers, including insight into mental health outcomes, working conditions, type of stressors, and coping styles. There are both clinical and theoretical implications of this study.

This study confirms that farmers work long hours, often with minimal assistance, which may contribute to feelings of isolation and increased work stress. Higher levels of overall farm stress, as well as work stress, are associated with higher levels of depressive and anxious symptomology. Farmers are reporting levels of anxious and depressive symptoms at rates 1.5 to 4.5 times higher than the national averages. Clinically, these results justify the need for increasing mental health interventions for American farmers. Previously successful forms of intervention (e.g., stress management workshops, farm family support groups, home outreach by mental health professionals, AgriSafe Network, and telephone crisis lines, among others; Rosmann, 2008) that were used with farmers in the 1980s and 1990s should be implemented

again and used with this generation of farmers. Female farmers and first-generation farmers may benefit from targeted interventions, as farmwomen and first-generation farmers experience higher levels of specific types of farm stress than their counterparts. As women in the farm family often hold several different, but salient roles (e.g., mother, manager, farmer, and bookkeeper, etc.) and can experience increased isolation, farmwomen may benefit in particular from support groups and social events, to build up support systems and find validation in other farmwomen who have similar experiences (Carruth & Logan, 2002; Stueland et al., 1997; Thelin, 1990). First-generation farmers are also in a unique situation beginning a farm without the support of prior generations of farmers. Similarly, first-generation farmers are likely to benefit most from support groups, particularly groups including farmers in similar situations, as well as multi-generational farmers who may be able to provide more insight into the lifestyle of farming.

Overall, farmers endorsed the use of mainly positive coping mechanisms, including both problem-focused and active emotion-focused strategies. Mental health professionals should consider capitalizing on these strengths, including promoting dispositional mindfulness, which can be helpful in fostering positive mental health outcomes above and beyond the protective factors of increasing age and higher resiliency. Additionally, just as gender and farmer generation was associated with different outcomes, researchers should consider conducting future research specifically with farmers of different racial and marital backgrounds, as their experiences may differ from the majority.

Though full supports will not be implemented this year (2019), the new farm bill, "The Agriculture Improvement Act of 2018," promises to provide Federal funds for behavioral and mental health resources in farming communities. As a part of this initiative, a National Farm and

Ranch Assistance Network will be established to coordinate behavioral and mental health resources for farmers across the United States, which will hopefully increase intervention. As the farmers in this study reported experiencing frequent farming-associated stress from multiple domains (i.e., financial, governmental, work, operational, and isolation), mental health professionals and farming organizations may consider helping groups of farmers process these specific issues and learn healthy and helpful coping strategies specific to these stressors. Also, the majority of farmers in this sample endorsed having depressive and anxious symptoms and reported a striking difference between visits to the doctor for physical concerns (73.9% "yes") versus mental/emotional health concerns (30.6% "yes"). What this tells us is that the majority of farmers in this sample have not seen a professional regarding their mental/emotional health concerns. Given that farmers may already be held back by stigma associated with reaching out for help, having more mental health resources in rural communities as a part of the new farm bill may help start the discussion about mental health and break barriers (Booth et al., 2000). If farmers participate in mental health initiatives, future researchers may consider conducting comparative effectiveness research with farmers to better understand which mental health interventions (e.g., mindfulness interventions, crisis support phone lines, farm crisis workshops, individual therapy sessions, and farm family support groups, etc.) are most practical and beneficial. Prior to engaging in any intervention research, mental health professionals and researchers should seek to understand the culture of farming (Hartley, Ziller, Loux, Gale, Lambert, & Yousefian, 2007; Rosmann, 2008), preferably by employing a community engaged research approach.

Theoretically, this study extends findings consistent with the SST to older farmers, showing that older age was associated with better emotional outcomes, as the older farmers in

this sample endorsed less depressive and anxious symptoms and better self-rated mental health (Carstensen et al., 2011). This study also adds to our understanding of the SAVI model, which posits that older age can bring about physical vulnerabilities that can make it more difficult for older adults to regulate their emotions (Charles, 2010). At face value, the results of this study appear to be misaligned with the SAVI model, as reports of resiliency did not differ in our sample with increasing age, despite older farmers continuing to undergo chronic stress. Older farmers in this sample rated their physical health as "very good" and continue to engage in physical labor, which may strengthen their resistance to physiological vulnerabilities, leading to retrospective reports of sustained resilience despite older age. However, since daily reports of stressors and reactivity to stressors were not assessed, this study cannot draw definitive conclusions that older farmers do not experience increased physiological response to stressors in comparison to younger farmers. Future research should include measures of physiological and psychological responses immediately following stressors to better assess the application of the SAVI model to the American farmer population.

Additionally, though the associations between greater dispositional mindfulness and positive mental health outcomes have been well studied (Brown & Ryan, 2003; Schutte & Malouff, 2011; Pepping, O'Donovan, & Davis, 2013), to our knowledge, this is the first study to assess the potential benefits of dispositional mindfulness in a sample of American farmers. Given that the average age of the American farmer continues to increase and fewer younger farmers are entering the field, research is needed that investigates effective coping mechanisms to mitigate difficult aspects of aging and promote positive mental health outcomes (de Frias & Whyne, 2015). This study shows dispositional mindfulness to be a particularly important predictor in terms of mental health and stress outcomes. Specifically, farmers higher in dispositional

mindfulness had less depressive and anxious symptoms, as well as less overall farm stress, governmental stress, work stress, operation stress, and isolation stress. Farmers who are already dispositionally mindful can enhance their skills through awareness and sustained use in stressful situations, further improving their responses to stressful situations. Notably, dispositional mindfulness can also be achieved through repeated practice of mindfulness meditation, making it a widely available coping mechanism for all farmers, not just those who are already dispositionally mindful (Kiken et al., 2015). Future research may consider exploring the associations between other mindfulness practices (i.e., state mindfulness, mindfulness-based stress reduction, and yoga, etc.), mental health outcomes, and farm-related stressors in a population of American farmers to better understand potential benefits of different mindfulness practices/techniques.

Strengths

Strengths from this study include the inclusion of a diverse sample of farming experiences, capturing a snapshot of the unique circumstances of a sample of American farmers in 2018-2019, and the use of age and resiliency to assess adaptability across the lifespan.

The sample for this study was recruited both online and in-person at farming events, which provided a sampling of a greater diversity of experiences through reaching farmers of different ages and backgrounds. Notably, this sample contains 55.4% female farmers, which allowed for gender analyses that revealed significant differences between female and male farmers. A wide range of years spent farming was represented (i.e., 1 year to 68 years), as well as farming generation (i.e., 1st generation through 10th generation). Farmers from 33 states participated, although the majority of farmers surveyed were from Kentucky (48.7%) and Virginia (11.4%). Farmers surveyed endorsed a variety of types of farming, which allowed for a

greater understanding of stressors common across farmers despite differences in livestock, crops, and/or business, etc.

Findings from this study make novel contributions to research on America's farmers, particularly in the realm of mental health. Prior research, predominantly during the 1980s farm crisis with a few studies in the past decade, identified high rates of suicide and a report of negative mental health outcomes among farmers (Eisner et al., 1998; Lizer & Petrea, 2007; Rosmann, 2008). Results from this study indicate that the farmers sampled experience significant depressive and anxious symptoms (i.e., only 5.1% endorsed no depressive symptoms and only 9.6% endorsed no anxious symptoms), as well as farm stressors. This study also shows age to be a protective factor against poorer mental health outcomes. Dissemination of these results will likely be important in the narrative of considering the strengths, as well as mental health needs of farmers.

National attention was recently paid to farmers when the media widely quoted a 2016 CDC study that was later retracted due to a misclassification of farmers in analyses, which inflated the reported suicide rate for farmers (Rosenberg & Stucki, 2018). The headlines spurned discussions among Congress to create a new farm bill that would include resources for farmer mental health. Though the bill was still created despite the error in the CDC's research, new research adequately assessing farmer mental health has been needed. As such, a strength of this research study is that the data provides a snapshot into the working conditions, mental health, and coping trends in a group of American farmers in 2018 and 2019, which has been a particularly stressful time for farmers. For example, in addition to political changes affecting market values and trade, the average income for farmers was 50% lower this year in comparison to 2013 (Farm Aid, 2018). Although this study is not representative of all United States farmers,

it does provide information on the experience of 158 United States farmers primarily in the Southeastern United States with diverse experiences. This study can be instrumental in better understanding the plight of today's American farmer and may be able to serve as a springboard for future intervention studies.

Lastly, a core strength of this study was the use of both age and resiliency in assessing how farmers adapt and/or react to compounded stressors across the lifespan. Prior research has focused on adverse outcomes for older farmers, but this study has identified strengths of older farmers, including sustained resilience, overall lower farm stress, lower levels of depressive and anxious symptoms, and better self reported mental health. The examination of both age and resiliency allowed us to better understand the experiences of older farmers, rather than just stating that results changed with age.

Limitations

Limitations of the present study include a cross-sectional design, examination of only one type of mindfulness, sample limitations, and retrospective reporting. Given that the present study is cross-sectional in design, causal statements cannot be made regarding the associations between mental health outcomes, farm-related stressors, and dispositional mindfulness. Future research may consider longitudinal designs to examine the associations between these variables over time, particularly given how quickly the social and political climate can change and impact farmers. Additionally, because this study only examined dispositional mindfulness, it cannot be assumed that the examined associations are consistent for individuals engaging in state mindfulness or mindfulness interventions.

The farmers in this sample self-selected and decided to participate, which may have affected results of the study. Specifically, depending on planting and harvesting times, some

farmers may not have chosen to participate due to time constraints. As the study was advertised on social media and at farming tradeshows/events, it is less likely that the most isolated farmers participated in the study. Additionally, given the length of the survey, farmers experiencing higher levels of depressive or anxious symptomology may have chosen not to participate due to seeing the survey as too taxing.

When examining the study sample further, the majority of this sample identified as White and married, and almost half of the farmers in this sample farm in the state of Kentucky, with the remaining sample farming in 32 different states across the United States. As such, it is important to note that the experience of the farmers in this sample may not be generalizable to all American farmers. The majority of farmers in this sample raise beef cattle, which likely contributes to differences in the farming experience than farmers raising wheat, corn, and/or dairy cows, etc. However, the results still give us a snapshot into the American farmer because regardless of type of farming, there are still farm stressors that are common across all farmers (i.e., financial stress, governmental stress, work stress, operation stress, and isolation stress).

Lastly, study findings appear to be inconsistent with the SAVI model, which may be in part due to study design. Physiological response to stressors was not measured, nor was psychological response measured in real-time for individual stressors. This study looked at retrospective reports of stressors and mental health symptoms, which cannot capture an individual's immediate response to a specific stressor. As a result, this study cannot assess how long the farmers in this sample take to recover from specific stressors. What can be reported, however, is that farmers across the lifespan reported being able to bounce back rather quickly after hard times.

Conclusion

In closing, it is important to recognize the enduring strength and resilience of the American farmer. Paul Harvey's 1978 speech, "So God Made a Farmer," given at the National Future Farmers of America (FFA) Convention, still accurately describes and summarizes the work and resilience of farmers across the globe:

And on the 8th day, God looked down on his planned paradise and said, "I need a caretaker." So God made a Farmer.

God said, "I need somebody willing to get up before dawn, milk cows, work all day in the fields, milk cows again, eat supper, then go to town and stay past midnight at a meeting of the school board." So God made a Farmer.

"I need somebody with arms strong enough to rustle a calf and yet gentle enough to deliver his own grandchild; somebody to call hogs, tame cantankerous machinery, come home hungry, have to wait for lunch until his wife's done feeding visiting ladies, then tell the ladies to be sure and come back real soon -- and mean it." So God made a Farmer.

God said, "I need somebody willing to sit up all night with a newborn colt, and watch it die, then dry his eyes and say, 'Maybe next year.' I need somebody who can shape an ax handle from a persimmon sprout, shoe a horse with a hunk of car tire, who can make a harness out of haywire, feed sacks and shoe scraps; who, planting time and harvest season, will finish his forty-hour week by Tuesday noon, and then pain'n from tractor back, put in another seventy-two hours." So God made a Farmer.

God had to have somebody willing to ride the ruts at double speed to get the hay in ahead of the rain clouds, and yet stop in mid-field and race to help when he sees the first smoke from a neighbor's place. So God made a Farmer.

God said, "I need somebody strong enough to clear trees and heave bails, yet gentle enough to tame lambs and wean pigs and tend the pink-combed pullets, who will stop his mower for an hour to splint the broken leg of a meadow lark."

It had to be somebody who'd plow deep and straight and not cut corners; somebody to seed, weed, feed, breed and rake and disc and plow and plant and tie the fleece and strain the milk and replenish the self-feeder and finish a hard week's work with a five-mile drive to church; somebody who would bale a family together with the soft strong bonds of sharing, who would laugh, and then sigh, and then reply, with smiling eyes, when his son says that he wants to spend his life "doing what dad does."

So God made a Farmer.

Despite having a demanding occupation and lifestyle wrought with chronic and unpredictable stressors, American farmers continue to work long hours in stressful conditions and still produce what is asked of them. The farmers of today appear to be "getting by," but for how long can our farmers sustain chronic stress and associated higher depressive and anxious symptoms? As such, it is imperative that legislators, researchers, and mental health providers work harder to advocate for the mental health and overall wellbeing of America's farmers.

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Appendix A

Table 1. *Participant Demographics*

Variable	
N	158
Age in years, M *(SD)*	47.62 (*15.31*)
Age range	18-64
Gender, % female	55.4%
Race, %	
White/Caucasian	98.1%
Black/African American	.6%
Asian American/Pacific Islander	.6%
Other	.6%
Marital Status, %	
Married	77.1%
Single	17.2%
Widowed	2.5%
Divorced/Separated	3.2%
Education, %	
Some high school, no diploma	.6%
High school Diploma or GED	17.1%
Some college, no degree	15.8%
Trade/technical/vocational training	6.3%
Associate degree	10.1%
Bachelor's degree	31.6%
Master's degree	15.2%
Professional degree	1.3%
Doctorate degree	1.9%
First Generation, %	30.8%
Years Farming, M *(SD)*	30.18 (*18.77*)
Years Farming, range	1 to 68
Pre-tax Income in Last Calendar Year, %	
Loss – less than $0	7.3%
0-10,000	10.6%
10,001-20,000	7.9%
20,001-30,000	5.3%
30,001-40,000	8.6%
40,001-50,000	11.3%
50,001-60,000	8.6%
60,001-70,000	6.6%
70,001-80,000	2.0%
80,001-90,000	4.0%
90,001-100,000	2.6%
100,001-110,000	4.0%
110,001-120,000	4.6%
125,000 or above	16.6%

Table 2. *State of Residence and Farm*

State	Frequency	Percentage of Sample
Kentucky	77	48.7%
Virginia	18	11.4%
New York	7	4.4%
Missouri	5	3.2%
Maryland	4	2.5%
Nebraska	4	2.5%
California	4	2.5%
Michigan	3	1.9%
Minnesota	3	1.9%
Pennsylvania	3	1.9%
Alabama	2	1.3%
Colorado	2	1.3%
Illinois	2	1.3%
Oklahoma	2	1.3%
South Dakota	2	1.3%
Washington	2	1.3%
Arkansas	1	.6%
Florida	1	.6%
Indiana	1	.6%
Kansas	1	.6%
Louisiana	1	.6%
Massachusetts	1	.6%
Maine	1	.6%
Mississippi	1	.6%
Montana	1	.6%
North Carolina	1	.6%
Ohio	1	.6%
Oregon	1	.6%
South Carolina	1	.6%
Tennessee	1	.6%
Texas	1	.6%
Wisconsin	1	.6%
West Virginia	1	.6%

Table 3. *Farm Size*

Variable	
Land Size *M* (*SD*)	703.15 (1954.58)
Land Size range	.25 acre – 20,000 acres
Frequency and Percentage of Land Size:	
50 acres or less	51 (32.3%)
51-100 acres	13 (9.2%)
101-200 acres	26 (16.5%)
201-300 acres	11 (7.0%)
301-400 acres	10 (6.3%)
401-500 acres	8 (5.1%)
501-750 acres	12 (7.6%)
751-1000 acres	5 (3.2%)
1000 acres and above	22 (13.9%)

Table 4. *Multi-Generational Farm Status*

Variable	Frequency	Percentage
2nd generation	9	5.7%
3rd generation	39	24.7%
4th generation	26	16.5%
5th generation	17	10.8%
6th generation	4	2.5%
7th generation	0	0.0%
8th generation	3	1.9%
9th generation	0	0.0%
10th generation	1	.6%
Multi-generation unspecified number	59	37.3%

Table 5. *Type of Farming Endorsed (Multiple Selections Allowed)*

Variable	Frequency	Percentage of Total Sample
Arable	54	34.2%
Dairy Cattle	14	8.9%
Beef Cattle	85	54.8%
Sheep/Ewes	15	9.5%
Pigs	28	17.7%
Poultry	21	13.3%
Horticulture	24	15.2%
Agritourism/Agribusiness	17	10.8%
Other:		
Bees	1	.6%
Fish	1	.6%
Dairy Goats	5	3.2%
Rabbits	1	.6%
Equine/Horses	7	4.4%
Forest	1	.6%
Goats	4	2.5%
Cattle (no specification)	1	.6%
"Homestead"	1	.6%
"Research Farm"	1	.6%
"Sustainable Family Farm"	1	.6%

Table 6. *Participant Average Scores on Variables*

Variable	M *(SD)*	Range of Scores in Sample
PHQ-8 Total Score (Depressive Symptoms)	7.64 (*5.70*)	0-23
GAD-7 Total Score (Anxious Symptoms)	7.37 (*5.43*)	0-21
Self-Rated Mental Health	3.34 (*.92*)	1-5
Self-Rated Physical Health	3.41 (*.93*)	1-5
BRS Total Score (Resiliency)	3.43 (*.72*)	1.67-5.00
MAAS Total Score (Mindfulness)	3.69 (*1.01*)	1.67-5.80
Perceived Stress Scale Total Score	18.37 (*6.91*)	3-36
Farm Ranch Stress Inventory Total Score	2.42 (*.44*)	1.14-3.57
Financial Stress	2.63 (*.77*)	1-4
Governmental Stress	2.42 (*.68*)	1-4
Work Stress	2.54 (*.57*)	1.25-3.75
Operational Stress	2.64 (*.52*)	1.33-4.00
Isolation Stress	1.54 (*.55*)	1-3

Variable	Percentage	N
PHQ-8 Depressive Symptom Severity		156
No depression	5.1%	
Minimal depression	34.6%	
Mild depression	27.5%	
Moderate depression	18.6%	
Moderately severe depression	10.8%	
Severe depression	3.1%	
GAD-7 Anxious Symptom Severity		156
No anxiety	9.6%	
Minimal anxiety	24.9%	
Mild anxiety	36.6%	
Moderate anxiety	15.8%	
Severe anxiety	13.3%	
Perceived Stress		153
Low stress (scores 0-13)	25.5%	
Moderate stress (scores 14-26)	60.1%	
High stress (scores 27-40)	14.4%	

Table 7. *Physical Healthcare Versus Mental/Emotional Healthcare*

	Frequency/Percentage "Yes"	Frequency/Percentage "No"
"Do you take medications for your physical health?"	107 (68.6%)	49 (31.4%)
"Do you take medications for your mental/emotional health?"	47 (29.9%)	110 (70.1%)
"Have you visited a doctor in the past 12 months for physical health concerns?"	116 (73.9%)	41 (26.1%)
"Have you visited a doctor in the past 12 months for mental/emotional health concerns?"	48 (30.6%)	109 (69.4%)

Table 8. *Farm Ranch Stress Inventory Individual Item Responses*

Variable	No Stress	A Little Stress	Moderately Stressful	Very Stressful
1. Distance from shopping/school/recreation	61.1%	28.0%	9.6%	1.3%
2. Lack of close neighbors	78.5%	12.7%	7.0%	1.9%
3. Farm/ranch accidents and injuries	19.7%	47.1%	26.1%	7.0%
4. The weather	1.3%	17.1%	42.4%	39.2%
5. Market prices for your crops/livestock	5.8%	14.1%	37.2%	42.9%
6. Limited social interaction opportunities	48.1%	31.0%	13.3%	7.6%
7. Seasonal variations in the workload	12.1%	40.1%	38.9%	8.9%
8. Not enough money for day-to-day expenses	12.7%	26.8%	33.8%	26.8%
9. High debt load	19.1%	24.2%	28.0%	28.7%
10. Working with bankers and loan officers	28.7%	26.8%	26.8%	17.8%
11. Not enough time to spend together as a family in recreation	15.4%	39.1%	29.5%	16.0%
12. Concern over the future of the farm/ranch	3.8%	33.3%	35.9%	26.9%
13. Not having the manpower to operate the farm/ranch	7.0%	32.5%	39.5%	21.0%
14. Government export policy	39.5%	28.7%	20.4%	11.5%
15. Operating hazardous machinery	36.1%	44.9%	12.7%	6.3%
16. Taxes	11.5%	32.5%	37.6%	18.5%
17. Distance from doctors/hospitals	58.0%	28.7%	11.5%	1.9%
18. Balancing roles as a family member and a farmer/rancher	10.8%	37.6%	28.0%	23.6%
19. Problems with machinery	5.7%	33.8%	46.5%	14.0%
20. Problems with livestock or crops	5.1%	36.9%	38.9%	19.1%
21. Not enough cash/capital for unexpected problems	11.5%	25.0%	35.3%	28.2%
22. Working with extended family members in the farm/ranch operation	34.0%	44.2%	15.4%	6.4%
23. Having too much work for one person	5.7%	31.8%	34.4%	28.0%
24. Financing for retirement	14.1%	32.1%	34.0%	19.9%
25. Government farm price supports	35.3%	32.1%	25.0%	7.7%
26. Dealing with non-relative help	21.8%	29.5%	32.7%	16.0%
27. Outsiders not understanding the nature of farming/ranching	17.1%	28.5%	32.3%	22.2%
28. Health care costs	12.8%	26.9%	28.2%	32.1%

Appendix B

Dear Farmer,

My name is Janna Imel and I am a graduate student at Virginia Commonwealth University where I am working toward my doctoral degree in Counseling Psychology. I am the daughter and granddaughter of farmers and grew up on my family farm in Kentucky, which is what ignited my passion for this specific research study. I am interested in knowing what types of stressors are unique to farmers, how farmers cope with farm-related stressors, and finally, how these stressors are associated with changes in the mental, emotional, and physical health of farmers. I would greatly appreciate your assistance with my project.

You are invited to participate in this study, called "From Sunrise to Sunset: An Examination of the Mental Health of America's Farmers Across the Lifespan." If you agree to participate you are asked to do the following:

(1) Read through the "Research Participant Information and Consent" document before beginning the survey. Your completion of the survey indicates that you freely consent to participate in the research study.
(2) You may also choose to fill out the "Drawing Entry and Research Results" form if you would like to be entered into a drawing for 1 of 4 $50 gift cards and/or if you wish to receive a summary of the results from this study once it is completed. Please note that your "Drawing and Research Results" form will be separated from your survey responses once I receive the packet.
(3) Return the completed survey in the self-addressed stamped envelope by **2/2/2019.**

Your experiences and opinions will provide much needed information about the working conditions of American farmers, as well as how being a farmer may be associated with changes in physical and mental health. Farmers are an underserved population and this research is the first step in being able to identify potential areas where farmers can be helped. **Participation in this project is voluntary and your answers are completely anonymous.** Each survey set is numbered, but numbers <u>will not</u> be linked to participant names and information, so this survey is completely confidential. It should take approximately 15 to 20 minutes of your time to complete the survey.

To express gratitude to everyone for completing surveys, I will conduct a drawing in which four participants will receive a $50 gift card. If you wish to participate in the drawing, please fill out the "Drawing and Research Results" form, where you will be able to write your name, phone number, and address. The form will be immediately separated from your survey upon receipt to ensure that there will be no way to link your name to your answers. If you know of other farmers who may be interested and willing to participate in this study, please provide them my contact information below and I will send them a survey either via mail or email. Please feel free to reach out to me by phone or email if you have any questions about the survey or study.

Sincerely,

Janna Imel, M.S.

RESEARCH PARTICIPANT INFORMATION AND CONSENT

STUDY TITLE: From Sunrise to Sunset: An Examination of the Mental Health of America's Farmers Across the Lifespan

VCU INVESTIGATOR: Janna Lynn Imel, M.S. & Natalie Dautovich, Ph.D.

ABOUT THIS CONSENT FORM

You are being invited to participate in a research study. **It is important that you carefully think about whether being in this study is right for you and your situation.** This document is meant to assist you in thinking about whether or not you want to be in this study. **Please ask the investigator or the study staff to explain any information in this document that is not clear to you.** Your participation is voluntary. You may decide to not participate in this study. If you do participate, you may withdraw from the study at any time. Your decision not to take part or to withdraw will involve no penalty or loss of benefits to which you are otherwise entitled.

AN OVERVIEW OF THE STUDY AND KEY INFORMATION

The purpose of this research study is to find out about (1) farm related stressors faced by American farmers, (2) how American farmers cope with these stressors, (3) how these stressors are associated with the mental and physical wellbeing of American farmers of all ages. This study will allow us to learn more about farm-related stressors, as well as the mental and physical health, and coping behaviors of America's farmers. Additionally, this study will identify potential coping strengths in American farmers.

WHAT WILL HAPPEN IF I PARTICIPATE IN THE STUDY?

In this study, you will be asked to spend 15-20 minutes competing a questionnaire about farm-stressors you face, as well as your health (emotional and physical), and the most common ways you cope with stress. For example, you will be asked about your typical workday as a farmer and your feelings that may be affected by the stressors of farming. Participation in this study requires completing a questionnaire and nothing more. Approximately 200 individuals will participate in this study.

WHAT ALTERNATIVES ARE AVAILABLE?

You have the option to fill out the questionnaire online instead of filling out the paper survey.

WHAT ARE THE BENEFITS OF BEING IN THE STUDY?

You may not get any direct benefit from this study, but you may become more aware of how stress impacts you and what types of coping strategies you use when you are asked to report them. In addition, the information we learn from farmers in this study will provide much needed information about the working conditions of American farmers, as well as how being a farmer may impact physical and mental health. Farmers are an underserved population and this research is the first step in being able to identify potential areas where farmers can be helped. In general, we will not give you any individual results from the study. Once the study has been completed, we can send you a summary of all of the results of the study and what they mean. If you would like a summary of study results, please fill out your contact information on the "Drawing Entry and Research Results" form.

If you decide to participate in this research study, you will also be helping a Counseling Psychology Ph.D. student complete her dissertation.

WHAT RISKS AND DISCOMFORTS COULD I EXPERIENCE FROM BEING IN THE STUDY?
You may experience the following risks and discomforts as a result of participating in this study:

Physical Risks
There are no physical risks or discomforts associated with completing this questionnaire.

Non-Physical Risks
You will be asked questions about stressors related to your work and life, your mood, and your health. Some of these questions are personal and sensitive in nature and may make you feel uncomfortable. You do not have to answer any questions that you don't want to, and you can choose to stop filling out the questionnaire at any time. If you become upset, the following resources are available:

- The Suicide Prevention Lifeline: 1-800-273-8255 (connects callers to trained crisis counselors 24/7)
- www.psychologytoday.com (offers a national directory of therapists, psychiatrists, therapy groups, and treatment facility options)
- SAMHSA Treatment Locator: 1-800-662-4357 (provides referrals to low cost/sliding scale mental health care, substance abuse, and dual diagnosis treatment)

As is the case any time data is collected, loss of confidentiality is a potential risk of participation. We take steps to minimize this risk as detailed below.

Unknown or Unforeseeable Risks
The researchers will let you know about any significant new findings (such as additional risks or discomforts) that might make you change your mind about participating in the study.

WHAT ARE THE COSTS?
There are no costs for participating in this study other than the time you will spend filling out the questionnaire.

WILL I BE PAID TO PARTICIPATE IN THE STUDY?
As compensation for your participation in this study, you can elect to be entered into a drawing for 1 of 4 $50 gift cards. To be entered, you will fill out your contact information on the "Drawing Entry and Research Results" form. Drawings will take place once data collection is finished. If you are the recipient of one of the gift cards, we will notify you by phone.

CAN I STOP BEING IN THE STUDY?
Your participation in this study is voluntary. You may decide to not participate in this study. Your decision not to take part will involve no penalty or loss of benefits to which you are otherwise entitled. If you do participate, you may freely withdraw from the study at any time.

Your decision to withdraw will involve no penalty or loss of benefits to which you are otherwise entitled.

HOW WILL INFORMATION ABOUT ME BE PROTECTED?
Potentially identifiable information about you will consist of your responses to the study questionnaires. Your data will be identified by ID numbers, not names, and stored separately from the "Drawing Entry and Research Results" form. Both the questionnaire and the "Drawing Entry and Research Results" form will be stored separately in a locked research area. Access to all data will be limited to study personnel. There will be no link between your answers to the questionnaire and your name.

Data is being collected only for research purposes. Although results of this research may be presented at meetings or in publications, identifiable personal information about participants will not be disclosed.

If something we learn through this research indicates that you may intend to harm yourself or others, we are obligated to report that to the appropriate authorities.

WHO SHOULD I CONTACT IF I HAVE QUESTIONS ABOUT THE STUDY?
If you have any questions, complaints, or concerns about your participation in this research, contact:

Janna Imel, M.S. – jlimel@vcu.edu or (606) 465-1576
and/or
Natalie Dautovich, Ph.D. – ndautovich@vcu.edu or (804) 828-4304

The researchers named above are the best persons to call for questions about your participation in this study.

If you have general questions about your rights as a participant in this or any other research, you may contact:

Virginia Commonwealth University Office of Research
800 East Leigh Street, Suite 3000
Box 980568
Richmond, VA 23298
Telephone: (804) 827-2157

Contact this number to ask general questions, to obtain information or offer input, and to express concerns or complaints about research. You may also call this number if you cannot reach the research team or if you wish to talk to someone else. General information about participation in research studies can also be found at http://www.research.vcu.edu/irb/volunteers.htm.

STATEMENT OF CONSENT
I have been provided with an opportunity to read this consent form carefully. All of the questions that I wish to raise concerning this study have been answered. My completion of the questionnaire indicates that I freely consent to participate in this research study.

Study Questionnaire

Directions: Please circle your response and/or write-in a response where a line is provided.

1. **What is your age? _____**

2. **What is your gender?**
   - Female
   - Male
   - Other (please specify) _____

3. **What is your marital status?**
   - Single
   - Married
   - Widowed
   - Divorced/Separated

4. **What is your race/ethnicity? (Circle all that apply)**
   - White/Caucasian
   - Black/African American
   - American Indian/Alaska Native
   - Asian American/Pacific Islander
   - Latino/Hispanic
   - Other (please specify) _____

5. **What is the highest degree or level of school you have completed?**
   - No schooling completed
   - 8th grade
   - Some high school, no diploma
   - High school graduate (diploma or GED)
   - Some college credit, no degree
   - Trade/Technical/Vocational Training
   - Associate degree
   - Bachelor's degree
   - Master's degree
   - Professional degree
   - Doctorate degree

6. **Which of the following applies to your current status as a farmer:**
   - I own and work on my own farm
   - I farm on someone else's land

7. **How many years have you been farming? _____**

8. **Are you a first generation farmer? (<u>If "Yes" skip question 9 and go directly to question 10</u>)**
   - Yes
   - No

9. **<u>If you are not a first generation farmer</u>, what generation of farmer are you in your family? (For example, if my father and grandfather were both farmers, I would be a 3rd generation farmer).**
   I am a _____ generation farmer.

10. **What type of farming operation do you have? (Circle all that apply)**
    - Arable
    - Cattle (dairy)
    - Cattle (beef)
    - Sheep/Ewes
    - Pigs
    - Poultry
    - Horticulture
    - Agribusiness/Agritourism
    - Other (please specify) _____

11. **What size is your farm altogether in acres? _____**

12. **As you have gotten older, has your farm:**
    - Increased in size
    - Decreased in size
    - Stayed about the same

13. **How many <u>hours a day</u> do you usually work on the farm in the <u>spring</u>?**
    - 1 to 7 hours
    - 8 to 10 hours
    - 11 to 14 hours
    - 15 or more hours

14. **How many <u>hours a day</u> do you usually work on the farm in the <u>summer</u>?**
    - 1 to 7 hours
    - 8 to 10 hours

- 11 to 14 hours
- 15 or more hours

15. How many hours a day do you usually work on the farm in the fall?

- 1 to 7 hours
- 8 to 10 hours
- 11 to 14 hours
- 15 or more hours

16. How many hours a day do you usually work on the farm in the winter?

- 1 to 7 hours
- 8 to 10 hours
- 11 to 14 hours
- 15 or more hours

17. On average, I have other people helping me work on the farm _____% of the time:

- 0-25%
- 26-50%
- 51-75%
- 76-100%

18. On average, I receive most help on the farm from: (please only circle one answer)

- Family members
- Neighbors
- Hired workhands
- Other (please specify) _____

19. Do you have any other employment? (If "No" skip to question 22)

- Yes
- No

20. What type of job is your other employment? _____

21. How many hours a week do you work at your other job in addition to farming?

_____

22. Please circle the amount of pre-tax income you earned in the last calendar year:

- Less than $0 (Loss)
- $0 - $10,000
- $10,001 - $20,000
- $20,001 - $30,000
- $30,001 - $40,000
- $40,001 - $50,000
- $50,001 - $60,000
- $60,001 - $70,000
- $70,001 - $80,000
- $80,001 - $90,000
- $90,001 - $100,000
- $100,001 - $110,000
- $110,001 - $120,000
- $125,000 or above

23. Are you currently taking medications (including vitamins and over the counter medications) for your physical health?

- Yes
- No

24. Have you been to see someone in the past 12 months for help with your physical health concerns (e.g., doctor, hospital, ER, or urgent care clinic, etc.)?

- Yes
- No

25. Are you currently taking medications (including vitamins and over the counter medications) for your mental or emotional health?

- Yes
- No

26. Have you been to see someone in the past 12 months for help with your mental or emotional health concerns (e.g., psychiatrist, family doctor, psychologist, professional counselor, social worker, spiritual advisor, or support group, etc.)?

- Yes
- No

27. In general would you say your physical health is:

- Excellent
- Very Good
- Good

- Fair
- Poor

28. In general would you say your mental health is:

- Excellent
- Very Good
- Good
- Fair
- Poor

29. How did you hear about this study? _____

BRS

Please indicate how much you agree or disagree with the following statements by circling a number for each item below:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
(1) I tend to bounce back quickly after hard times.	1	2	3	4	5
(2) I have a hard time making it through stressful events.	1	2	3	4	5
(3) It does not take me long to recover from a stressful event.	1	2	3	4	5
(4) It is hard for me to snap back when something bad happens.	1	2	3	4	5
(5) I usually come through difficult times with little trouble.	1	2	3	4	5
(6) I tend to take a long time to get over set-backs in my life.	1	2	3	4	5

Farm/Ranch Stress Inventory

DIRECTIONS: Listed below are some of the things that can contribute to farming/ranching related stress. Please rate each item according to how much stress it causes you where
(1) = NO STRESS, (2) = A LITTLE STRESSFUL, (3) = MODERATELY STRESSFUL and (4) = VERY STRESSFUL.

Stressors	**No Stress**	**A Little Stressful**	**Moderately Stressful**	**Very Stressful**
(1) Distance from shopping centers/school/recreation	**1**	**2**	**3**	**4**
(2) Lack of close neighbors	**1**	**2**	**3**	**4**
(3) Farm/ranch accidents and injuries	**1**	**2**	**3**	**4**
(4) The weather (inadequate/too much rainfall, snow, hail, etc.)	**1**	**2**	**3**	**4**
(5) Market prices for your crops/livestock	**1**	**2**	**3**	**4**
(6) Limited social interaction opportunities	**1**	**2**	**3**	**4**
(7) Seasonal variations in the workload (planting season, harvest, calving time, marketing time, etc.)	**1**	**2**	**3**	**4**
(8) Not enough money for day-to-day expenses (purchases, repairs, parts, fence, and building maintenance, etc.)	**1**	**2**	**3**	**4**
(9) High debt load	**1**	**2**	**3**	**4**
(10) Working with bankers and loan officers	**1**	**2**	**3**	**4**
(11) Not enough time to spend together as a family in recreation	**1**	**2**	**3**	**4**
(12) Concern over the future of the farm/ranch	**1**	**2**	**3**	**4**
(13) Not having the manpower to operate the farm/ranch	**1**	**2**	**3**	**4**
(14) Government export policy	**1**	**2**	**3**	**4**
(15) Operating hazardous machinery	**1**	**2**	**3**	**4**
(16) Taxes (high taxes, figuring taxes, etc.)	**1**	**2**	**3**	**4**
(17) Distance from doctors or hospitals	**1**	**2**	**3**	**4**
(18) Balancing the many roles I perform as a family member and a farmer/rancher	**1**	**2**	**3**	**4**
(19) Problems with machinery (purchases, repairs, breakdowns	**1**	**2**	**3**	**4**
(20) Problems with livestock or crops (illness, disease, noxious weeds, rodents)	**1**	**2**	**3**	**4**
(21) Not enough cash/capital for unexpected problems (illnesses, health care, breakdowns, other emergencies)	**1**	**2**	**3**	**4**
Please circle 3 for this line.	**1**	**2**	**3**	**4**
(22) Working with extended family members in the farm/ranch operation (parents, in-laws, children)	**1**	**2**	**3**	**4**
(23) Having too much work for one person	**1**	**2**	**3**	**4**
(24) Financing for retirement	**1**	**2**	**3**	**4**
(25) Government farm price supports	**1**	**2**	**3**	**4**
(26) Dealing with non-relative help (incompetent help, finding good help, supervising help)	**1**	**2**	**3**	**4**

Stressors	No Stress	A Little Stressful	Moderately Stressful	Very Stressful
(27) Outsiders not understanding the nature of farming/ranching	**1**	**2**	**3**	**4**
(28) Health care costs (direct costs and/or cost of insurance)	**1**	**2**	**3**	**4**
(29) Please list any other items you find stressful in relation to farming and rate them.				

Mindful Attention Awareness Scale

Instructions: Below is a collection of statements about your everyday experience. Using the 1-6 scale below, please indicate how frequently or infrequently you currently have each experience. Please answer according to what *really reflects* your experience rather than what you think your experience should be. Please treat each item separately from every other item.

1 Almost Always	2 Very Frequently	3 Somewhat Frequently	4 Somewhat Infrequently	5 Very Infrequently	6 Almost Never

(1) I could be experiencing some emotion and not be conscious of it until some time later.	1	2	3	4	5	6
(2) I break or spill things because of carelessness, not paying attention, or thinking of something else.	1	2	3	4	5	6
(3) I find it difficult to stay focused on what's happening in the present.	1	2	3	4	5	6
(4) I tend to walk quickly to get where I'm going without paying attention to what I experience along the way.	1	2	3	4	5	6
(5) I tend to not notice feelings of physical tension or discomfort until they really grab my attention.	1	2	3	4	5	6
(6) I forget a person's name almost as soon as I've been told it for the first time.	1	2	3	4	5	6
(7) It seems I am "running on automatic," without much awareness of what I'm doing.	1	2	3	4	5	6
(8) I rush through activities without being really attentive to them.	1	2	3	4	5	6
(9) I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there.	1	2	3	4	5	6
(10) I do jobs or tasks automatically, without being aware of what I'm doing.	1	2	3	4	5	6
(11) I find myself listening to someone with one ear, doing something else at the same time.	1	2	3	4	5	6
(12) I drive places on 'automatic pilot' and then wonder why I went there.	1	2	3	4	5	6
(13) I find myself preoccupied with the future or the past.	1	2	3	4	5	6
(14) I find myself doing things without paying attention.	1	2	3	4	5	6
(15) I snack without being aware that I'm eating.	1	2	3	4	5	6

The Brief COPE

We are interested in how people respond when they confront difficult or stressful events in their lives. There are lots of ways to try to deal with stress. **This questionnaire asks you to indicate what you generally do and feel when you experience stressful events**. Obviously, different events bring out somewhat different responses, but think about what you usually do when you are under a lot of stress.
Respond to each of the following items by circling one number for each, using the response choices listed just below. Please try to respond to each item separately in your mind from each other item. Choose your answers thoughtfully, and make your answers as true **for you** as you can. Please answer every item. There are no "right" or "wrong" answers, so choose the most accurate answer for **you**—not what you think "most people" would say or do. Indicate what **you** usually do when **you** experience a stressful event.

1 = I usually don't do this at all
2 = I usually do this a little bit
3 = I usually do this a medium amount
4 = I usually do this a lot

In general, when I experience stressful events…	**Not at all**	**A little bit**	**A Medium Amount**	**A lot**
1. I turn to work or other activities to take my mind off things.	1	2	3	4
2. I concentrate my efforts on doing something about the situation I'm in.	1	2	3	4
3. I say to myself "this isn't real."	1	2	3	4
4. I use alcohol or other drugs to make myself feel better.	1	2	3	4
5. I try to get emotional support from friends or relatives.	1	2	3	4
6. I give up trying to deal with it.	1	2	3	4
7. I take action to try to make the situation better.	1	2	3	4
8. I refuse to believe that it has happened.	1	2	3	4
9. I say things to let my unpleasant feelings escape.	1	2	3	4
Circle 1 for this line.	1	2	3	4
10. I've been getting help and advice from other people.	1	2	3	4
11. I use alcohol or other drugs to help me get through it.	1	2	3	4
12. I try to see it in a different light, to make it seem more positive.	1	2	3	4
13. I criticize myself.	1	2	3	4
14. I try to come up with a strategy about what to do.	1	2	3	4
15. I get comfort and understanding from someone.	1	2	3	4
16. I give up the attempt to cope.	1	2	3	4
17. I look for something good in what is happening.	1	2	3	4
18. I make jokes about it.	1	2	3	4
19. I do something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.	1	2	3	4
20. I accept the reality of the fact that it has happened.	1	2	3	4
21. I express my negative feelings.	1	2	3	4

In general, when I experience stressful events…	Not at all	A little bit	A Medium Amount	A lot
22. I try to find comfort in my religion or spiritual beliefs.	1	2	3	4
23. I try to get advice or help from other people about what to do.	1	2	3	4
24. I learn to live with it.	1	2	3	4
25. I think hard about what steps to take.	1	2	3	4
26. I blame myself for things that happened.	1	2	3	4
27. I pray or meditate.	1	2	3	4
28. I make fun of the situation.	1	2	3	4

PHQ-8

Over the **last two weeks**, how often have you been bothered by any of the following problems?

	(0) Not at all	**(1) Several days**	**(2) More than half of the days**	**(3) Nearly every day**
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself—or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed? Or the opposite—being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3

If you checked off any problems above, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people? (Please circle one)

Not difficult at all **Somewhat difficult** **Very difficult** **Extremely difficult**

GAD-7

Over the **last two weeks**, how often have you been bothered by any of the following problems?

	(0) Not at all	**(1) Several days**	**(2) More than half of the days**	**(3) Nearly every day**
1. Feeling nervous, anxious or on edge	0	1	2	3
2. Not being able to stop or control worrying	0	1	2	3
3. Worrying too much about different things	0	1	2	3
4. Trouble relaxing	0	1	2	3
5. Being so restless that it is hard to sit still	0	1	2	3
6. Becoming easily annoyed or irritable	0	1	2	3
7. Feeling afraid as if something awful might happen	0	1	2	3

PSS-10

The questions in this scale ask about your feelings and thoughts during the last month. In each case, you will be asked to indicate by circling how often you felt or thought a certain way, **over the past month.**

Question	Never	Almost Never	Sometimes	Fairly Often	Very Often
(1) In the last month, how often have you been upset because of something that happened unexpectedly?	0	1	2	3	4
(2) In the last month, how often have you felt that you were unable to control the important things in your life?	0	1	2	3	4
(3) In the last month, how often have you felt nervous and "stressed"?	0	1	2	3	4
(4) In the last month, how often have you felt confident about your ability to handle your personal problems?	0	1	2	3	4
(5) In the last month, how often have you felt that things were going your way?	0	1	2	3	4
(6) In the last month, how often have you found that you could not cope with all the things that you had to do?	0	1	2	3	4
(7) In the last month, how often have you been able to control irritations in your life?	0	1	2	3	4
(8) In the last month, how often have you felt that you were on top of things?	0	1	2	3	4
(9) In the last month, how often have you been angered because of things that were outside of your control?	0	1	2	3	4
(10) In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	0	1	2	3	4

Appendix C

Table 61. *Individual items from the FRSI loading onto the five FRSI factors.*

Finances • Not enough money for day to day expenses • High debt load • Not enough cash/capital for unexpected problems • Working with bankers & loan officers • Financing for retirement	**Isolation** • Lack of close neighbors • Limited social interaction opportunities • Distance from shopping centers/school/recreation, etc. • Distance from doctors or hospitals
Government and External Stress • Government export policy • Government farm price supports • Outsiders not understanding the nature of farming/ranching • Health care costs • Taxes (high taxes, figuring taxes, etc.)	**Operation Stressors** • Operating hazardous machinery • Farm/ranch accidents and injuries • The weather • Problems with livestock or crops • Problems with machinery • Market prices for your crops/livestock
Work Stressors • Not having the manpower to operate the farm • Having too much work for one person • Not enough time to spend together as a family in recreation • Dealing with non-relative help • Balancing the many roles I perform as a family member and a farmer/rancher • Seasonal variations in workload • Concern over the future of the farm/ranch • Working with extended family members in the farm/ranch operation	

Vita

Janna Lynn Imel was born on July 28, 1992 in Ashland, Kentucky. She graduated from Greenup County High School (Greenup, Kentucky) in 2010. She received her Bachelor of Arts in Psychology and a Certificate in Peace, Justice, and Conflict Transformation, from the University of Louisville (Louisville, Kentucky) in 2014. Janna earned her Master of Science in Psychology from Virginia Commonwealth University (Richmond, Virginia) in December 2016. In addition to her studies, Janna has been actively involved in clinical work. She has completed clinical practicums at the Hunter Holmes McGuire VAMC, Piedmont Geriatric Hospital, Center for Psychological Services and Development, Virginia Commonwealth University Counseling Services, MCV Ambulatory Care Center, and the Richmond Health & Wellness Program Behavioral Health Clinic. Janna has a long-standing passion for and commitment to older adults, and has honed her academic, research, and clinical experiences to focus on this population. Her dissertation is a bridge between her personal interests in the farming community and her dedication to aging research throughout graduate school. This fall, Janna will begin her yearlong predoctoral internship as an Interprofessional Geropsychology intern at the McGuire VAMC in Richmond, Virginia. Following her Ph.D., Janna hopes to become a staff psychologist at a VA Medical Center and become board certified in Geropsychology. She also hopes to work with rural populations and contribute to destigmatizing mental health in both rural and Veteran populations.