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The Intersection of Gender and Occupational Roles in Agriculture: Stress, Resilience, and Alcohol Behaviors of US Farmers

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Clinical Significance:

The findings in this article will expand practitioner's knowledge of the relationship between gender, occupational stress, and alcohol consumption in farmers living in the United States. A better understanding of this relationship will improve rural health practitioners' abilities to support farmers' health and well-being.

Abstract:

*Objective***:** The purpose of this study was to explore behavioral and mental health outcomes among a sample of farmers living in the United States and compare differences between male and female farmers. *Methods:* An online cross-sectional survey was distributed within the farming community by researchers, farming consultants, and community partners. Chi-Square and ANOVA analyses were used to explore relationships between variables of interest. *Results:* Female survey respondents reported significantly higher perceived stress, and significantly lower resilience than their male counterparts. A significant interaction effect was observed between gender and farm roles on alcohol consumption patterns, with female farm owners and managers reporting binge drinking behavior most frequently. *Conclusion:* This study identified distinct differences between respondents in terms of stress, resilience, and alcohol consumption patterns, based on both gender and occupational roles.

Keywords: Alcohol use, Resilience, Farmer, Perceived Stress, Gender Disparities, Occupational Roles

Objectives:

- Describe levels of stress, resilience, and alcohol use in the farming population.
- Illustrate the impact of gender and occupational role on farmer's stress and alcohol consumption patterns.
- Summarize gender inequalities, workplace culture, and gender roles among farmers.

Introduction:

Individuals working in agriculture have elevated stress levels compared to other occupations and their counterparts in the general population [1-3]. External stressors such as occupational hazards, financial pressures, extreme weather events, excessive workloads, and isolation are well documented in farming populations, which can cause physical and behavioral health issues [4-6]. In addition to day-to-day stress in the farming community, research conducted in farmers and ranchers in the Western United States indicates that agricultural producers experience considerable chronic stress, or 'stressor pileup' associated with their occupation [7]. Unique social, cultural, and environmental stressors may contribute to higher rates of alcohol use, excessive drinking, depression, and suicide in farmers [8-10]. The presence of elevated stress, coupled with a strong internal drive to succeed and maintain operations [11] (dubbed the 'agrarian imperative' by one researcher), may contribute to elevated rates of alcohol consumption within the farming community [12,13].

Resilience is a well-established protective factor against the impact of occupational stress on mental health [14]. However, chronic stress has been shown to undermine resilience, diminishing capacity to respond to new challenges [15]. Prior research in the farming community has identified resilience as a critical aspect of farmers' identities, and farmers may downplay their own challenges, or abstain from help-seeking behavior, in order to maintain the image of a resilient worker [16,17]. The cycle of persistent stress potentially undermining farmer's resilience, and farmers' abstinence from help-seeking behavior in order to maintain the perception of resilience, may lead to farmers' reliance on alcohol as a coping strategy for managing stress [6,18,19].

There are over 1.2 million female farmers in the United States, and the number of female farmers grew by 27% from 2012 to 2017. In addition, a majority of farms have female producers in decision-making roles [20]. Given the influx of female agriculture producers and the increasingly important role female farmers play in the economy, it is critical to gain a better understanding of health behaviors within this population to more effectively target stress and alcohol consumption among female farmers. Overall, very little research has been conducted on the female farming population, and there are few resources that have been developed to support mental health and substance use within the female farming population.

Research suggests that women in the agricultural industry are at higher risk for psychological distress [21-24]. Female farmers are more likely to take on multiple responsibilities while engaging in farm work including caregiving for family members, household duties, and childcare [25]. Role conflicts, family and relationship issues, and lower wages increase the risk of psychological distress in women working in agriculture [26,27]. In addition, females working in agriculture report feeling underappreciated and ostracized in a male-dominated industry [28]. Farm women report pressure to hold their community together, adhere to traditional roles, and nurture family, and experience distress when not measuring up to traditional stereotypes or conforming to community expectations [28]. Even though women working in agriculture report higher psychological distress and depression scores, they are more likely to talk about the health effects of farming on their partners and spouses and less likely to take care of their own well-being [29]. Women who participate in more masculine-associated roles on the farm like driving tractors, using pesticides, engaging in heavy manual labor, and working with machines report

poor mental health and higher rates of depression [30]. Stress associated with nonconformity and traditional stressors associated with farming may contribute to higher rates of stress and mental health disorders in farm women [28].

Studies examining alcohol use in the female farming population are limited; however, one recent study found elevated rates of short-term high-risk alcohol consumption in female farmers compared to the general population [21]. In addition, female farmers reported higher rates of weekly drinking compared to their counterparts in the general population [21]. A recent study found that according to AUDIT-C, 27.7% of its female farming respondents could be categorized as hazardous drinkers [31]. These findings should be considered in light of a nationwide increase in rates of heavy alcohol consumption among females, particularly because female farmers face unique occupational and lifestyle stressors that may compound the risk for alcohol consumption [32].

In prior research conducted on the farming population, female farmers consistently report lower levels of resilience than their male counterparts [33], although limited research has been conducted on this topic. There is a need for further research to examine the relationship between perceived stress and resilience among female farmers, and the farming population in general.

The purpose of this cross-sectional study is to compare the perceived stress, resilience, and alcohol consumption of male and female farmers. This study will explore alcohol use patterns and use standardized scales to measure stress and resilience in the farming population, as well as explore differences in experience based on occupational roles.

Methods:

Participants

An online survey was completed by 987 farm owners (51.1%), farm managers (29.9%), farm workers (15.0%), and farm spouses (4.0%). Most of the respondents self-identified as male (28.7% female, 0.01% nonbinary) and were between the ages of 35-45 (49.3%). The average respondent had high educational attainment, with 24.8% reporting a bachelor's degree and 17.1% reporting a graduate or professional degree. Most respondents (66.4%) identified as 2nd or 3rd generation farmers. The average age of the farmers was 33.42 years old (SD=6.9). The average age of respondents to this survey was considerably lower than the average age of farmers living in the United States, which may be attributable to the use of social media platforms for recruitment and the use of QR codes to direct potential respondents to the survey. In formative research, qualitative interview participants indicated that older generations of farmers would be less likely to engage in surveys about mental health and well-being, which may have resulted in the demographic profile skewing younger [16].

Female respondents to the survey were predominantly farm owners (33.9%) or farm managers (30.7%), with 21.6% reporting being a farm worker and 13.1% reporting being the spouse of a farmer. The average age of the female respondents was 33.23 years old (SD=7.763), and the majority were second (27.6%) and third (48.1%) generation farmers. The female sample was similarly educated compared to the main sample, with 28.6% reporting holding a bachelor's degree, and 9.9% reporting a graduate or professional degree.

Materials

A cross-sectional online survey was set up in Qualtrics and distributed to farm owners, farm managers, farm workers, and farm spouses across the United States. The survey was shared with farmers and consultants who worked with the researchers on formative research [6, 16] to pilot the instrument and test face validity. The survey was shared by researchers, farming consultants, and community partners at farmer's markets and on farm-related social media sites, as well as at farm-related events and conferences including both the 2023 Georgia and American Farm Bureau conferences. Both of these conferences were open to producers of all commodities, and the majority of respondents indicated that they were involved in multiple commodities. The most frequently reported commodities among this sample were fruit and vegetables (35.3%), beef cattle (26.6%), wheat (25.7%), corn (25.4%), and poultry and eggs (19.3%). Based on formative research, demographics, stigma, resilience, perceived stress, and alcohol use were included as variables of interest.

Perceived Stress Scale

The perceived stress scale (PSS) contains ten items that assess the degree to which individuals perceive situations in their lives to be stressful during the last month. The scale inquires about stress beyond the ability to cope, and past studies show good reliability and validity in rural populations [34]. Analysis in this study focused on the total score of respondents on the PSS, with scores ranging from 27-40 indicating high stress. The Cronbach's alpha of this scale was .854, indicating good reliability for this sample.

Stigma

Stigma was assessed using an 8-item scale (max score 40) adapted from the Internalized Stigma of Mental Illness (ISMI) scale and the Substance Use Stigma Mechanism Scale (SU-SMS). Previous research has indicated that public stigma gives rise to stereotypes, prejudice, and discrimination decreasing chances for farmers to seek help for mental health disorders [35]. In addition, self-stigma influences farmers' normative beliefs and negative attitudes about seeking mental healthcare [36]. This adapted scale allowed researchers to measure both internal and community stigma associated with seeking care for alcohol use and mental health care in rural areas. Cronbach's alpha of this scale was .909, indicating good reliability for this sample.

Resilience

Resilience was assessed using an 8-item (max score 55) scale adapted from the Transcultural Community Resilience Scale and the Brief Resilience Scale (BRS). Previous research in the farming community indicated that farmers' identification with resilience was a barrier to engaging with available healthcare resources [16]. The Cronbach's alpha of this scale was .804 indicating good reliability in this sample.

Alcohol Use

Alcohol use patterns, heavy drinking, and binge drinking behaviors were assessed using three items pulled from the Alcohol Use Disorders Identification Test (AUDIT). Participants were asked to report how often they had consumed alcohol in the last three months, the number of drinks they consumed on a typical day in the past three months, and the number of times they

had consumed six or more drinks on one occasion in the past three months (binge drinking). Categorical responses were assigned numerical properties for the purpose of analysis.

Procedure

An online survey was distributed from November 1st, 2022 to February 1st, 2023 through farming outlets across the United States. Marketing materials were developed that included information about formative research with the farming community, a survey link, a QR code, and contact information for researchers. The research was supported by UGA Cooperative Extension and Archway Partnership, as well as the Georgia Agricultural Wellness Alliance. Recruitment materials were shared at in-person farm-related conferences and events and shared online to specific farm-related social media sites. In addition, farmers were encouraged to share across state lines with other farmers they knew working in similar commodities.

Data analysis was completed in SPSS 28.0. An alpha threshold of 5% was used for all statistical tests. Demographic categorical data were analyzed using Pearson's chi-squared tests and Fischer's exact test when appropriate. ANOVA and t-tests were used to assess relationships between demographic variables and emotional and behavioral outcomes.

Results:

Demographics

Table 1 summarizes the primary demographic characteristics of the 987 survey respondents. The average age of the farmers was 33.42 years old (SD=6.9). The majority of respondents (76.19%) reported being millennials (25-40 years of age). Female respondents to the questionnaire were

significantly more likely to report being members of Generation X than male respondents (p<.001). Educational attainment was high among this sample, with 21.6% of all respondents reporting obtaining a bachelor's degree, and 11.1% reporting holding a master's level degree. Male respondents were more likely to report holding a doctorate degree, but average educational attainment was similar between male and female respondents. Female respondents were more likely to report being divorced or widowed than their male counterparts and were less likely to report being married at the time of their response. There was no significant difference in the number of children reported by male and female respondents. Compared to male respondents, females were less likely to report being a first-generation farmer, and more likely to report being a part of a fifth or sixth-generation farming operation. When considering occupational roles on the farm, female respondents were significantly more likely to report being a farm worker or the spouse of a farmer than their male counterparts, and significantly less likely to report holding the role of farm owner or manager. PSS scores were significantly associated with age with younger respondents reporting highest PSS scores (t=-4.043, df=985, p<.001).

Emotional and Behavioral Outcomes

This survey collected a variety of data about both emotional and behavioral health outcomes from respondents (Table 2). Female respondents reported significantly higher scores on the perceived stress scale (PSS) than their male counterparts (t=4.498, df=985, p<.001). The analysis did not reveal any significant differences in reported stigma between male and female respondents. Female respondents reported significantly lower resilience scores than male respondents (t=2.925, df=985, P=.002). When examining patterns of alcohol consumption, females were significantly more likely to report never drinking compared to males (p=.003), and

among male respondents, just under a quarter reported consuming alcohol 2 or 3 times per week (24.6%). When examining the number of drinks consumed in a typical day, males were more likely to report consuming between 5 and 9 drinks on a typical day than their female counterparts. Overall, while female respondents were significantly more likely to report not engaging in binge drinking and also reported drinking less than their male counterparts, those who did report alcohol consumption were more likely to engage in binge drinking behavior on a daily basis.

Relationship Between Demographics and Emotional and Behavioral Outcomes

When assessing the impact of gender and farm roles on perceived stress, a significant interaction effect was observed (Table 3). Women who reported working as farm owners and farm managers were more likely to report higher PSS scores, while male farm owners and managers reported the lowest PSS scores ($F= 2.979$, $p= .031$, $r^2 =.038$). There were no significant differences in gender and farm role's interaction effect on stigma and resilience within this sample. Gender and farm roles showed significant interaction effects for alcohol consumption patterns among respondents. Female farm owners and managers reported drinking more frequently than female farm workers or farm spouses. Males who indicated that they were farm workers reported consuming alcohol more frequently than any other farm role ($F= 2.191$, $p <.05$, $\boldsymbol{\eta}^2 = .047$). There were significant differences in patterns of binge drinking behavior based on the interaction of farm role and gender, with female farm owners and managers reporting binge drinking most frequently. Among male respondents, farm workers and spouses of farmers reported engaging in binge drinking more frequently than farm owners or managers ($F= 12.284$, $p <.001$, $\boldsymbol{\eta}^2 = .054$). Figures

1, 2, and 3 represent the interaction of gender and farm roles on emotional and behavioral outcomes.

Discussion:

Impact of Gender on Behavioral Health Outcomes

Mean PSS scores for this study were higher than the general US population in both males (29.19) and females (30.38). These findings are consistent with previous research in the farming population showing high rates of perceived stress [16,33]. The results of this study have increased the understanding of perceived stress in female farming populations. Our results are similar to findings from previous studies, suggesting women working in agriculture are at higher risk for psychological distress than their male counterparts [17,27]. A novel finding in this research is the impact both farm roles and gender had on respondents' stress levels. Women working in roles with increased responsibility, such as a farm owner or farm manager position, were more likely to report high PSS scores. Conversely, males who occupied these roles reported the lowest PSS scores. There are no known studies examining the impact of farm roles and gender on stress outcomes, but research conducted on other high-risk, male dominated occupations indicates that women in managerial positions often report higher stress and poor mental health outcomes [37]. Other research found females working in male-dominated industries often report greater occupational stress than women in more gender-balanced occupations [38].

Physical, psychological, and environmental stressors may be exacerbated in farming women due to a number of risk factors. Women face increased physical and health-related challenges

working in male-dominated industries and may experience stress associated with not being able to perform specific tasks due to physical abilities [39]. Women in male-dominated industries are also more likely to experience imposter syndrome than their male counterparts [40]. Prior research has connected females' experience of imposter syndrome in male-dominated occupations to a combination of factors, including gender-biased workplace infrastructure and policies, a lack of acceptance from male peers due to pride and resistance to change, and expectations of women to conform to traditional gender roles [40]. Women who own farms and manage farming operations may feel these effects more acutely due to the low percentage of females working in elevated positions in agriculture. While the proportion of female farmers is increasing, the majority of agriculture producers in the United States are male [41], and the additional occupational challenges associated with working in a predominantly male industry could contribute to elevated rates of stress in females working in agriculture.

Gender inequalities in financial earnings, domestic labor, and family care may also contribute to higher levels of stress in farming women. Women in agriculture are often tasked with the responsibilities of childcare, elder care, and provision of health insurance via non-farming jobs [42]. Males comprise a majority of farm owners and managers in the United States, so females who occupy these positions might feel a need to overcompensate by taking on more domestic labor or care responsibilities, leading to higher perceived stress [43]. While this study didn’t find a significant relationship between number of children and measures of alcohol use, more research should be conducted to examine the relationship between partner support and drinking behaviors in female farmers given that relationship stress has been found to have a significant

indirect effect on binge drinking behavior in rural women [18]. Another factor that may contribute to elevated stress among female farmers is income inequality. A study of agriculture producers living in North Carolina found male farmers earn three times the gross annual household income of female farmers [44]. Additional research on a national scale found large income gaps in male and female farmers and significant disparities between the proportion of land owned and operated by female farmers [45]. Given that financial concerns are commonly reported as a significant stressor among farmers [4, 6, 44], women working in agriculture may be impacted more significantly by these stressors due to inequalities in land ownership and income.

Influence of Occupational Role and Stress on Drinking Behaviors of Female Farmers

While the exact prevalence of alcohol use in the farming community is unknown, high occupational stress has been connected to increased rates of alcohol consumption in the farming community [21]. Higher rates of heavy and binge drinking behaviors in female farm owners and managers could indicate there are workplace cultural factors in agricultural industries that adversely affect female drinking patterns. Some research has found female managers working in other male-dominated industries are at a higher risk for heavy drinking and alcohol use disorders [46]. Females in managerial positions in male-dominated occupations are also more likely to drink immediately after work and have an increased risk of alcoholism and diagnosis of AUD compared to the general population [46]. Increased severity and frequency of perceived occupational stress is associated with a significant increase in drinking as a coping behavior, increased volume of alcohol consumption, and adverse consequences related to alcohol consumption [47].

Previous research has linked risk factors for alcohol use in predominantly male industries to gender, job insecurity, low levels of supervisory support, workplace harassment, and job demands [48]. Female farmers could be adopting masculine traits or behaviors in an attempt to cope with elevated stress of working in a male-dominated industry. This behavioral adaptation has been reported by women working in male-dominated industries [49]. Research among females in other high-risk occupations such as firefighting has found that, over time, rates of binge drinking and volume of alcohol consumption among females increased to match their male peers [37]. In contrast, males with lower farm responsibilities were more likely to report heavy drinking and binge drinking behaviors. Previous research has found men working in non-managerial positions in male-dominated occupations are more likely to drink alone and report negative consequences from alcohol use [46]. More research should be conducted to understand the intersection of gender and occupational roles in agricultural communities.

Resilience

Lower resilience scores reported among female farmers may be related to the observed trend of high attrition in women working in other male-dominated industries like the skilled trades and the military [40]. While there is limited research that considers gender as a unique factor influencing resilience, the work that does exist indicates women working in male-dominated industries often contend with unfounded criticism of their work abilities, isolation from peers, discrimination, and a deficit of family-friendly policies, in addition to conventional occupational stressors [48]. This compounding of work-related stress may undermine female farmers' resilience and could contribute to both elevated perceived stress and patterns of alcohol consumption and binge drinking behavior among women working in agriculture.

Fortunately, prior research conducted within the farming population indicates that resilience can be learned and may serve as a protective factor against both stress and risky behavior like binge drinking [50,51]. The use of the Bridger's Resilience for Gender Inclusion Model (RGI) may serve as an effective tool for promoting resilience within female farmers and should be considered as a framework for future intervention design [52]. The University of Minnesota's Cultivating Resiliency project, which specifically explores best practices for improving resiliency among women working in agriculture, found the cultivation of relationships was a critical component of developing the resilience of farm women, even in a digital format [50]. The use of webinars, anonymous online meetings, and digital media should be prioritized as modes of fostering community within women in agriculture, which may help combat the isolation faced by many women who work in the male-dominated space of agriculture, directly addressing the isolation reported in Bridgers et al.'s work on the subject [52]. In fact, research exploring differences in resilience among men and women indicates that social support is a much more significant mediator of the relationship between stress and resilience in women than men, implying that social support plays a more significant role in women's' ability to contend with stress, and further reinforcing the importance of developing interconnected networks of female farmers to provide much-needed social support in the face of considerable occupational stress [53]. Other researchers in the field of agriculture have called for training to develop resilience in the agricultural community as a manner of combatting occupational stress regardless of gender [33]. Findings from the Cultivating Resilience project indicate that women working in agriculture are receptive to future programming that seeks to improve their resilience through networking with other female agricultural producers [50].

Limitations

The findings of this research should be considered in light of a number of limitations. First, the sample used for this research was a convenience sample; and therefore, our results may not be generalizable beyond those who completed the online questionnaire. The questionnaire was only administered one time to each participant, and the cross-sectional nature of this research also limits the generalizability of the findings. Farmers self-reported behavioral outcomes and may have over or underestimated alcohol consumption due to recall bias. In addition, while the questionnaire was completed by farmers across the United States, responses from some states were overrepresented. Additionally, the sample population was 33 years old on average, which is considerably younger than the average age of farmers in the United States at 57.5 years old [54]. Younger farming populations are more likely to report higher alcohol consumption and higher perceived stress scores [7,13].

Conclusion

Overall, these findings highlight the significant impact of gender and occupational role among farmers. Because female farmers were found to have higher perceived stress and worse mental health outcomes than their male counterparts, future studies that examine the influence of specific gender inequalities, workplace culture, and gender roles among farmers are warranted. The finding that female farmers in occupational roles with increased responsibility are more likely to engage in binge drinking should be considered in future interventions that aim to support female farmers in their occupational, social, and personal roles. Reducing systemic inequalities in the workplace while providing additional support for female farmers may help to alleviate poor mental health outcomes and negative coping strategies.

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Figure Legends

Figure 1 shows the estimated marginal means for PSS Scores using a factorial ANOVA. The dotted line shows average PSS scores for female respondents by occupational role. The solid line shows average PSS scores for male respondents by occupation role.

Figure 2 shows the estimated marginal means for current drinking scores using a factorial ANOVA. The dotted line shows average current drinking scores for female respondents by occupational role. The solid line shows average current drinking scores for male respondents by occupational role. A Likert scale measuring current alcohol use was converted to continuous scale (1= never, 2= monthly or less, 3= 2-4 times per month, 4= 2-3 times per week,5= 4 or more times per week).

Figure 3 shows the estimated marginal means for binge drinking scores using a factorial ANOVA. The solid line shows average binge drinking scores for female respondents by occupational role. The black line shows the average binge drinking scores for male respondents by occupational role. A Likert scale measuring binge drinking was converted to a continuous scale (1= Never, 2= Less than Monthly, 3 = Weekly, 4= Daily or Almost Daily).

Figure 1: Estimated Marginal Means for PSS Scores Factorial ANOVA

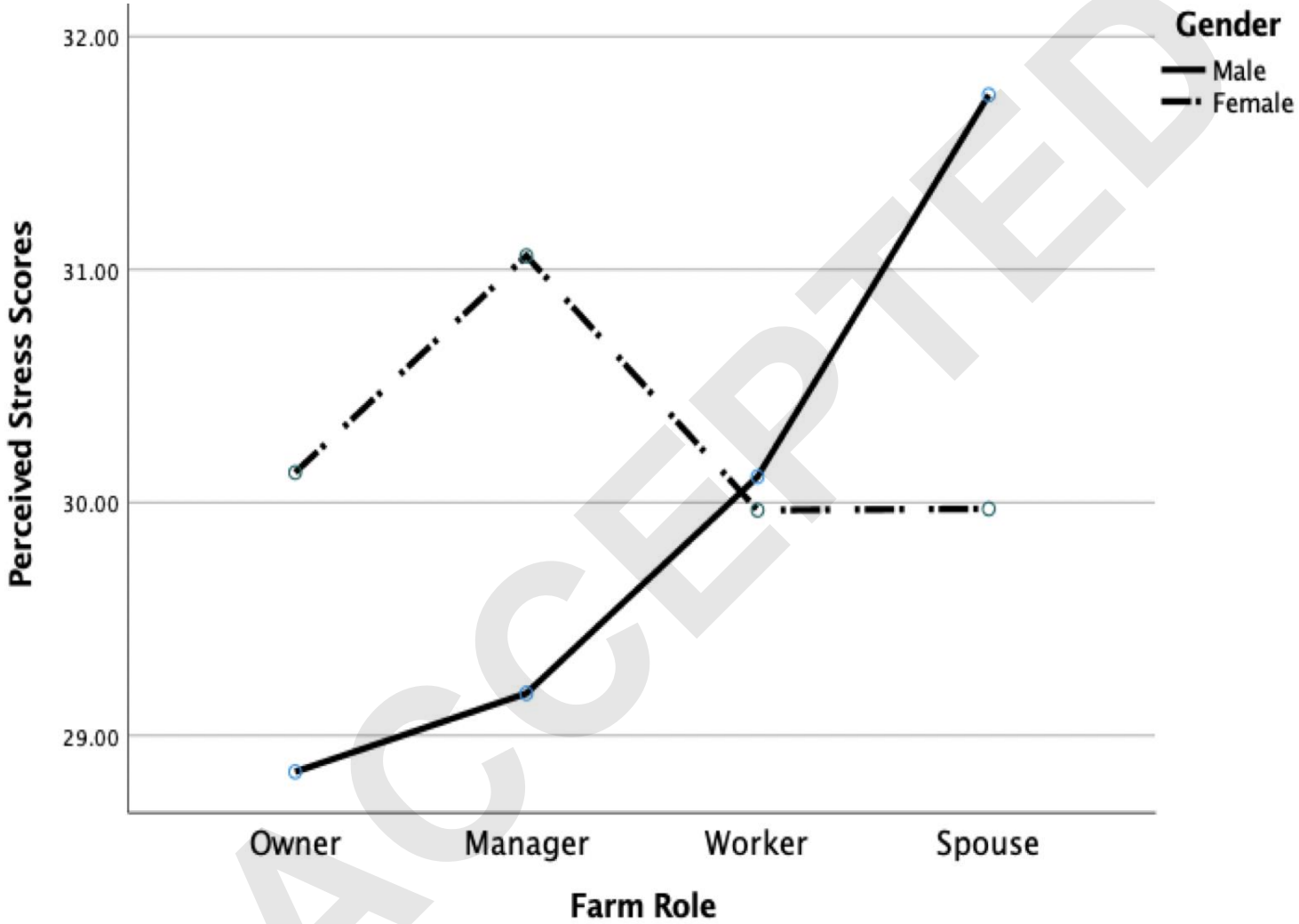

Figure 2: Estimated Marginal Means for Current Drinking Scores Factorial ANOVA

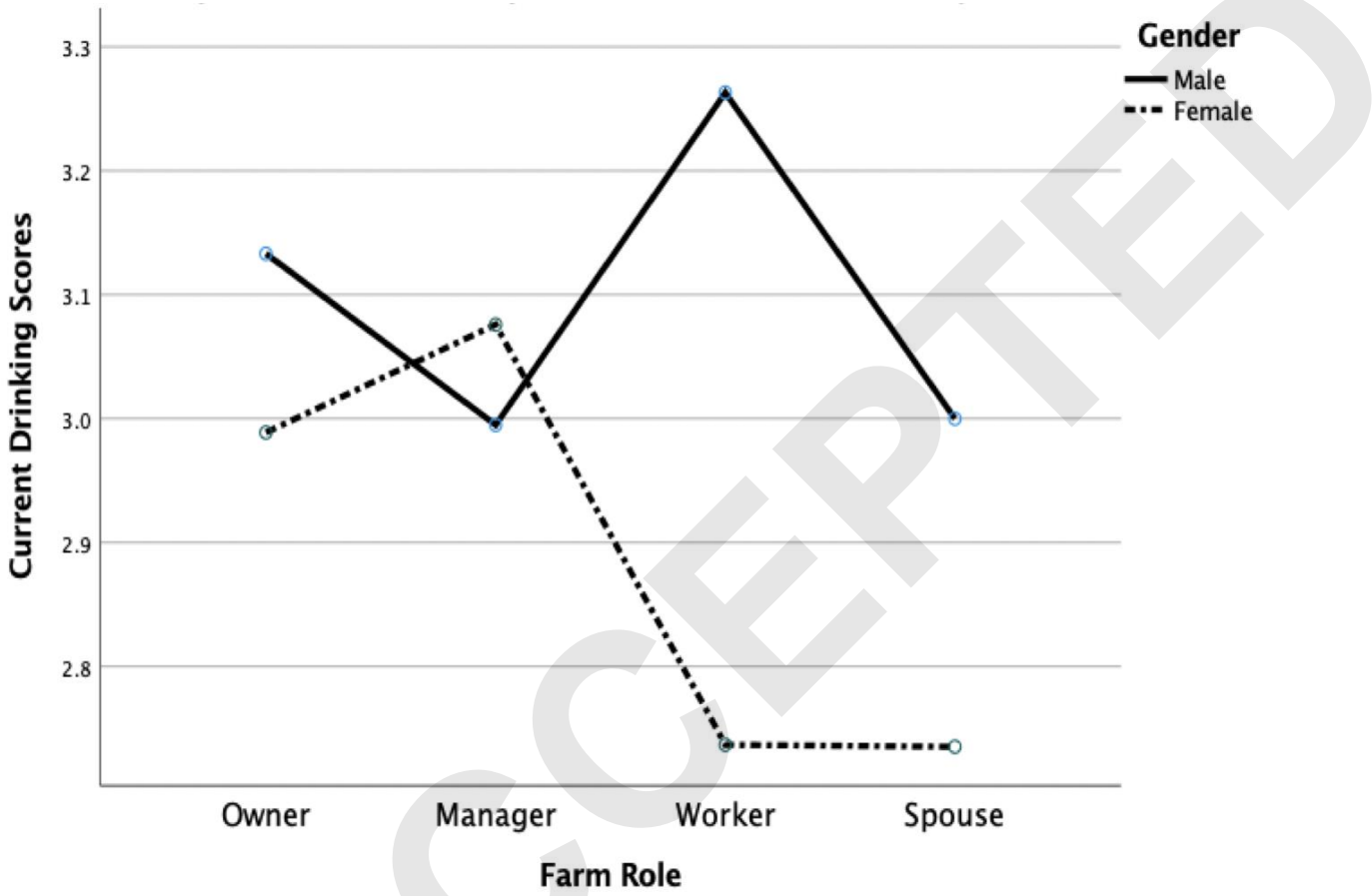

Figure 3: Estimated Marginal Means for Binge Drinking Scores Factorial ANOVA

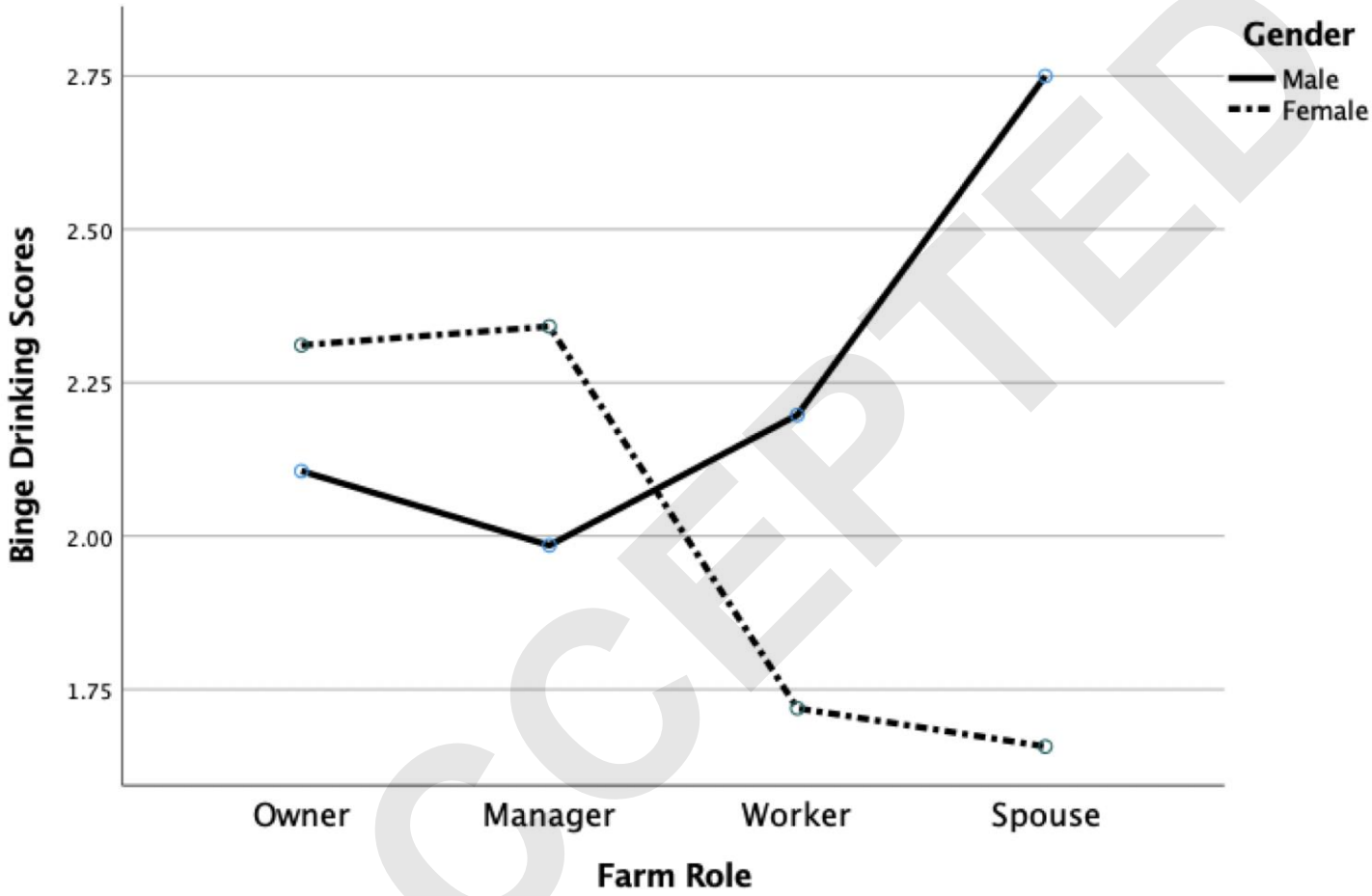

Table 1: Demographic Information

Variable	All Respondents (n= 987)	Female Respondents (n= 283)	Male Respondents (n= 698)	P-Value
Generation				**P<.001**
Gen Z	150 (15.53%)	45 (16.36%)	105 (15.19%)	
Millennials	736 (76.19%)	197 (71.63%)	539 (78.00%)	
Gen X	77 (7.97%)	31 (11.27%)	46 (6.66%)	
Baby Boomer	3 (0.03%)	2 (0.07%)	1 (0.01%)	
Marital Status				**P<.001**
Single (never married)	151 (15.3%)	44 (15.5%)	107 (15.3%)	
Married	790 (80%)	217 (76.7%)	571 (81.8%)	
Divorced	28 (2.8%)	11 (3.9%)	15 (2.1%)	
Widowed	12 (1.2%)	7 (2.5%)	3 (0.4%)	
In a Domestic Partnership	5 (0.5%)	4 (1.4%)	1 (0.1%)	
Generation Farmer				**P<.001**
First	154 (15.6%)	27 (9.5%)	126 (18.1%)	
Second	338 (34.2%)	78 (27.6%)	258 (37.0%)	
Third	346 (35.1%)	136 (48.1%)	208 (29.8%)	
Fourth	120 (12.2%)	29 (10.2%)	91 (13.0%)	
Fifth	13 (1.3%)	5 (1.8%)	7 (1.0%)	
Sixth (+)	15 (1.5%)	7 (2.5%)	8 (1.1%)	
Farm Role				**P<.001**
Farm Manager	294 (29.4%)	87 (30.7%)	205 (29.4%)	
Farm Owner	482 (48.8%)	96 (3.9%)	384 (55.0%)	
Farm Worker	146 (14.8%)	61 (21.6%)	84 (12.0%)	
Spouse of Farmer	42 (4.3%)	37 (13.1%)	4 (0.6%)	

Table 1: Demographic InformationNote: Categorical variables used Pearson's Chi-Square test or Fisher's Exact Test where applicable.

Table 2: Emotional and Behavioral Outcomes

Variable	All Respondents (n= 981)	Female Respondents (n= 283)	Male Respondents (n= 698)	P-Value
PSS Score (mean, SD)	29.536, 3.748	30.379, 3.766	29.189, 3.681	**P<.001**
Resilience Score (mean, SD)	35.802, 4.893	35.099, 4.825	36.103, 4.891	**P=.002**
Stigma Score (mean, SD)	24.086, 7.777	24.067, 6.777	24.069, 8.152	P=.499
Frequency of Alcohol Consumption (Current Drinking)				**P=.003**
Never	41 (4.2%)	17 (6.0%)***	23 (3.3%)	
Monthly or Less	232 (23.5%)	73 (25.8%)	157 (22.5%)	
2-4 Times per Month	372 (37.7%)	108 (38.2%)	264 (37.8%)	
2-3 Times per Week	215 (21.8%)	41 (14.5%)	172 (24.6%)	
4 or More Times per Week	75 (7.6%)	23 (8.1%)*	52 (7.4%)	
Frequency of Binge Drinking (Binge Drinking)				**P<.001**
Never	192 (19.6%)	60 (21.2%)***	132 (18.9%)	
Less Than Monthly	365 (37.0%)	138 (48.8%)	356 (51.0%)	
Weekly	242 (24.5%)	43 (15.2%)	166 (23.8%)	
Daily or Almost Daily	121 (12.3%)	22 (7.8%)***	14 (2.0%)	
Number of Drinks in a Typical Day (Heavy Drinking)				**P<.001**
1 or 2	142 (14.5%)	56 (19.8%)	86 (12.3%)	
3 or 4	363 (37.0%)	123 (43.5%)	240 (34.4%)	
5 or 6	241 (24.6%)	54 (19.1%)	187 (26.8%)	
7 to 9	119 (12.1%)	17 (6.0%)	102 (14.6%)	
10 or More	66 (6.7%)	13 (4.6%)	53 (7.6%)	

Note: Categorical variables used Pearson's Chi-Square Test or Fischer's Exact Test where applicable. Continuous variables used an independent t-test (reported with means). Bolded values are significant at the 5% level or higher.

Table 3: Results of ANOVA using Gender, Farm Roles, and Outcome Variables

Dependent Variable	Variable	*SS*	*df*	*MS*	*F*	η^2
PSS	Gender	4.591	1	4.591	4.591	0.038
	Farm Role	76.400	3	25.467	1.865	
	G x FR	122.066	3	40.689	2.979*	
	Error	12619.259	924	13.657		
Binge Drinking	Gender	2.987	1	2.987	5.365*	0.054
	Farm Role	5.832	3	1.944	3.492*	
	G x FR	20.516	3	6.839	12.284**	
	Error	501.067	900	0.557		
Heavy Drinking	Gender	4.383	1	4.383	5.425*	0.047
	Farm Role	6.873	3	2.291	2.836*	
	G x FR	2.384	3	0.795	0.984	
	Error	673.731	834	0.808		
Current Drinking	Gender	2.136	1	2.136	2.191	0.018
	Farm Role	0.756	3	0.252	0.258	
	G x FR	7.675	3	2.588	2.624*	
	Error	876.411	899	0.957		

*Note: *p < .05. **p < .001.*