

BRIEF REPORT

Associations Between Support Gaps and Agricultural Stress

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Farmers experience high levels of stress, which may be alleviated by the receipt of social support. However, people do not always receive the amount of support they desire, potentially resulting in negative consequences. In the present study, we examine associations between U.S. farmers' ($N = 130$) experiences of informational and emotional support gaps and dimensions of perceived stress related to their occupation. Gaps in informational support were positively associated with farmers' reports of general perceived stress as well as stress due to time pressures. Emotional support gaps were negatively associated with stress due to economic and climatic conditions.

Public Health Significance Statement

This study found that discrepancies between the amount of social support farmers in the United States desire and the amount of social support they actually receive are associated with farmers' stress levels. Associations varied depending on the type of social support and type of stress. These findings are important, as farm stress is associated with a host of negative outcomes.

Keywords: support gap, agriculture, farmer, stress, well-being

Farmers in the United States experience stress from multiple sources, such as weather conditions and farm finances (e.g., Hovey & Seligman, 2006). The chronic stress farmers experience is associated with negative outcomes, including substance abuse, poor physical health, family conflict, depression, anxiety, greater risk of injury, and suicide (Hovey & Seligman, 2006; Jones-Bitton et al., 2020; Sprung, 2022; Tiesman et al., 2015).

Though risk factors for farmers' stress have received ample scholarly attention, protective factors have received less (Liang et al., 2021). Research and theory indicate that social support, which refers to resources provided to those in need (e.g., MacGeorge et al., 2011), can buffer the negative effects of stress (Cohen & Wills, 1985). Unfortunately, despite its potential helpfulness, people do not always receive the support they

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desire (Xu & Burleson, 2001). Desired support refers to the specific amount and forms of support that people feel they need to cope with stress, whereas received support refers to the actual support that they receive from others.

The support gap hypothesis (SGH) posits that when levels of received support fail to match levels of desired support, individuals experience support gaps (Xu & Burleson, 2001). The SGH, as well as an emerging theory of support gaps (e.g., Pederson et al., 2020), maintains that a match between support desired and received leads to the most optimal outcomes for recipients. Accordingly, a deficit (i.e., more support desired than received) or surplus (i.e., more support received than desired) of support is predicted to lead to a variety of negative personal and relational consequences (Joseph et al., 2016). Wang (2019) explained that support gaps can hinder the process of coping with stressors effectively “by causing negative feelings like anger, disappointment (Cutrona, 1996), and/or hurt (McLaren & High, 2015) as well as by lowering positive self-regard and self-worth (Feeney & Collins, 2015)” (p. 3450).

Farmers experience high levels of stress and its potentially devastating consequences. It is important to understand unique contributions to farmers' stress, such as support gaps. Thus, the present study examines links between support gaps and farmers' experience of multiple types of stress associated with their occupation.

Farmers' Stress

Farmers experience stress associated with a variety of topics, and this stress can have significant physiological and psychological effects (Hovey & Seligman, 2006). Eberhardt and Pooyan (1990) identified six dimensions of farm stress. *Hazardous working conditions* refer to stress associated with potentially dangerous farm labor, such as handling chemicals and operating hazardous machinery. *Personal finances* refer to farmers' concerns about such topics as repayment of farm loans and financing their retirement. *Geographic isolation* concerns stress associated with living and working far from friends, health care, and amenities. *Time pressure* refers to stress associated with not having enough time or manpower to complete necessary tasks on the farm. Stress due to *climatic conditions* entails concerns related to weather that affects crops, such as rainfall levels, temperature, and wind

erosion. Finally, stress about *general economic conditions* refers to concerns about government policies that influence farmers (e.g., export policies).

Farmers and Social Support

Recent research suggests that social support may have positive benefits for farmers, including enhanced psychological well-being and reduced levels of depression (e.g., Deegan & Dunne, 2022). This research has focused on the effects of general perceived support availability, that is, beliefs about the availability of support if it should be needed (MacGeorge et al., 2011). However, measures of general perceived support availability do not consider the amount of support desired or received, which the SGH maintains is important in understanding support outcomes. Furthermore, they do not consider the specific types of support farmers desire to cope with their stress. Pragmatically, this information is important, as it can lend itself to future outreach efforts to improve farmers' support experiences.

We focus on two forms of support farmers may desire and receive: emotional and informational (MacGeorge et al., 2011). Emotional support refers to behaviors that comfort and soothe distressed emotional states. For example, emotional support behaviors include nonverbal displays of affection such as hugs as well as verbal expressions of empathy. On the other hand, informational support involves problem-solving behaviors provided to improve upsetting situations. For example, people may provide informational support by giving advice about a problem or by helping the recipient explore the benefits and drawbacks of different solutions to their problem.

Research has provided support for the SGH with regard to emotional and informational support in other contexts. For example, Joseph et al. (2016) observed that immediately following a supportive interaction between couples regarding a stressor, a smaller discrepancy between desired and received emotional support was associated with more positive affect, less negative affect, and greater relationship satisfaction through cognitive reappraisal. In the present study, we examine associations between informational and emotional support gaps and farmers' experiences of stress. Empirical research in other contexts has indicated associations between support gaps and

perceived stress. For example, Wang's (2019) study of emerging adults' perceptions of support from their parents indicated support for the SGH: Perceived stress was lowest when there was a match between support received and desired, for all forms of support. We thus pose the following research question to examine these effects in a population of farmers:

Research Question (RQ1): Are support gaps in (a) emotional support and/or (b) informational support associated with farmers' general perceived stress?

Specific Farm Stressors

Research indicates six key dimensions of farm stress (Eberhardt & Pooyan, 1990). Most research on these sources of stress is descriptive (e.g., Eberhardt & Pooyan, 1990; Rudolphi et al., 2020). Relatively little research links the sources of stress to outcomes, though research which does so indicates outcomes may vary by stressor (e.g., Rudolphi et al., 2020). Thus, we ask:

Research Question (RQ2): Are gaps in emotional support associated with farmers' stress due to (a) hazardous working conditions, (b) personal finances, (c) geographic isolation, (d) time pressure, (e) climatic conditions, and/or (f) general economic conditions?

Research Question (RQ3): Are gaps in informational support associated with farmers' stress due to (a) hazardous working conditions, (b) personal finances, (c) geographic isolation, (d) time pressure, (e) climatic conditions, and/or (f) general economic conditions?

Method

Participants and Procedure

Participants were agricultural producers in the United States. Other eligibility criteria included being at least 18 years of age and able to read and write in English. Participants were recruited in person at meetings of agricultural producers (e.g., farm expos) and online via targeted Facebook advertising and posts to agricultural commodity group pages. Participants who self-identified as meeting the eligibility criteria via an initial screening survey were interviewed by phone to confirm eligibility. Participants were compensated with a \$40 gift card to an online retailer for completing two surveys (the data reported here are derived from the first survey only). A total of 135 farmers participated in the survey. After removing five incomplete responses, 130 cases were used for

analysis. All procedures were approved by the authors' institutional review board.

Most participants (90.2%) farmed in a Midwestern state where recruitment efforts were focused. They were on average 46.53 years old ($SD = 12.69$, $range = 21-75$). Men comprised 47.7% of the sample; women comprised 52.3%. Most participants were White (95.4%); 2.3% reported multiple races, and less than 1% reported they were Hispanic/Latino or American Indian/Alaskan Native, respectively (one person chose not to respond).

Measures

General Perceived Stress

General perceived stress was measured using the validated 10-item Perceived Stress Scale (Cohen et al., 1983). Participants rated each item on a scale of 1 (*never*) to 5 (*very often*; e.g., "In the last month, how often have you felt nervous and 'stressed'???"). The 10 items were averaged to create a composite score ($\alpha = .87$, $M = 3.04$, $SD = .65$).

Support Desired and Received

Support desired and received were operationalized using items from the informational and emotional support subscales of Xu and Burleson's (2001) scale of support types. Participants rated each item twice: once for the extent to which they desired that support and once for the extent to which they received that support from their family and friends. Importantly, they were asked to reflect on the support desired and received *with regard to their farm-related stress*. Items were rated on a 5-point scale (1 = *didn't [desire/receive] at all*, 5 = *[desired/received] a great deal*). Four items were used to assess each subscale (first reported α is for desired; the second is for received): emotional ($\alpha = .65$, $\alpha = .82$) and informational ($\alpha = .83$, $\alpha = .81$). An example emotional support item is: "Expressing understanding of a situation that is bothering you"; an example informational support item is: "Analyzing a situation with you and telling you about available choices and options."

Farm Stress

Farm stress was measured using the Farm Stress Survey (Eberhardt & Pooyan, 1990).

Participants were asked about the degree to which they are affected by these six sources of farm stress on a 4-point scale bounded by 1 = *not at all* and 4 = *a great deal*: hazardous working conditions, seven items, $\alpha = .83$; geographic isolation, five items, $\alpha = .79$; personal finances, five items, $\alpha = .70$; time pressure, four items, $\alpha = .89$; climatic conditions, four items, $\alpha = .80$; and general economic conditions, three items, $\alpha = .76$.

Results

To create variables representing support gaps, we calculated the absolute value of difference between desired and received support, using the procedure described by Joseph et al. (2016), so that larger numbers indicate the less ones' standards are met (regardless of whether it was more or less support than desired). Scores of 0 indicate exact matches between support received and desired: for emotional support, $M = 0.97$, $SD = 0.84$, $range = 0.00\text{--}3.75$, and for informational support, $M = 0.85$, $SD = 0.76$, $range = 0.00\text{--}3.00$. Table 1 includes correlations between study variables. To analyze the research questions, multiple regression analyses were conducted for each dependent variable, examining the effects of emotional and informational support gaps on that dimension of stress.

General Perceived Stress (RQ1)

The model examining the effects of emotional and informational support gaps on general perceived stress was significant, $R^2 = .16$, $F(2, 126) = 11.69$, $p < .001$. Emotional support gaps did not significantly predict perceived stress

($\beta = -.14$, $p = .13$, 95% CI $[-0.28, 0.05]$). Informational support gaps were significant predictors of perceived stress, with greater gaps associated with more stress ($\beta = .37$, $p < .001$, 95% CI $[0.21, .53]$).

Hazardous Working Conditions (RQ2a and RQ3a)

Emotional and informational support gaps did not significantly predict participants' ratings of stress due to hazardous working conditions, $R^2 = .04$, $F(2, 126) = 2.30$, $p = .10$.

Personal Finances (RQ2b and RQ3b)

Emotional and informational support gaps did not significantly predict participants' ratings of stress due to personal finances, $R^2 = .03$, $F(2, 126) = 1.98$, $p = .14$.

Geographic Isolation (RQ2c and RQ3c)

Gaps in emotional and informational support did not significantly predict participants' ratings of stress due to geographic isolation, $R^2 = .03$, $F(2, 126) = 2.03$, $p = .14$.

Time Pressure (RQ2d and RQ3d)

The model examining the effects of emotional and informational support gaps on participants' ratings of stress due to time pressure was significant, $R^2 = .13$, $F(2, 126) = 9.14$, $p < .001$. Though emotional support gaps did not significantly predict ratings of stress due to time pressure ($\beta = .01$, $p = .95$, 95% CI $[-0.18, 0.17]$), informational support gaps did, with

Table 1
Correlations Among Study Variables

Variable	1	2	3	4	5	6	7	8	9
1. Emotional support gap	—								
2. Informational support gap	.39**	—							
3. General stress	.04	.38**	—						
4. Hazardous work	-.18*	-.07	-.05	—					
5. Finances	-.06	.12	.37**	.25**	—				
6. Geographic isolation	-.15	.03	.16	.43**	.30**	—			
7. Time pressure	.14	.36**	.43**	-.02	.39**	.19*	—		
8. Climate	-.14	.09	.12	.41**	.39**	.21*	.19*	—	
9. General economic	-.24**	-.12	.13	.46**	.46**	.32**	.00	.33**	—

* $p < .05$. ** $p < .001$.

larger gaps associated with greater stress ($\beta = .39, p < .001, 95\% \text{ CI } [0.23, 0.54]$).

Climatic Conditions (RQ2e and RQ3e)

The model examining emotional and informational support gaps on stress due to climatic conditions was significant, $R^2 = .05, F(2, 126) = 3.51, p = .03$. Emotional support gaps were a significant predictor of stress due to climatic conditions ($\beta = -.21, p = .02, 95\% \text{ CI } [-0.39, -0.05]$). The greater the support gap, the less stress due to climatic conditions was reported. Informational support gaps did not significantly predict ratings of stress due to climatic conditions, though the effect was positive and approached significance ($\beta = .18, p = .05, 95\% \text{ CI } [0.02, 0.39]$).

General Economic Conditions (RQ2f and RQ3f)

The model examining the effects of gaps in support on participants' ratings of stress due to general economic conditions was significant, $R^2 = .07, F(2, 126) = 4.36, p = .02$. Emotional support gaps were a significant predictor of stress due to general economic conditions ($\beta = -.25, p = .01, 95\% \text{ CI } [-0.43, -0.07]$). The larger the gap in emotional support, the less participants rated their stress due to general economic conditions. Informational support gaps did not significantly predict ratings of stress due to general economic conditions ($\beta = -.02, p = .83, 95\% \text{ CI } [-0.22, 0.19]$).

Discussion

Summary of Findings

Farmers in the United States experience high levels of stress, which can lead to harmful outcomes (Hovey & Seligman, 2006; Tiesman et al., 2015). As such, understanding predictors of their stress is important. Informed by the SGH (e.g., Xu & Burleson, 2001), we examined how gaps in informational and emotional support may be associated with farmers' experience of general perceived stress as well as multiple dimensions of farm-related stress. We found that informational support gaps predicted greater general perceived stress as well as greater stress due to time pressure, whereas emotional support gaps were

associated with less stress due to climatic conditions and general economic conditions.

Theoretical Implications

As in previous studies (Wang, 2019), gaps in informational support were associated with greater general perceived stress. Though mediators were not assessed in the present study, support gap theory suggests that farmers who experience gaps in informational support may experience unpleasant affect and/or find themselves unworthy of appropriate support, increasing their perceived stress. Gaps in informational support were also associated with stress due to time pressure. Time pressure has been a significant concern for farmers in past research (Eberhardt & Pooyan, 1990; Rudolphi et al., 2020) and exhibited the highest mean among the topics in the present study. With regard to this topic, informational support may involve providing advice about how to manage time pressure or helping farmers to strategize about time usage. As such, it appears that due to the salience of the topic, gaps in informational support may be particularly consequential.

A surprising finding was that the greater the gap in emotional support, the less stress participants reported regarding general economic and climatic conditions. These findings are difficult to explain in the context of the SGH and prior research. In the extant research, emotional support behaviors such as listening and expressing empathy are largely seen as helpful and are associated with positive outcomes (MacGeorge et al., 2011). However, sometimes, receiving even desired support is stressful; it can threaten self-esteem or be overwhelming (e.g., Bolger et al., 2000), which may be exacerbated by farmers' general desire for stoicism and self-reliance. It is also possible that the findings are a reflection of the quality of emotional support farmers receive regarding these topics, for example, if emotional support quality is poor, farmers who receive more support than desired may not benefit. However, why this pattern for emotional support gaps emerged for these two topics is unknown, and future research is needed to further unpack this unique finding.

Perhaps as interesting as the significant findings observed in the present research are the nonsignificant findings. As was the case in past research (e.g., Pederson et al., 2020), support gaps were sometimes associated with perceived stress and at

other times were not. The varied effects of support gaps on perceived stress and other outcomes point to the continued need for theory regarding support gaps and their effects. Developing and testing theory will help to identify mediators linking support gaps to outcomes as well as moderators that influence the support gap process (e.g., individual differences; [Pederson et al., 2020](#)).

Pragmatic Implications

The results point to some pragmatic implications for those seeking to support farmers. Most clearly, they indicate the importance for support providers to understand and meet farmers' needs for informational support. In the present study, informational support was operationalized in terms of behaviors such as giving advice and helping farmers to think through solutions to problems. Farmers must make difficult decisions regarding their business and land use, and they need access to complex and varied information to do so. At the same time, the prevalence of online information regarding these issues continues to expand, frustrating farmers who must sort through this information and do not know who to trust ([Rust et al., 2022](#)). As a consequence, farmers may turn to their in-person networks for advice on managing their operations. However, farming is a relatively solitary occupation, meaning that farmers are often alone as they carry out their daily work, reducing opportunities to confer with others. As such, finding ways to meet farmers' needs for informational support with high-quality information from trusted sources should be a priority, as it has the potential to reduce their general stress as well as stress related to time pressure.

Pragmatic implications regarding emotional support are less clear, particularly because emotional support behaviors are generally associated with positive outcomes. Thus, before counseling people not to provide desired levels of emotional support to farmers, further research is needed to determine the reasons farmers were less stressed about economic and climatic conditions when their emotional support desires were not met.

Limitations and Future Directions

Several limitations of the present study pertain to its sample. Agricultural producers who attend in-person agricultural meetings, who are members

of online commodity group pages, and who are willing to participate in an online study about farm stress may differ from farmers unwilling to participate. For example, such farmers may experience different levels of support desired and received than other farmers. Additionally, the present study's sample was on average a decade younger than the average Michigan farmer (46.5 years vs. 56.6 years; [United States Department of Agriculture, 2022](#)). Future research should include a more diverse sample of farmers in terms of sampling methods and participant demographics and may also sample those who do not own their own operations (e.g., migrant workers). Such farm workers experience some of the same stressors as farm operators as well as other, unique stressors (e.g., acculturative stress). Future research could also consider how demographic characteristics (e.g., age, gender) and other factors moderate support gap outcomes.

The cross-sectional study design limits our ability to make causal inferences. To better understand the continuing impact of support gaps on farmers' experiences of stress, longitudinal research is warranted. Prior research outside of the SGH consistently indicates support quality matters when it comes to recipients' outcomes ([MacGeorge et al., 2011](#)). Therefore, future research could also focus on the *quality* of support desired and received; support gap research tends to focus more heavily on support *quantity*. Understanding the quality of support farmers receive may explain some of the outcomes of the present study, for example, the positive effects of emotional support gaps. Another limitation is that the present study did not assess the specific sources of support desired and received, instead asking participants to focus on their friends and family as a group. Extant support gap studies tend to focus on single sources of support (e.g., [Crowley et al., 2023](#)) or on nonspecified sources of support ([Holmstrom et al., 2021](#); [McLaren & High, 2019](#)); however, the limited research comparing support sources suggests that source moderates the prevalence and effects of support gaps (e.g., [Crowley et al., 2019](#)). As such, examining from whom farmers desire and receive support should be a focus for future research. For example, it may be that farmers desire more of certain types of support from some sources as compared with others or that the effects of support gaps on their stress are greater when experienced from certain sources versus others.

Conclusion

Farming is a stressful occupation, but our findings suggest that meeting farmers' needs for informational support can alleviate some of that stress, though the implications of emotional support gaps are less clear. Overall, the results of this study suggest that continuing to understand the sources of farm stress is a worthy goal for future research.

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