

Internal locus of control buffers the impact of daily stressors on Australian Farmers' well-being: A cross-sectional study

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Abstract

Objective: Farmers are prone to poor well-being and are at higher risks of suicide than the general population. The aim of this study was to understand whether the negative impact of daily stressors on Australian farmers' well-being could be buffered through a strong internal locus of control – a strong sense of control over what happens in life.

Methods: Australian farmers self-reported their well-being, daily stress, and locus of control.

Design: Cross-sectional via pen-and-paper survey.

Setting: Participants completed the surveys at the beginning of agricultural management training courses.

Participants: Australian farmers ($N = 129$, M age = 39 ± 12 years, 54.7% male).

Main Outcome Measures: Internal and external locus of control, daily stress, and subjective well-being.

Results: More daily stressors were associated to poorer well-being, regardless of external locus of control; however, farmers with a stronger internal locus of control were buffered from the negative impacts of daily stressors. That is, daily stressors were not significantly associated with well-being for farmers with a strong internal locus of control.

Conclusions: Internal locus of control may be a significant factor in supporting good well-being for farmers. Further research should investigate how to enhance internal locus of control amongst this population. It may be that interventions to enhance internal locus of control in farmers could improve their well-being and productivity, good outcomes for the individual farmers, and global society overall.

KEYWORDS

agriculture, autonomy, daily hassles, resilience, satisfaction with life

1 | INTRODUCTION

Australian agricultural workers make up 2.4% of the total Australian workforce,¹ produce about 93% of the country's daily domestic food supply,² and contribute to nearly 15% of the country's total goods and services export income.³ This essential part of Australia's population not only plays a vital role supporting the country's economy but also manages just over half of Australia's landmass. Despite the significance of the job and the positive aspects such as satisfaction from the physical labour,⁴ Australian farmers may be more prone to poor well-being than the general population.⁵ Australian males in farming occupations suffer a higher rate of suicide than the wider rural population or men nationally.^{5,6} Living in isolated locations, financial stress, government regulations, public opinion, and market conditions were all found to contribute to poorer farmer well-being.⁷ Given that Australian farmers tend to have poorer well-being, more is needed to understand how to enhance farmers' abilities for resilience such that daily stressors do not detrimentally impact their well-being.

Well-being is the balance point between an individual's resource pool and the challenges faced⁸ and is constantly affected by life events or challenges. A stable, positive level of well-being is achieved when an individual has sufficient resources to meet the daily stressors they experience. When stressors exceed the resources available, well-being declines. Beyond the importance of well-being for an individual's physical and mental health, good well-being is important for work-related outcomes such as productivity and work performance.⁹⁻¹¹ Understanding factors that may influence productivity and economic output, such as subjective well-being, is essential for individual farmers and for national and global economies. Farmers' well-being is directly impacted by factors such as remoteness of farming⁷ and climate.^{12,13} Beyond these stressors specific to farming, farmers also must cope with the daily stressors faced by everyone.

Daily stressors are the small, regular irritating experiences that can cause frustration at work or home. When they are constantly experienced over time, daily stressors can significantly negatively affect well-being.¹⁴ There is a lack of evidence of how Australian farmers maintain well-being in the face of daily stressors, which inhibits the advancement of interventions for this at-risk population. Anything that impacts farmers' ability to produce food poses a significant risk to the Australian economy, so furthering our knowledge about well-being amongst this vital sector of the Australian population is imperative. This study aims to expand the knowledge of farmers' well-being by investigating how daily stressors impact well-being.

What is already known:

- Farmers are at a disproportionately high risk for poor well-being compared to the general population
- Daily stressors can negatively impact well-being in the general population
- Our sense of control over the things that happen to us (i.e., locus of control) partially determines the impact that stressors have on general populations

What this paper adds:

- Australian farmers with more daily stressors have poorer well-being than those with fewer daily stressors
- One way to buffer Australian farmers from the impact of daily stressors is to enhance their internal locus of control
- Interventions designed to encourage more internal locus of control may help benefit Australian farmers

Daily stressors do not directly translate to poorer well-being, rather, these effects depend on a person's perspective on the stressors.¹⁴ One such relevant factor is a person's locus of control. Locus of control is an individual's belief in their ability to control the outcome of things that happen to them.¹⁵ The concept of locus of control was developed from social learning theory which predicts whether a particular behaviour will be exhibited based on the potential reward. Rotter extended this theory positing that how much a person believed that their behaviour could influence the outcome affected the likelihood that the behaviour would be performed. The perception of possessing the ability to control or influence outcomes in life is known as internal locus of control and is related to feelings of empowerment.¹⁶ People with a high internal locus of control tend to attribute events to their own initiatives, seek out situations where control is possible, and avoid situations with little active choice. In contrast, external locus of control describes the perception that life events are largely outside of a person's jurisdiction and controlled by powerful others or luck, so people feel like passive agents in what happens to them. People with a high external locus of control are also more likely to opt for situations in which they have little control or choice compared to those with a low external locus of control.¹⁶

An internal locus of control is associated with emotional health and positive well-being,¹⁷ whereas external

locus of control has been related to stress and poor health.¹⁸ Findings by Kaine et al. suggested that Australian farmers' locus of control was related to their farm's financial performance and their likelihood of adopting innovations and training.¹⁹ Specifically, farmers with a strong external locus of control were found to be more in need of support to increase their business skills but were less likely to participate in appropriate training than farmers with a strong internal locus of control. Research in New Zealand indicated that locus of control contributed to farmers' managerial success and their approach to farming.²⁰ Those study findings supported previous research which concluded that farmers with an external locus of control were more likely to pursue a conservative, risk-averse approach to financial goals combined with less leisure time than farmers with an internal locus of control.²¹ However, it remains unknown as to what role locus of control has on Australian farmers' well-being, and whether the different types of locus of control affect the impact of daily stress and well-being. This study aims to fill this gap.

1.1 | The present study

Given the vital role farmers play in national and global economies, understanding how to support and maximise this vulnerable part of the population's well-being should be made a top priority. Specifically, more is needed to understand how to help farmers build resilience so that daily stressors do not negatively impact their well-being. The aim of this study was to investigate whether the impact of daily stressors on Australian farmers' well-being was moderated by their locus of control. It was hypothesised that for all farmers, lower daily stressors would be positively associated with better well-being; however, it was anticipated that this effect would differ depending on individuals' locus of control. Specifically, it was anticipated that daily stressors would have less of a detrimental effect on well-being for farmers with a higher internal locus of control and lower external locus of control.

2 | METHODS

2.1 | Study procedures

Convenience sampling was used to recruit Australian farmers at five Farming and Grazing for Profit schools, which are 7-day holistic agricultural management training courses run by a small, highly experienced Australian company, Resource Consulting Services. The schools were held in Queensland, New South Wales, Victoria, and Western Australia over an 8-week period between June

and November 2021. For each training course, enrolment ranged from 11–36 farmers aged 18 years or older, resulting in a recruitment pool of 140 possible participants. These courses were chosen as a recruitment avenue because they provided easy access to a pan-Australian range of farmers with a variety of farming disciplines, knowledge, experience, and attitudes regarding farming life.

Within the training courses, the farmers were provided details about the study including the voluntary nature of the study and that their relationship with Resource Consulting Services would not be negatively impacted by their decision to engage in the study or not. An information sheet, consent form and paper survey were provided for those interested in participating. The survey took about 15 min to complete. The study procedures were approved by the local research ethics committee (Project No. 22676).

2.2 | Measures

Well-being was measured using the valid and reliable Flourishing Scale.²² The scale is designed to assess adults' general well-being in a brief format, comprised of eight items rated on a 7-point response scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). Items include “I lead a purposeful and meaningful life”; and “I am a good person and live a good life”. Well-being was calculated from summing the responses to the eight items, with possible scores ranging from 8–56, with higher scores representative of better well-being. For this study, the interitem reliability was $\alpha = 0.81$.

Daily stressors were assessed with the valid and reliable Brief Daily Stressors Screening tool.²³ The scale assesses routine stressful experiences from the past 12 months based on responses to ten items rated on a 5-point scale ranging from 0 (*Not at all*) to 4 (*Very much*). Participants were provided directions of, “There are occasional minor and major challenges in daily life that can constantly re-occur, to which one can sometimes not get used to, and which can be more or less burdensome. Please select the response that indicates how strongly you have been affected by the following annoyances or inconveniences over the past 12 months.” Items asked about daily life inconveniences such as family responsibilities, health problems, and financial restrictions. Daily stressor total scores were calculated by summing the item responses, resulting in total scores between 0 (not at all affected by daily stress) and 36 (strongly affected by daily stress). For this study, the inter-item reliability was $\alpha = 0.78$.

Locus of control was analysed with the well-validated Levenson scale²⁴ which offers a multidimensional view to measure locus of control, divided into three subscales: internal locus of control, and two types of external locus

of control – powerful others and chance. The scale consists of 24 items, rated on a 6-point scale ranging from -3 (*Strongly disagree*) to $+3$ (*Strongly agree*) with items such as, “Whether or not I get to be a leader depends mostly on my ability” (internal locus of control); “People like myself have very little chance of protecting our personal interests when they conflict with those of strong pressure groups” (powerful others external locus of control), and “To a great extent my life is controlled by accidental happenings” (chance external locus of control). As per normal scoring procedures, responses to the items were summed for each subscale, and then 24 was added to each subscale value, resulting in totals ranging between 0–48, with higher values indicating a stronger degree of locus of control. Interitem reliability for the subscales were $\alpha = 0.61$ for internal locus of control, $\alpha = 0.75$ for powerful others external locus of control, and $\alpha = 0.72$ for chance external locus of control.

Demographic data of participants' age (in years) and gender (female, male, other, prefer not to respond) were self-reported.

2.3 | Data management and analyses

G*Power²⁵ was used to ascertain that a sample size of 86 would be required to be powered to $1-\beta = 0.80$ for a medium-sized effect of $f^2 = 0.15$. The final sample size achieved was 129, which provided power of $1-\beta = 0.93$ for a medium-sized effect of $f^2 = 0.15$.

On receipt of the completed surveys, the raw data was manually entered by RS and accuracy confirmed with independent duplicate entry of 10% of the data by ALR. No inconsistencies of data entry were found, resulting in a 100% intercoder reliability for data entry.

Data were analysed in R version 4.2.1.^{26–28} To test whether the impact of daily stressors on well-being was moderated by locus of control, three regression models were estimated – one for each form of locus of control. Well-being was regressed onto daily stressors, locus of control, the mean-centred interaction term between daily stressors and locus of control and the covariates of age

and gender. No differences were found between training school cohorts for any study variable, so the training school clustering was not controlled for in analyses. Any significant moderation effects were probed using the Johnson and Neyman method.²⁹

3 | RESULTS

3.1 | Sample characteristics and descriptive statistics

The sample ($N = 129$) was aged between 20 and 65 years with a M age = 39 years ($SD = 12$). Most farmers were male (54.3%) and the rest were female (36.4%) or did not report gender (9.3%). The descriptive statistics and bivariate correlations of study variables are shown in Table 1. Most people reported well-being above the midrange of the well-being scale, suggesting good well-being overall. On average, people reported daily stressors equivalent to the middle of the range, with a wide variability between-people. People tended to have a stronger internal locus of control and weaker external locus of control, but there was notable between-person variability across the locus of control subscale scores. Well-being was negatively associated with daily stressors and both scales of external locus of control. Well-being was not significantly associated with internal locus of control. Daily stressors were not significantly associated with internal locus of control, but positively associated with both scales of external locus of control. The two external locus of control scales were positively associated but not associated with internal locus of control.

3.2 | Locus of control moderating daily stressors – well-being association

The regression analyses are presented in Table 2. Well-being was negatively associated with daily stressors, across all three models with effect sizes ranging from $\beta = -0.34$ to

TABLE 1 Descriptive statistics and bivariate correlations of well-being, daily stressors, and locus of control of Australian farmers ($N = 129$)

Variable	M (SD)	Range	2.	3.	4.	5.
1. Well-being	48.70 (4.05)	36.0–56.00	–0.31*	0.15	–0.24*	–0.24*
2. Daily stressors	10.06 (5.68)	0.00–27.00	–	–0.12	0.23*	0.25*
3. Internal locus of control	31.76 (6.15)	8.00–44.50		–	0.07	0.03
4. Powerful others external locus of control	16.07 (7.26)	1.00–40.00			–	0.65*
5. Chance external locus of control	15.53 (6.90)	2.00–39.00				–

* $p < 0.05$.

TABLE 2 Results of models testing whether locus of control moderated effects of daily stressors on well-being of Australian farmers ($N = 129$)

Predictor	<i>b</i>	SE	β
Internal locus of control: <i>Adj. R</i> ² = 0.18, $p < 0.01$			
Intercept	48.63*	1.30	–
Daily stressors	–0.24*	0.06	–0.34
Internal locus of control	0.11*	0.05	0.17
Gender	0.07	0.71	0.01
Age	0.01	0.03	0.03
Daily stressors \times internal locus of control	0.03*	0.01	0.23
Powerful others external locus of control: <i>Adj. R</i> ² = 0.12, $p < 0.01$			
Intercept	49.20*	1.34	–
Daily stressors	–0.23*	0.07	–0.34
Powerful others external locus of control	–0.08	0.05	–0.14
Gender	0.01	0.74	0.00
Age	–0.01	0.03	–0.02
Daily stressors \times powerful others external locus of control	–0.00	0.01	–0.01
Chance external locus of control: <i>Adj. R</i> ² = 0.15, $p < 0.01$			
Intercept	49.07*	1.30	–
Daily stressors	–0.28*	0.07	–0.41
Chance external locus of control	–0.11*	0.05	–0.19
Gender	–0.02	0.74	–0.00
Age	–0.00	0.03	–0.01
Daily stressors \times chance external locus of control	0.01	0.01	0.16

* $p < 0.05$.

–0.41, but age and gender were not associated with well-being in any of the models (p 's > 0.05). Internal locus of control was found to significantly moderate with the association between daily stressors and well-being ($\beta = 0.23$), with the overall model explaining 18% of variability in well-being. The probing analyses revealed that well-being is only significantly associated with daily stressors for farmers with an internal locus of control weaker than the average, but for farmers with stronger than average internal locus of control (> 0.57 SD more than sample M), there is no significant association between daily stressors and well-being. Figure 1 depicts this moderation effect, showing the association between daily stressors and well-being for a person with weak (1 SD $< M$), moderate (M), and strong (1 SD $> M$) internal locus of control.

Powerful others external locus of control did not significantly moderate the association between well-being

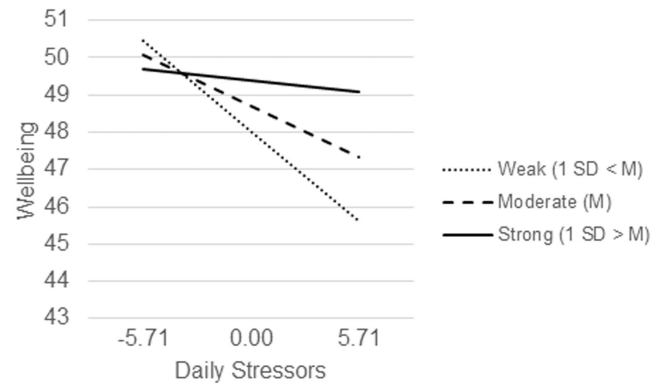


FIGURE 1 Moderation effect showing the association between daily stressors and well-being for Australian farmers with weak (1 SD $< M$), moderate (M), and strong (1 SD $> M$) internal locus of control

and daily stressors, nor was the powerful others external locus of control directly associated with well-being. The model explained 12% of variability in well-being. Chance external locus of control did not significantly moderate the association between well-being and daily stressors; however, a direct, inverse association was found between chance external locus of control and well-being ($\beta = -0.19$), with the model explaining a total of 15% of variability in well-being.

4 | DISCUSSION

The aim of this study was to investigate whether Australian farmers' well-being related to daily stressors and whether the impact of daily stressors on well-being depended on farmers' locus of control. It was found that farmers with fewer daily stressors tended to have better overall well-being. The study also found that daily stressors affected farmers' well-being differently depending on their internal but not external locus of control. Internal locus of control tended to buffer farmers' well-being from being negatively impacted by daily stressors. In contrast, the impact of daily stressors on farmers' well-being was found to be unaffected by how strongly they believed that outcomes in life were controlled by powerful others or luck. There are clear implications of this study that farmers' well-being, and the national and global economies driven by farmers, could be enhanced by interventions focussed on enhancing internal locus of control.

4.1 | Daily stressors and well-being

That daily stressors were associated with well-being in Australian farmers and aligns with the well-being theory

that when the daily stressors a person faces outweighs the person's resources to cope with stressors, poor well-being prevails.⁸ Given the well-evidenced link between well-being and productivity,^{9–11} farmers' well-being is imperative – for their own physical and mental health as well as for their economic outputs. Our findings add to a building line of evidence suggesting that farmers have a high risk for high psychological distress,^{5,6} although notably our findings suggest the farmers in our study had well-being that was overall quite high. For the betterment of regional and rural communities and the economic prosperity of agricultural sectors, more is needed to understand how to enhance and maintain farmers' abilities to cope with daily stressors.

4.2 | Locus of control, daily stressors, and well-being

Our findings revealed that internal, but not external locus of control moderates the impact of daily stressors on farmers' well-being. Specifically, it was found that for those with strong internal locus of control, there was no connection between daily stressors and well-being, whereas for those with weaker internal locus of control, more daily stressors meant poorer well-being. These findings build on existing evidence of the importance of locus of control for farmers. Now, we know that locus of control is beneficial for farmers' well-being overall¹⁷ as well as for their productivity and work motivation.^{19,20} The present study extends this line of research by revealing that locus of control can also serve as a form of resilience against daily stressors. Future research should build on these findings to consider the likely complex interdependence of contextual and environmental factors that impact farmers outside of their control (e.g., extreme climactic events, global influences, policy changes) and personal factors such as resilience and locus of control. Taken together, this line of research suggests that interventions to enhance locus of control in farmers may have multifaceted benefits for mental health, physical health, and productivity.

One approach to enhancing internal locus of control is through what are referred to as 'strengths-based' intervention approaches.^{30,31} Most common in social work and forensic psychology programs, strengths-based approaches advocate personal agency and independence through developing a person's ability to avoid unnecessary stressors and effectively cope with stressors.^{32,33} An 8-week strengths-based intervention which focused on cultivating character strengths, emotion regulation, constructive communication, effective decision-making, problem solving, and gratitude enhanced college students' well-being.³⁴ Similar programs showed promising results with health care workers,³⁵ prisoners,³⁶ and older adults

(Wolinsky et al., 2010).³³ It may be that a strengths-based approach could be utilised to enhance farmers' well-being through strengthening their internal locus of control.

Notably, however, there is likely a major barrier to any well-being-focused interventions for farmers, especially for those low in internal locus control. Farmers tend to be resistant to mental health treatment and training.^{37,38} This propensity to avoid self-care for mental health is further maximised in those with low internal locus of control¹⁹ – the exact people who our study indicates would be most benefited by such a program. As such, further work is needed to determine how to effectively reach this target population with interventions for locus of control and well-being enhancement. Promising approaches for providing mental health support for farmers are those that are co-designed, engaging, and accessible across a geographically dispersed target population.³⁹ Farmers want mental health and well-being programs that are trustworthy, authentic, reflective of the broad diversity and context of the farmer population, simple to use, with empowering and humorous language.^{40,41} Perhaps, an effective approach for reaching farmers with weak internal locus of control is to integrate a program with these sought-after characteristics and features within existing agricultural training programs, a relevant aspect of business training given the strong connection of well-being to profit and productivity.^{9–11} By integrating well-being and locus of control training amidst other relevant training such as in financial literacy, benefits for farmers' well-being and productivity may be exacerbated.^{42,43}

4.3 | Study strengths and limitations

A strength of this study was the large sample size of a hard-to-reach and understudied population – Australian farmers. The study received very high response rates, likely the result of buy-in and support from relevant industry representatives. That the population was large and heterogeneous speaks to the good generalizability of the findings to Australian farmers. However, it is likely the study sample may misrepresent the entire Australia farming population in some regards. For example, it is likely that by recruiting through a management training course, the sample represents farmers with a higher than typical internal locus of control, given that internal locus of control is associated with seeking educational and professional development pursuits to enhance job satisfaction.⁴⁴ Additionally, the sample was fairly young, with the mean age almost 20 years junior to the average Australian farmer.⁴⁵ Further research is needed to test the generalizability beyond other older Australian farmers, those who are not actively seeking training and farmers in other countries and other rural and regional occupations.

Limitations of the study include the cross-sectional nature of data collection. It is likely that well-being, daily stressors, and locus of control are dynamic, fluctuating over time, depending on personal and external circumstances. As such, more work is needed to determine as to what degree these constructs change over time for farmers, and how changes in locus of control and daily stressors impact changes in well-being. Additionally, future research may consider further personal and environmental factors that impact well-being such as self-efficacy, mental illness symptoms, policy changes, and weather. Most importantly, future research is needed to determine how to enhance internal locus of control for Australian farmers, and whether enhancements of locus of control lead to enhancements of well-being through buffering from negative effects of daily stressors.

4.4 | Conclusion

Australian farmers are an important sector of the population who are vulnerable to poor well-being and higher rates of suicide. The results of this study suggest that the impact of daily stressors on well-being differs depending on farmers' internal locus of control. For farmers who believe that their behaviour has a significant influence over life occurrences, there was no connection between daily stressors and well-being; however, for those with lower internal locus of control, more daily stressors were associated with poorer well-being. There is a clear direction for intervention work to enhance Australian farmers' sense of control over what happens in their life. The results of this study provide pathways to support farmer well-being, thereby safeguarding the lives of farmers, their productivity, and the national and global economies dependent on productive farmers.

AUTHOR CONTRIBUTIONS

All authors were involved in the conceptualization of the study. RS and ALR analysed the data and wrote the manuscript. RS and AC managed the project and curated data.

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CONFLICT OF INTEREST

The authors have no competing interests to declare.

ETHICAL APPROVAL

The study procedures were approved by the Central Queensland University's Human Research Ethics Committee (Project No. 22676).

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