

# **Hardiness in South Australian Farmers: Moderator or Mediator?**

**Sherylee Williams and Rob Ranzijn**

**School of Psychology  
University of South Australia  
GPO Box 2471 Adelaide, South Australia 5001  
Australia**

## **Abstract**

This research investigated the role of hardiness in the relationship between stressors and distress in South Australian farmers. The participants were 164 male farmers from the Far Northern and Upper Northern regions, which had been experiencing a severe drought. The sample were obtained from the Orroroo and Carrieton District Council's Telephone directory and were sent a mail out inviting them to participate in the study. The farmers completed a self-report questionnaire with scales of farm stress, the General Health Questionnaire (Goldberg & Breznitz, 1993), and the Hardiness Scale of Bartone *et al.* (1989) which conceptualises hardiness as a multidimensional construct *with* three components: commitment, challenge, and control. Multiple regression analyses showed that hardiness was neither a significant moderator nor mediator, although this may have been partly due to low reliabilities, but it did have main effects on distress ( $p < .01$ ). Other findings included that the weather was the greatest source of stress. Further fine-grained research is recommended in order to devise effective interventions to reduce negative health outcomes for farmers.

**Keywords:** Hardiness. Farmers. Stress. Self-report

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## Introduction

The explosion of research on psychological stress over the past several decades has consistently found a negative relationship between stress and well-being (Goldberg & Breznitz, 1993). Many individuals however are able to experience a high level of stress without their psychological or physical health being affected (Beasley, Thompson, & Davidson, 2003). Recent research, therefore, has attempted to identify the characteristics that might protect stress-resistant individuals from the impact of stressful life experiences (DeLongis, Folkman, & Lazarus, 1988). Researchers have begun to look at individual differences that may mediate the relationship between life events and subsequent distress, as well as investigating differences in individual resources that may serve to buffer an individual against the harmful effects of stress (Crowley, Hayslip, & Hobdy, 2003). These variables range from social support, coping strategies, and exercise, to personality characteristics (Crowley *et al.*, 2003; Maddi, 2002; Roth, Wiebe, Fillingim, & Shay, 1989).

Kobasa (1979) asserted that individuals are protected from the ill effects of a stressful situation by the existence of a personality construct termed hardiness. Kobasa conceptualised hardiness as a composite of three constructs - commitment, control, and challenge - which together provide the capacity for individuals to turn stressful life events into opportunities for personal growth (Lambert, Lambert, & Yamase, 2003). Commitment is defined as a sense of purpose and meaning that is expressed by becoming involved in life's events rather than withdrawing. People high in commitment tend to find meaning and interest in whatever they are doing and feel that life is a worthwhile experience (Lambert *et al.*, 2003). Control is defined as the tendency to feel a sense of mastery in times of adversity. People strong in control believe they can influence life events rather than seeing themselves as powerless (Maddi *et al.*, 2002). Lastly, challenge is defined as regarding change to be an opportunity for self-development. Highly challenged people believe that change, rather than stability, improves their lives and provides motivation for growth and learning (Kobasa, 1979). Therefore, hardy individuals are thought to interpret stressful experiences as a normal aspect of existence (Bartone, 1999) and are expected to turn their experiences into developmental rather than debilitating events (Khoshaba & Maddi, 1999).

An initial retrospective study by Kobasa (1979) found that managers who were high in stress, but experienced less illness, scored higher on hardiness than those who were equally stressed and experienced more illness. A subsequent prospective design (Kobasa, Maddi, & Kahn, 1982) further demonstrated this effect and found hardiness was approximately twice as effective in decreasing the risk of illness as social support or physical exercise. A number of studies have since supported these findings about the apparent protective effect of hardiness for example, (Bartone, 1989; Beasley *et al.*, 2003; Crowley *et al.*, 2003; DeLongis *et al.*, 1988; Lambert *et al.*, 2003; Maddi & Hess, 1992; Wallace, Bisconti, & Bergeman, 2001). However, the underlying process through which hardiness affects health is unclear. Some studies suggest hardiness is a psychological resource which acts as a buffer against either physical or psychological

ill health, while others believe hardiness is a mediator of the relationship between stressors and health outcomes.

Initial research by Kobasa and colleagues (1979; 1982) indicated that hardiness buffers the relationship between stress and distress. However there has been much criticism of these early findings. Funk (1992) concluded that the buffering effect of hardiness is an artefact of Type 1 statistical errors. As the number of statistical tests conducted within a study increases, the probability of finding a statistically significant relation by chance also increases. A number of early studies (Kobasa, 1979; Kobasa *et al.*, 1982) used several tests for buffering effects, and only found one significant or marginally significant interaction among the multiple tests (Funk & Houston, 1987). Kobasa's (1979) research has been further critiqued for containing statistical inaccuracies (Wallis, 2002). While Kobasa (1979) reported that hardiness significantly moderated the effect of stress on health, the *F* statistic was not actually large enough to be significant (Funk & Houston, 1987). Recent research using third generation hardiness scales has found that in a variety of groups hardiness buffers the effects of a stressful life event on subsequent distress (Beasley *et al.*, 2003; Benishek & Lopez, 1997; Brookings & Bolton, 1997; Feinauer, Hilton, & Howard Callahan, 2003; Pengilly & Dowd, 2000; Waysman, Schwarzwald, & Solomon, 2001).

In contrast, there is some suggestion in hardiness literature that hardiness exerts a mediating effect rather than a moderating effect on health outcomes. Mediator effects of hardiness on distress have been found in both retrospective and prospective analyses as well as using a variety of types of participants and hardiness scales (Funk & Houston, 1987; Manning, Williams, & Wolfe, 1988; Roth *et al.*, 1989). Hull *et al.* (1987) suggests the inconsistencies in hardiness research are due to the components of hardiness being treated as a unified construct rather than as separate entities. This argument is based on findings that the subscales are not equally predictive of health. It could also be that the three components of hardiness act in different ways with different samples, therefore explaining the diverse range of results. Since the term hardiness was first introduced, there have been extensive contributions essentially confirming or expanding the original results in new contexts. The present study investigated the role of hardiness in the psychological well-being of South Australian farmers.

The Institute of Occupational Safety and Health in the United States of America rated farming the twelfth most stressful occupation out of 130 high stress occupations (Olson & Schellenberg, 1986). This is consistent with studies across the western world that have found that dramatic demands are placed on farmers which can result in familial and extra-familial stressors (Olson & Schellenberg, 1986). Farm stress was exacerbated in South Australia recently by economic hardship in the agriculture sector and in particular by the severe drought felt by most of the state during 2001-2003. The Australian Bureau of Statistics (2003) reported that in the previous financial year South Australia experienced the worst drought in a century with wheat production down 58 percent and sheep and lamb numbers dropping to their lowest level since 1947.

Farm stressors are beginning to take their toll on South Australian farmers. Feelings of guilt, failure and despair are reported to be common among farmers (Pfitzer, 1992). The size of the problem is evidenced by reports at the National Rural Health Conference that the rate of suicide death of male farmers were around double that of the general male population, age standardized (Fragar *et al.*, 1997). In addition, rural people experience 10 percent more illness, and have 28 percent more hypertension and psychiatric disorders than Australian urban populations (Lawrence, Vanclay, & Furze, 1992). South Australian farmers from the Eyre Peninsula, one of the worst drought-affected areas, have further reported feeling high levels of anger or withdrawal and the subsequent inability to communicate with family and friends (Bryant, 1989). Other signs of stress include increases in domestic violence (Lawrence & Williams, 1990), marriage breakdowns (Pfitzer, 1992), and emotional disturbances (Kerby, 1997). The overall indication is one of substantial spatial differentiation in health experience between rural and urban Australia, even after the elderly and Indigenous people have been factored out (Lawrence *et al.*, 1992). Thus, the cost of drought and rural economic hardship can result in “not only loss of stock and depletion of resources, but also in deterioration of family cohesion, loss of community networks”, (Stehlik, Lawrence, & Gray, 1997, p.178) health and in some cases suicide.

While the need for provision of health services for rural Australia was recognised by the Australian Health Ministers’ Conference in 1994, there has been no move to provide rural health professionals with valid information on effective interventions (Fragar *et al.*, 1997). Keating (1987) suggested that professionals should investigate stress symptoms and stress management techniques of farm families and then use this information to improve healthy coping strategies already in place.

Traditionally it is believed that farmers have the ability to handle stress because of their ‘hardy’ personalities. Wallis (2002) suggests that the core of rural ideology, and subsequent rural stereotypes can be seen to resemble the building blocks of Kobasa’s (1979) hardy personality traits. Wallis (2002) suggests that the self-reliance of farmers and their flexibility in work schedules enables them to control their lives. The nobility and belief in the inherently virtuous pursuit of farming evident in farmers’ intense attachment to their land despite economic hardship strongly depicts the commitment component of hardiness. Finally, Wallis suggests that farmers’ attitudes of resiliency, self-efficacy and mateship facilitate feelings of challenge rather than threat in farmers. Thus hardiness is arguably the backbone or inner strength of the rural character.

Despite copious research investigating farm stressors, there has been very little research examining resources or personality traits that may reduce these stressors, and even less research specifically looking at the relationship between hardiness and farm stressors. An American study by Carson *et al.* (1993) examined strains and stressors in Idaho farm families, and found that hardiness was correlated with lower self-reports of physical illness, discord and distress amongst family members. In a later study, Carson *et al.* (1994) reported family hardiness was positively associated with adaptation and negatively associated with maladaptation, suggesting that hardier families experienced less stress and greater satisfaction with life than less hardy families. However, both studies offered no causal hypotheses and thus add no

understanding to the moderator/mediator debate. Lee (1991) on the other hand, investigated the buffering effects of hardiness on perceived stress, yet while she also reported a significant relationship between hardiness and perceived mental and social health, she failed to demonstrate a buffering effect for hardiness. An Australian study by Wallis (2002) paralleled Lee's (1991) results, though Wallis's sample had insufficient statistical power to find a significant interaction effect which would have supported the buffering hypothesis.

The limited amount of research using farmers, as well as the inconsistency in the way hardiness is measured, makes it difficult to draw comparisons between farmers and non-farming populations. Wallis (2002) found that older farmers were significantly harder than non-farmers. However closer examination of the results showed that it was only the commitment aspect of hardiness that contributed to this difference, and control and challenge were not higher in farmers than in non-farmer senior citizens. Lee (1991) also found that the commitment component of hardiness accounted for the greatest amount of variance in perceived mental health, followed by control. Like Wallis (2002), Lee (1991) found challenge offered nothing to the model. Thus, while research suggests that farmers are harder than other populations, it appears that the predictive power of each component of hardiness varies.

The purpose of the current research was to demonstrate that hardiness reduces the impact of farm stressors on health outcomes, so that health professionals can develop these strengths rather than focus on farmers' deficits. Specifically, the present study explored whether hardiness acts as a moderator or mediator in the relationship between stress and psychological distress. Theoretically, hardiness appears to be the inner strength of farmers, and thus can be conceptually considered as a resource, and therefore it was hypothesised that hardiness would buffer the effects of stress on subsequent distress. In light of much of the literature suggesting that the components of hardiness have different predictive power it was also hypothesised that commitment would be the most individually predictive of stress as farmers attach so much value and meaning to their lifestyle.

## **Methodology**

Previous research has reported vast differences in experiences of stressors for rural males and females (Deary, Willock, & McGregor, 1997; Fragar *et al.*, 1997; Gow & Stayner, 1995; Walker & Walker, 1988). Females were therefore excluded from the current study to enable a comprehensive investigation of stressors experienced by male farmers. Ethical approval from the University of South Australia was granted for the study.

Two-hundred and seventy farmers were contacted via a mail out to participate in the study. Farmer's details were obtained from the Orroroo and Carrieton District Council's Telephone Directory. The mail out consisted of an information letter inviting male farmers to participate and an anonymous questionnaire. The questionnaire consisted of three scales. The first scale was the Farm Stress Scale – Revised (Ide, Carson, & Araquistain, 1997). This 22-item self-report scale assessed farm-specific stressors in the past year. The scale included questions on weather

variations, social isolation, financial concerns and potential role conflicts, and asked participants to indicate how stressful they found each item. American terms such as “ranch” were replaced in the current study with words appropriate for Australian farmers.

The Shortened 12-item General Health Questionnaire (GHQ-12) (Goldberg & Breznitz, 1993) was used as a general measure of health and psychological distress. It contained 12 self report statements such as “Have you recently lost much sleep over worry?” after which participants were asked to rate their responses. Binary scoring was also used to score the GHQ-12. This method identifies at risk categories; symptomatic responses to each item are scored ‘1’ and summed over the items (Donath, 2001), with scores ranging from 0 to 12. Subgroups were defined according to the following criteria: 0 or 1 = *low or no disturbance*; 2 or 3 = *mild to moderate disturbance*; 4 or more = *high to severe disturbance*.

The Revised Dispositional Resilience (Hardiness) Scale, Short Form (Bartone, Ursano, Wright, & Ingraham, 1989) is a self-report 29-item scale, a modified version of Kobasa’s (1979) measure of personality hardiness. The revised scale contains more positively worded items, therefore reducing criticism that neuroticism, rather than hardiness, is being measured. Participants were asked to rate whether each item was not at all true, a little true, mostly true, or very true. The items were scored from one to four respectively. The scale consists of three subscales measuring commitment, control and challenge. Examples of challenge items include: “The tried and true ways are always the best” and “It’s exciting to learn something about myself”. An example of a commitment item is “I really look forward to my work” and a control item is “Most of the time, people listen carefully to what I say”. Certain items were reversed scored to prevent response set. Cronbach’s alpha for the full scale was 0.72.

## Results

One hundred and sixty-four Far and Upper Northern South Australian male farmers participated in this study, ranging in age from 23 to 81 years (mean age 50.67 years, *SD* 11.31 years). The majority of participants were mixed farmers (53.7%), though a substantial portion reported to concentrate on grazing (23.2%) or broadacre farming (18.9%), with 4.3% owning feedlots or were pastoralists. 270 questionnaires were issued to farming participants, of which 164 were returned, representing a response rate of 60.7%.

While the reliability of the full Hardiness Scale was reasonable, the three subscales of commitment, control and challenge showed lower reliability, with Cronbach’s alphas of 0.65, 0.51 and 0.33 respectively. All of the items within the commitment and control subscales showed similar correlations, therefore no items were removed as a means of improving reliability. Removing question 22 “I respect rules because they guide me” from the challenge subscale however did improve reliability to an alpha of .42 and thus it was removed from the challenge subscale for all subsequent analyses.

The means and standard deviations for scores on farm related stress, distress and hardiness are presented in Table 1. The mean scores indicate that farmers experienced moderate levels of farm stress and higher levels of distress compared to the mid-points of each scale. They also displayed above mid-range levels of hardiness overall as well as within each of the subscales. The results of binary scoring of the GHQ-12 showed that 64.5% of farmers were in the none or low disturbance range, 15.3% in the mild or moderate range, and 20.2% in the high or severe range.

**Table 1: Descriptive Statistics**

<b>Scale</b>	<b><i>N</i></b>	<b><i>Possible Range</i></b>	<b><i>Minimum</i></b>	<b><i>Maximum</i></b>	<b><i>M</i></b>	<b><i>SD</i></b>
Farm Stress	161	22-88	25	80	49.99	10.8
Distress	163	0-36	4	32	11.67	5.10
Hardiness	162	29-116	63	106	85.71	7.14
Commitment	162	8-32	21	36	29.49	3.01
Control	164	11-44	23	43	33.38	3.42
Challenge	163	9-36	12	29	20.49	2.76

The bivariate correlation matrix for the variables in the regression analyses is shown in Table 2. As predicted Farm Stress, Hardiness, and the three subscales of Hardiness were all significantly related to Distress. Hardiness, Challenge, Control and Commitment were moderately negatively related to Distress, suggesting that the harder farmers are, the less psychological distress they experience. Unexpectedly none of the demographic variables were related to Distress, Hardiness, or Stress. Age was significantly positively related to Commitment and negatively related to Challenge, suggesting that the older farmers are more committed to their lives, however they also begin to see life as a threat rather than a challenge.

**Table 2: Bivariate Correlations between variables.**

	Distress	Stress	Hardiness	Challenge	Control	Commit.	Farm Type	Farm Beginning	Social Support	Education	Marital	Age
Distress	1.00											
Stress	.411**	1.00										
Hardiness	-.570**	-.199*	1.00									
Challenge	-.346**	-.131	.730**	1.00								
Control	-.442**	-.085	.845**	.458**	1.00							
Commit.	-.559**	-.289**	.760**	.322**	.482**	1.00						
Farm Type	.107	.136	-.110	-.079	-.041	-.119	1.00					
Farm Beginning	-.002	-.034	-.036	-.052	-.060	.089	.069	1.00				
Social support	-.140	-.026	.090	.150	.010	.062	.032	.011	1.00			
Education	-.045	-.035	.081	.169*	.166*	-.151	.149	-.153	.051	1.00		
Marital	.049	-.073	.004	.023	-.009	.052	-.103	.119	-.017	-.086	1.00	
Age	-.090	-.134	-.060	-.200*	-.149	.237**	-.164*	.156*	-.074	-.509**	.226**	1.00

Note: \*\* p < .01 level (two-tailed); \* p < .05 level (two-tailed); N=158

## Hardiness as a Moderator

In order to test the moderator hypotheses, interaction terms were first constructed by standardising the stress, hardiness, control, commitment, and challenge variables and then multiplying the standardised stress variable with each of the other four. The results of the series of hierarchical multiple regression analyses, with scores on the GHQ as the dependent variable in each case, are shown in Table 3. Previous research has suggested that social support and farm type have direct effects on stress and well-being so they were entered as control variables on the first step of each analysis and collectively explained 3.2% of the variance in distress. At step 2 of each regression analysis farm stress and either hardiness, challenge, commitment, or control were entered and at step 3, the appropriate interaction variable was entered.

**Table 3: The Moderator Model Regression Analysis of Hardiness**

Step	Variable	Adjusted R Square	R Square Change	F Change	$\beta$	<i>t</i>
<b>Regression 1</b>						
1	Social Support	.020	.032	2.58	-.144	-1.82
	Farm Type				.112	1.42
2	Stress	.424	.392	52.1**	.308	4.88**
	Hardiness				-.499	-7.91**
3	Stress x Hardiness	.432	.007	1.99	-.087	-1.41
<b>Regression 2</b>						
2	Stress	.325	.310	36.5**	.361	5.46**
	Control				-.397	-6.05**
3	Stress x Control	.326	.005	1.26	-.074	-1.12
<b>Regression 3</b>						
2	Stress	.240	.227	23.6**	.361	2.30**
	Commitment				-.273	-3.97**
3	Stress x Commit.	.246	.011	2.29	-.107	-1.51
<b>Regression 4</b>						
2	Stress	.376	.359	45.2**	.269	4.07**
	Challenge				-.473	-7.14**
3	Stress x challenge	.372	.000	.028	-.011	-.167

*Note: The dependent variable for all analyses is GHQ scores; Step 1 is the same for all regressions; \*\*  $p < .01$*

At step 3, none of the interaction variables were significantly related to Distress. Hence, Hardiness and its components of Challenge, Commitment, and Control did not moderate the relationship between farm stress and distress. However, significant main effects of Stress, Hardiness, Challenge, Commitment, and Control were found.

### Hardiness as a Mediator

A hierarchical multiple regression analysis was conducted to test for a mediator effect of hardiness. Step 1 was identical to step 1 in the moderator models and is the same for all subsequent regression analyses. Social Support and Farm Type collectively explained 3.2% of the variance in distress,  $R^2 = .032$ ,  $F(2,155) = 2.58$ ,  $p = .079$ . The addition of Stress to the model significantly improved the prediction of Distress,  $R^2 = .157$ ,  $F$  of change  $(1,154) = 29.76$ ,  $p < .001$ .

**Table 4: The Mediator Model Regression Analysis of Hardiness**

Step	Variable	Adjusted R Square	R Square Change	F Change	$\beta$	$t$
<b>Regression 1</b>						
1	Social Support	.020	.032	2.58	-.144	-1.82
	Farm Type				.112	1.42
2	Stress	.173	.189	29.76**	.400	5.46**
3	Hardiness	.409	.424	62.61**	-.499	-7.91**
<b>Regression 2</b>						
2	Stress	.173	.189	29.76**	.400	5.46**
3	Commitment	.376	.392	50.98**	-.473	-7.14**
<b>Regression 3</b>						
2	Stress	.173	.189	29.76**	.400	5.46**
3	Control	.325	.342	36.58**	-.397	-6.05**
<b>Regression 4</b>						
2	Stress	.173	.189	29.76**	.400	5.46**
3	Challenge	.240	.259	14.65**	-.273	-3.83**

Note: The dependent variable for all analyses is GHQ scores; Step 1 is the same for all regressions; \*\*  $p < .01$

For hardiness to mediate the relationship between stress and distress, the positive correlation between stress and distress should ideally disappear when hardiness is added to the equation (Baron & Kenny, 1986). Thus the beta for the relationship between stress and distress in the second step should be reduced to zero in the third step when hardiness is added to the regression. As shown in Table 4, while the betas weights did reduce at the third step for each regression, they did not reduce to zero. This indicates a partial mediating effect of Hardiness, Challenge, Control, and Commitment, as well as main effects.

## Discussion

The present study found that Hardiness is neither a significant moderator nor mediator of distress. However, Hardiness and its components were found to have main effects on distress.

### Hardiness as a Moderator

It was first predicted that hardiness and its components would buffer the effects of stress on distress. In all analyses, hardiness and its components did not moderate the relationship between stress and distress. This supports the findings of Hull *et al.* (1982) and Funk (1992), but is contrary to Kobasa's (1979; 1982) work. One possible explanation for these results is the timing of the present study. While the majority of the farmers in the sample had experienced drought over the last several years, at the time of the study the drought had just broken and many farmers commented that their stress levels were much lower. For example one farmer said in response to the open ended question "the rains have changed our outlook and moods to a much more positive frame of mind".

A moderator variable is considered a resource, that is, as levels of the independent variable increases, the moderator variable is called upon to reduce the impact of the independent variable on the dependent variable (Baron & Kenny, 1986). It was predicted that hardiness would be a resource in farmers, and that as stress levels increased, hardiness would act to buffer the effects of stress on distress. Although the farmers in the present study were found to have above mid-range levels of stress, perhaps they were not high enough at the time of the study for the buffering effects of hardiness to be activated. In support of this hypothesis, the size of the beta weights for the interaction terms, while not significant, were all substantially higher than zero. Therefore the results of the present study may have been different several months earlier, before the drought had broken.

### Hardiness as a Mediator

The current study also investigated the mediator effects of hardiness between stress and distress. Neither hardiness nor its components challenge, control, or commitment mediated the relationship between stress and distress. While all four variables reduced the relationship between stress and distress when added to the regression, the reduction was only very small. These findings add weight to the growing consensus in the literature that hardiness is not a stress-mediating variable.

### Main Effects of Hardiness on Distress

Previous literature has frequently found that stress and hardiness have main effects on distress. The present study collaborated these findings. Stress was found to have a moderate significant effect on distress ( $\beta = .31$ ) while hardiness was found to have a stronger effect ( $\beta = .51$ ). Challenge, commitment, and control, and hardiness as a whole, were also found to have direct effects on distress. This finding supports suggestions that hardiness is multidimensional, as the individual components did not equally predict distress. As postulated, commitment was found to be the strongest individual predictor of distress. This is consistent with much of the literature on the main effects of hardiness on well-being. For example, Hull *et al.* (1987), Florin *et al.*

(1995) and Molnar (1995) argue that commitment is the defining feature of hardiness. However, the present study also found main effects of both control and challenge on distress.

One possible explanation for these results is that the components of hardiness are more prominent in some populations than others. For example, Wallis (2002) found that older farmers were more committed than their non-farmer age peers. Coupled with the results of the present study, it appears that farming provides a rich sense of meaning for the farmer, which then provides a sense of commitment to their work, which in turn is associated with higher well-being. In other studies with different populations (Lazarus & Folkman, 1984), however, commitment has been found to not predict well-being. Thus it appears that each element of hardiness may be salient in different populations, therefore explaining much of the mixed results reported in hardiness research.

It should be noted that the current research was based on self-report measures and while self-reports of health have been found to highly correlate with physical symptoms (Lee, 1991) they are also criticised for not being an accurate reflection of one's health. The use of self-report measures is arguably a limitation of the present study. This became particularly evident when speaking to wives of farmers in the sample while recruiting participants. The wives perceived their husbands' stress levels to be higher than what the husbands themselves perceived. It may be useful in future research of this kind to also include the perceptions of farmers' spouses.

## **Conclusion**

The results of the present study confirmed the findings of much of the farming literature, that farming is an inherently stressful occupation. The research further supports the need to investigate farmers' stress symptoms and stress management techniques and then use this information to design specific health measures that suit their lifestyle and values. While the study did not support either the moderator or mediator hardiness literature it did corroborate previous findings of main effects of hardiness on distress. The study further validated the importance of considering the predictive power of each individual component in hardiness research. The subscales can assist in detecting subtle but significant differences between populations, and this information can then be used to design and evaluate unique and specific interventions (Lee, 1991). For example, commitment stood out as an important characteristic of South Australian farmers, therefore service providers may be able to help relieve stress by teaching farmers how to prioritise tasks, so as to avoid over-commitment to less important elements of their work. Given that South Australian farmers are expected to continue to experience trade declines, vagaries in weather, effects of globalisation, and changing consumer demands, future research should continue to design and test specific intervention and stress management techniques for farmers.

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