

Financial Problems and Health Complaints Among Farm Couples: Results of a 10-Year Follow-Up Study

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Over a 10-year period, this survey study of 91 Dutch dairy farm couples investigated both causal and reversed causal relationships between couples' financial problems and husbands' and wives' mental and physical health complaints, as well as crossover effects of mental and physical health complaints between spouses. These relationships were tested simultaneously using structural equation modeling analyses. Results showed that financial problems were not predictive of health complaints for either spouse but that husbands' health complaints did predict both couples' financial problems and wives' health complaints 10 years later. These findings emphasize the importance of mental and physical health as resources for both the business and the family. For wives, these effects were not found, which may reflect the different positions of husbands and wives at the farm and, hence, the different ways they allocate their resources.

The relationship between financial problems and health complaints has been studied extensively in a large variety of populations all over the world. Financial hardship has consistently been shown to relate negatively to mental and physical well-being. Depression and negative mood are the stress correlates most often reported, both in specific populations, such as adolescents (e.g., Ullah, 1990), students (Jou & Fukada, 1996; Roberts, Golding, & Towell, 1998), and the elderly (e.g., Krause & Baker, 1992; Krause, Jay, & Liang, 1991; Mendes de Leon, Rapp, & Kasl, 1994), and in the general population (e.g., Friedemann & Webb, 1995; Pearlin, Lieberman, Menaghan, & Mullan, 1981; Ross & Huber, 1985; Turner, 1995; Vinokur, Price, & Caplan, 1996; Voydanoff & Donnelly, 1989; Whelan, 1992). In addition, financial problems have been found to relate negatively to physical health (Jou & Fukada, 1996; Krause & Baker, 1992; Roberts et al., 1998), and they have been associated with health-impairing behaviors, such as excessive alcohol use and abuse (e.g., Conger, Ge, Elder, Lorenz, & Simons, 1994; Hum-

phreys, Moos, & Finney, 1996; Liberto & Oslin, 1995; Neff, 1993; Peirce, Frone, Russell, & Cooper, 1996), drug use and tobacco consumption, and deteriorated health behavior (e.g., Conger et al., 1994).

Thus, ample evidence exists that relates financial problems to health complaints in a wide range of different populations. We expand this line of research in the present study by investigating the association between financial problems and mental and physical health complaints among self-employed couples (specifically, farm couples). The self-employed have received little attention in organizational psychology literature. This is surprising because the self-employed constitute an important part of the working population. For instance, in 1997, about 15% of the labor force in the European Union were employers or self-employed, about half of whom ran small enterprises, working alone or with their families (Eurostat, 1998). Moreover, for the self-employed, financial issues are a central and ongoing concern, especially when compared with individuals who receive a regular salary. For instance, the economic situation not only is relevant for the welfare and consumption level of the family but also is an indicator of the economic success of the enterprise.

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Financial Problems and Health Complaints in the Farming Population

Studies on financial problems and health complaints among the farming population showed the same results as those among the general population: mental and physical health related negatively to a decrease in income level (Duncan, Volk, & Lewis,

1988; Welles & Defares, 1983), as well as to more enduring financial hardship (Berkowitz & Perkins, 1985; Hertsgaard & Light, 1984; Keating, 1987; Schubert-Walker & Walker, 1988; Schulman & Armstrong, 1989; Weigel, Weigel, & Blundall, 1987; Welles & Defares, 1983). Although most studies so far have been correlational, several methodologically sound longitudinal studies have recently been carried out (Lorenz, Conger, Monague, & Wickrama, 1993; Swisher, Elder, Lorenz, & Conger, 1998). These showed that over a period of 2 to 3 years, financial problems are significant predictors of depression and negative affect in the farming population. However, the presence of a possible reverse or reciprocal causal effect was not assessed.

In comparison with these earlier farm studies, the present study has unique features that may provide valuable additional insights into the relationship between farm couples' financial problems and their health. First, it focuses on the long term-effects, using a 10-year time lag. Second, both a causal and a reverse causal effect of financial problems and health complaints are tested for both spouses.

Conservation of Financial Resources

The general idea underlying the present study originates from the *conservation of resources* (COR) theory, a motivational stress theory according to which people strive to build, protect, and retain their resources (Hobfoll, 1988, 1989). Resources are those objects, personal characteristics, social circumstances, energies, and conditions that are valued and sought after and aid the requirement of other resources. COR theory predicts that, when confronted with an opportunity to achieve resources or with a (potential) loss of their resources, people will be motivated to obtain, maintain, or retain these resources by investing other resources they possess. If this does not lead to the expected outcome, individuals will experience distress and may consequently develop health problems.

A farm couple's financial situation can be considered a resource in several ways. First, capital is an "object resource" (Hobfoll, 1988, 1989), which has intrinsic value or is appreciated because it represents something else that is valued, such as security or status. Second, capital is considered an "energy": a resource with important instrumental value. For farm families, this relates to the specific characteristics of a traditional family farm business. Capital is a necessary means to run the farm, and lack of financial resources may paralyze business activities. Further-

more, at the farm, work and home are closely intertwined, and farm families may invest resources from the home environment to compensate for financial problems at the business, for instance, by adjusting family expenses and by investing the money thus saved in new machines. Previous research has shown such an entanglement to be fairly common (e.g., Leistriz, Ekstrom, Leholm, & Wanzek, 1987; Rosenblatt, 1990).

Over time, COR theory predicts that less important or easily obtainable resources will be invested first (Hobfoll, 1988, 1989). Farm couples may, for instance, start by postponing small renovations, which reduces the value of the business, or one of the family members may invest a few hours and start to work off-farm. If financial problems are being solved within the near future, the distress related to it will decrease. After it has been resolved, short-term financial problems may even have a positive effect on distress, by replenishing other resources, such as confidence in internal strength or social networks (see also Aneshensel, 1996).

However, when financial problems persists over a longer period of time, farm couples may get trapped in a "loss spiral" (Hobfoll, 1988, 1989): More and more important resources may be invested or lost, resulting in a depletion of resources and consequently in increased stress reactions. Farm couples may, for instance, have to sell essential means of production, such as land or cattle. Eventually, they may even have to give up the business. This would mean not only losing valued property but also losing the most important source of income and farming as a way of life. Losing the farm has a great impact on the emotional and physical health of the couples concerned (Rosenblatt, 1990).

Impaired Health as a Cause of Financial Problems

Financial problems may cause health complaints, but building on COR theory (Hobfoll, 1988, 1989), one can argue that the reverse may also be possible. People do not just passively undergo stress, but they are also active creators of their environment. People have their resources for doing so, one of which is their health. In this vein, farm couples' health complaints may also be predictive of financial problems. Farm couples can be assumed to have a substantial influence on the farm's productivity and hence on their financial situation, providing most of the labor themselves and being primarily responsible for all

management decisions (see Gasson & Errington, 1993).

Studies providing evidence for a reversed causal relationship leading from health complaints to financial problems are scarce. Two longitudinal studies have addressed this issue, one among an educated middle-class sample (Aldwin & Revenson, 1986) and one among skilled blue-collar workers (Glickman, Tanaka, & Chan, 1991). Results showed that individuals with poor mental health were more likely to experience financial hardship and were less likely to recover from it than were those with better mental health. Other studies have provided indirect evidence. For example, a study among human service supervisory personnel (Wright, Bonett, & Sweeney, 1993) showed that poor mental health impaired management qualities, such as goal emphasis, team building, and work facilitation. Health problems have also been found to precede the occurrence of stressors, indicating that people with poor health may be less able to positively influence their environment. Poor mental health was found to prolong unemployment after layoff among employees working in the automobile industry (Hamilton, Hoffman, Broman, & Rauma, 1993). Furthermore, recent studies have shown that employees with health problems are less able to maintain or enhance their job resources, such as job variety, opportunities for promotion, and good relations with superiors and coworkers (Taris, 1999; Taris, Bok, & Caljé, 1998). However, in a review of longitudinal studies in organizational stress research (Zapf, Dormann, & Frese, 1996) identifying 15 studies that addressed both causal and reversed causal relationships between stressors and health complaints, only half of the studies found evidence for a reversed causal relationship, whereas the other half did not.

For the purpose of examining the reversed effect of health complaints on financial problems, the long-term longitudinal design of the present study is particularly useful. Health has been found to have a large stable component (e.g., Ormel & Schaufeli, 1991), so its influence is expected to be constantly present. Therefore, even if the effect of poor health on the financial situation of the farm may be modest, in the long run its effect may become substantial, just like constant dripping wearing away the surface of a stone.

Crossover of Health Complaints Between Spouses

Unraveling the long-term relationship between farm couples' financial problems and husbands' and

wives' health complaints raises the question of whether health complaints of one spouse may influence the health of his or her partner. That health complaints may be transmitted between spouses is obvious for contagious diseases such as the flu. However, concordance among spouses has also been found for noncontagious physical diseases, such as multiple sclerosis (Jones & Fletcher, 1992), and for mental distress, such as negative mood (e.g., Doherty, Orimoto, Singelis, Hatfield, & Hebb, 1995; McIntosh, Druckman, & Zajonc, 1994), depression (e.g., Howes, Hokanson, & Lowenstein, 1985; Joiner, 1994; Westman & Vinokur, 1998), and occupational burnout (e.g., Bakker & Schaufeli, in press; Bakker, Schaufeli, Sixma, & Bosveld, in press; Westman & Etzion, 1995). Several psychosocial mechanisms have been described to explain the transmission of health complaints between spouses (Westman & Etzion, 1995). Although these mechanisms primarily aim to clarify the transmission of *mental* health complaints, some of them can also explain other crossover effects, such as the effect of physical health complaints of one spouse on the mental and physical health complaints of the other.

First, having a sick partner may confront a person with demands (Westman & Etzion, 1995): The partner's illness may be an ongoing source of concern, and the sick partner may need extra care or social support. Additionally, health complaints may be reflected in the way the sick partner behaves, which might be stressful. For instance, previous studies have shown that individuals experiencing negative mood and depression were evaluated by their partners as being unusually withdrawn and detached (Jones & Fletcher, 1996) or even "socially undermining" (Vinokur et al., 1996; Westman & Vinokur, 1998). The latter means that individuals are hostile, react negatively toward their partners and their efforts, and hinder their partners in attaining instrumental goals.

Second, demands that may have led to health problems in one spouse may cross over and pose demands on the other. Jones and Fletcher (1993) found that marital partners can have rather accurate perceptions of each other's work-related stressors. In their study, the frequency of discussing work at home was positively related to mental health complaints for both spouses, presumably because it posed a demand for social support on them. Marital partners have also been found to compensate for spousal stress by taking over some of each other's household tasks (Bolger, DeLongis, Kessler, & Wethington, 1989; Pittman, Solheim, & Blanchard, 1996).

Third, like contagious physical diseases, mood states of one partner may also affect the mood states of the other directly, for example, through an active, sympathetic reaction or a process of "tuning in" (Hsee, Hatfield, Carlson, & Chemtob, 1990). Tuning in refers to people trying to imagine what the other person may feel, for instance, by comparing the other person's situation with their own past experiences. Mental distress may also be "caught" through an unconscious process of "emotional contagion," which has been defined as "the tendency to automatically mimic and synchronize facial expressions, vocalizations, postures, and movements with those of another person and, consequently, to converge emotionally" (Hatfield, Cacioppo, & Rapson, 1994, p. 5). Hatfield and her colleagues argued that frequent exposure to another person's emotions and paying close attention to them is one of the conditions facilitating the transmission of mental distress. This is likely to be the case for farm couples, who care for each other and share a great part of their lives together.

The Present Study

The central aim of this 10-year follow-up study of farm couples is to investigate the long-term pattern of relationships between couples' financial problems and husbands' and wives' mental and physical health complaints. These relationships are tested simultaneously in an autoregressive model, thus controlling for relative stability of financial problems and mental and physical health complaints over time. Hypothesis 1 is that Time 1 (T1) financial problems are predictive of health complaints 10 years later, at Time 2 (T2). Hypothesis 2 states that T1 health complaints are predictive of T2 financial problems. These hypotheses are tested for both husbands and wives. Additionally, Hypothesis 3 is that husbands' T1 health complaints are predictive of wives' T2 health complaints, and vice versa; that is, wives' T1 health complaints are related to husbands' T2 health complaints. Figure 1 displays a graphic representation of our hypothesized model.

Method

Participants and Procedure

Data for this study were collected in 1986 and 1996 from Dutch dairy farm couples. In 1986, a sample of 182 couples (response rate 74%) participated in a survey, including scales to measure financial problems and mental and physical health (Giesen, 1991). This sample represented the Dutch population of dairy farm couples who were not in a

transitional stage in 1986. It must be noted that, although the mean farm size did not differ significantly from that of the Dutch dairy farm population ($M = 55$ milking cows, $SD = 12$), relatively small and large farms were not approached (range was 30 to 100 milking cows). Furthermore, the husbands were all between 32 and 50 years of age and had been farm operators for at least 5 years.

In 1996, each of the couples was contacted again by letter, followed by a telephone call. It turned out that 8 couples had transferred their farm to the offspring successor, 4 couples had switched to another branch in agriculture, 10 couples were not traceable because they had moved to a farm elsewhere, and 16 couples had completely stopped their farming activities. The main reasons these 16 couples reported for discontinuation of their farming activities were age, health problems, and not having a successor. Regression analyses showed that 1986 measures of health complaints and financial problems were not predictive of quitting.

The remaining 144 couples who were still working on their dairy farms were asked to participate in the second wave, 94 of whom responded (65%). As during the first wave, trained students visited these couples and completed questionnaires in personal interviews with husbands and wives separately. Comparison of the couples responding in both the first and the second wave with those only participating in the first wave showed no significant differences regarding personal and family characteristics (age, education, health and mental health, and family size) and farm characteristics (farm size and financial situation). In 1996, the mean age of the husbands was 52 years ($SD = 5$) and of the wives, 49 years ($SD = 6$). In all cases, the husband was the farm operator and did most of the actual farm work, namely, an average of 61 hr/week ($SD = 14$), compared with an average 16 hr/week for wives ($SD = 13$). The wives were primarily responsible for the family and the home. On 8% of the farms, only husbands did actual farm work; on 32% of the farms, husbands and wives were both doing farm work; and on 56% of the farms, husbands worked together with their wives and one of their children. The number of children participating in actual farm work had increased since 1986, when they participated only on 30% of the farms. Furthermore, the mean farm size had decreased significantly, for example, $M = 48$ milking cows, $SD = 19$, $t(96) = -4.44$, $p < .001$, but it was still within the mean range of Dutch dairy farms.

Measures

Perceived financial problems were measured with a 4-item Likert scale, which was developed and used in a previous study in the Netherlands (Welles & Defares, 1983). The items were introduced with the sentence, "Lately, how often has it occurred that . . ." followed by "You were unable to pay the bills on time?" (1), "Kept working with worn out machinery because you lacked financial resources to replace them?" (2), "Had to borrow money to pay off debts or cushion financial setbacks?" (3), and "You did not have enough money to make ends meet?" (4). In 1986, the answers ranged from 1 (*never/rarely*) to 4 (*very often*). Because the variance on the 1986 measure turned out to be somewhat limited ($SD = .31$ for husbands and $.30$ for wives), in 1996, the answers categories were

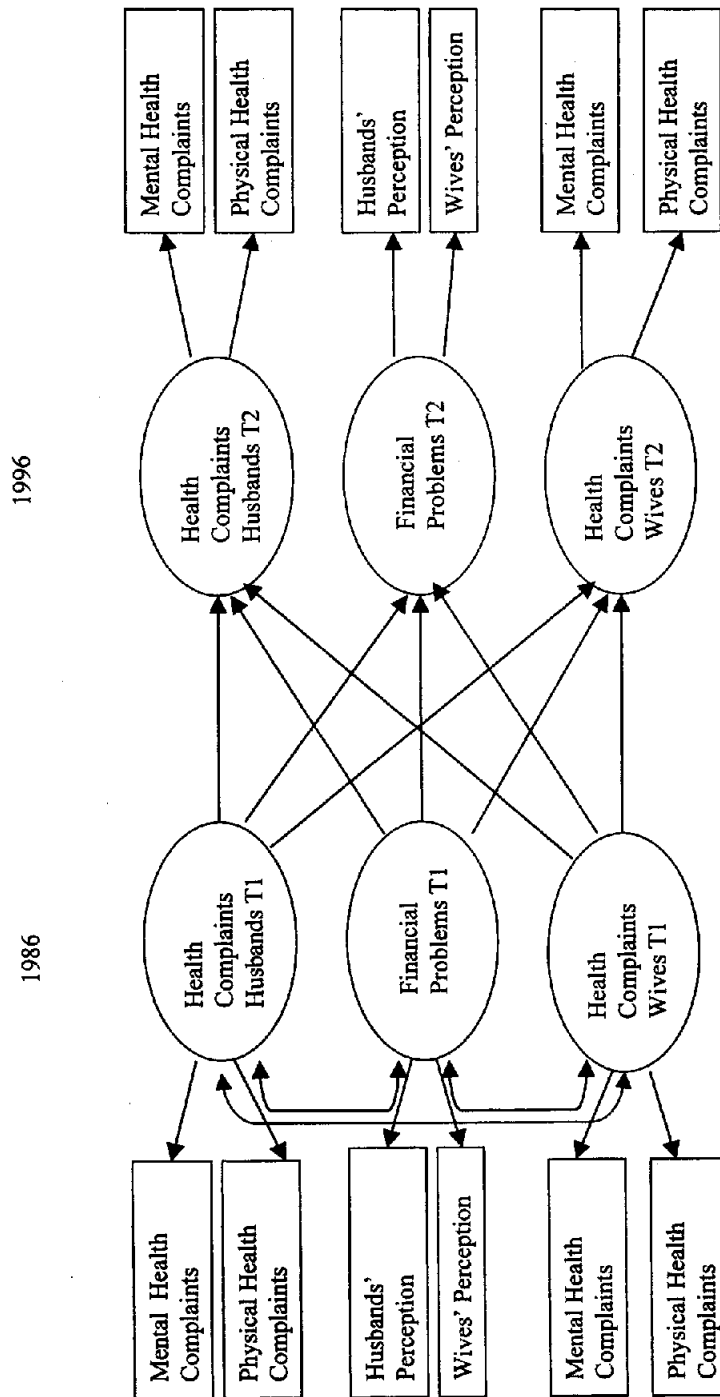


Figure 1. The research model. T1 = Time 1; T2 = Time 2.

changed to 1 (*never/rarely*), 2 (*now and then*), 3 (*sometimes*), 4 (*regularly*), and 5 (*very often*). Afterwards, it turned out that the variance was still somewhat limited ($SD = .35$ for husbands and $.38$ for wives). Scores were obtained from both husbands and wives and were used as two separate indicators of their financial situation. In 1986, Cronbach's alpha was $.74$ for husbands and $.78$ for wives. In 1996, Cronbach's alpha was $.81$ for husbands and $.83$ for wives.

Mental health complaints were assessed with a valid and reliable 10-item scale from the Vragenlijst Organisatiestress-D (VOS-D [Organizational Stress Questionnaire]; Bergers, Marcelissen, & De Wolff, 1986.) This scale was originally developed by French and Kahn (1962). Participants were asked to indicate on a 4-point scale how often they felt angry, relaxed, confused, tense, and so on. The answers ranged from 1 (*never/rarely*) to 4 (*very often*). In 1986, Cronbach's alpha was $.80$ for husbands and $.79$ for wives. In 1996, Cronbach's alpha was $.77$ for husbands and $.78$ for wives.

Physical health complaints were measured with a 14-item scale from the VOS-D (Bergers et al., 1986). The items cover experiences such as headache, stomachache, changes in heart rhythm, dizziness, and sleep disturbances. The answers ranged from 1 (*never/rarely*) to 4 (*very often*). In 1986, Cronbach's alpha for this scale was $.77$ for husbands and $.89$ for wives. In 1996, Cronbach's alpha was $.92$ for husbands and $.86$ for wives.

Analyses

We tested the hypotheses in a path model, using latent variables in a structural equation model (SEM) with the EQS program (Bentler, 1989; Dunn, Everitt, & Pickles, 1994). Missing values were listwise deleted, leaving 91 couples in the analyses. We used the scores of husbands and wives on the scale measuring perceived financial problems as two separate indicators of one latent variable, financial problems, in 1986 (T1) and 1996 (T2). The scores on the individual items measuring physical health complaints were generally low, suggesting they were psychosomatic in nature. Furthermore, the scales measuring mental and physical health complaints turned out to be highly correlated (see Table 1). For this reason, we used the scales measuring mental and physical health complaints as two separate indicators of one latent variable, health complaints, for husbands and wives separately, both at T1 and T2. The scores on all indicators had an inverted J-shaped distribution, showing that most of the participants reported only mild financial problems and few health complaints. Therefore, prior to the SEM analyses, we performed a natural logarithmic transformation on each of the scales (see Dunn et al., 1994).

To examine how close competing models fit to the data, we calculated several indices (Bentler, 1989; Hu & Bentler, 1995). The first is the traditional goodness-of-fit index chi-square, which shows the magnitude of the discrepancy between the hypothesized and the observed covariance matrix. Because this discrepancy should be small, the chi-square should be nonsignificant. In addition, we used several other general fit indices that counteract problems associated with the chi-square, such as the influence of a small sample size. The first of these is the Satorra-Bentler

scaled chi-square, based on the generalized least-squares method, which has been recommended for use in small samples. We also present some incremental fit indices, the comparative fit index (CFI), the Bonnet nonnormed fit index (NNFI), and the Bonnet normed fit index (NFI), which compare the fit of the hypothesized model to a null model. Finally, we present a parsimony index, the root mean square error of approximation (RMSEA). For the CFI, the NNFI, and the NFI, a value larger than $.90$ is generally considered acceptable. Browne and Cudeck (1993) suggested that a RMSEA value of $.05$ indicates a close fit and that values up to $.08$ represent reasonable errors of approximation in the population.

Results

Descriptives

Table 1 presents means, standard deviations, and the correlation matrix of the scores on perceived financial problems and mental and physical health complaints at T1 and T2 for husbands and wives separately. To compare the mean levels of financial problems at T1 and T2, we temporarily corrected the scores for different scaling. As can be seen, the absolute values for all variables are rather low. Furthermore, the level of financial problems had not changed significantly over time, for both husbands and wives, $t(90) < 1$, *ns*. However, for husbands, mental health complaints had increased significantly, $t(90) = 5.13$, $p < .001$, as well as physical health complaints, $t(90) = 2.57$, $p < .01$. For wives, only mental health complaints had increased significantly, be it slightly over time, $t(90) = 2.94$, $p < .01$. Furthermore, husbands and wives reported about an equal number of health complaints. In 1986, husbands reported fewer physical health complaints than did wives, $t(90) < 2.72$, $p < .01$.

As the correlations show, mental and physical health complaints were strongly related. Mental health complaints correlated somewhat stronger with financial problems than physical health complaints, but the differences were rather small.

Model Testing

As recommended by Jöreskog and Sörbom (1993), we tested the hypothesized model following a stepwise procedure. Prior to testing the hypothesized structural relationships, we tested three different measurement models to obtain an optimal basis for further analyses (cf. the two-step approach of Anderson & Gerbing, 1988). Table 2 presents the fit indices of the different measurement models.

All measurement models included the six latent

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Table 1
Means, Standard Deviations, and Correlations of the Observed Variables (N = 91)

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
Time 1														
Husbands														
1. Perceived financial problems (1-5) ^a	1.49	0.86	—											
2. Physical health complaints (1-4)	1.21	0.22	.28**	—										
3. Mental health complaints (1-4)	1.53	0.35	.45**	.54**	—									
Wives														
4. Perceived financial problems (1-5) ^a	1.53	0.65	.63**	.20*	.32**	—								
5. Physical health complaints (1-4)	1.32	0.41	.26*	.18	.29**	.19	—							
6. Mental health complaints (1-4)	1.71	0.39	.29*	.20**	.32**	.21**	.68**	—						
Time 2														
Husbands														
7. Perceived financial problems (1-5) ^a	1.54	0.68	.53**	.28**	.44**	.38**	.20*	.22*	—					
8. Physical health complaints (1-4)	1.61	0.36	.21*	.52**	.40**	.15	.13	.15	.21*	—				
9. Mental health complaints (1-4)	1.27	0.32	.33**	.40**	.59**	.24*	.21*	.23*	.32**	.45**	—			
Wives														
10. Perceived financial problems (1-5) ^a	1.32	0.38	.46**	.24*	.38**	.50**	.17	.19	.54**	.18	.28*	—		
11. Physical health complaints (1-4)	1.50	0.70	.27*	.26*	.42**	.20*	.59**	.43**	.24*	.19	.30**	.21*	—	
12. Mental health complaints (1-4)	1.74	0.39	.25*	.24*	.38**	.18	.36**	.39**	.22*	.18	.28**	.19	.49**	—

Note. All correlations are based on the natural logarithmic transformations of the scores.

* To compare means, Time 1 scores have been rescaled from 1 to 4 into 1 to 5.

** $p < .05$. *** $p < .01$.

Table 2
Fit Indices of the Different Measurement Models ($N = 91$)

Model	df	χ^2	p	Scaled χ^2	p	CFI	NNFI	NFI	RMSEA	90% confidence interval RMSEA
True-score measurement model	39	56.96	.03	59.46	.02	.95	.92	.87	.07	.02-.11
Common-factor measurement model	33	32.36	.50	33.90	.42	1.00	1.00	.93	.00	.00-.08
Final measurement model	35	33.45	.55	34.68	.48	1.00	1.01	.93	.00	.00-.07

Note. CFI = comparative fit index; NNFI = nonnormed fit index; NFI = normed fit index; RMSEA = root mean square error of approximation.

variables (T1 and T2 financial problems, husbands' T1 and T2 health complaints, and wives' T1 and T2 health complaints), the 12 indicators of these latent variables, and paths leading from the latent variables to the indicators. Furthermore, each of the models contained covariances between all latent variables. The three measurement models differed in the extent to which we allowed the error terms of the indicators to covary. The first model tested was a true score model, which does not allow any covariances between error terms (Fergusson & Horwood, 1988). This model did not fit the data ($p < .05$; see Table 2). Second, we tested a common-factor model, which allows covariances between all T1 and T2 error terms of identical indicators (Fergusson & Horwood, 1988). The rationale behind this is that identical measures are likely to be related over time because of systematic error that is not of theoretical interest, such as response bias. This may attenuate the covariances among latent constructs. The model fit of this common-factor measurement model was significantly better than that of a true-factor model, $\Delta\chi^2(6, N = 91) = 24.60, p < .001$.

Although the common-factor model fitted the data well, $\chi^2(33, N = 91) = 32.36, p < .001$, the Wald test for dropping parameters (Bollen, 1989) showed that two of the six relationships between the error terms of the indicators were not significant: those of husbands' T1 and T2 perception of financial problems and wives' T1 and T2 mental health complaints. Therefore, we revised the common-factor model, and the nonsignificant covariances were constrained to zero. The resulting measurement model showed a close fit to the data, $\chi^2(35, N = 91) = 33.45, p < .10$, and was used as the basis for testing our hypotheses. In this model, all paths from the latent variables to the manifest variables were highly significant ($p < .001$).

Table 3 presents the correlations between the latent variables in the revised common-factor model. As is shown, the autocorrelations, which are the correlations between identical factors on both measurement moments, were high, ranging from .71 to .80. This indicates high (relative) stability of both the couples' financial problems and of their health complaints over a 10-year time period. Furthermore, except for the relationship between wives' T1 health complaints and husbands' T2 health complaints, which had a z statistic of 1.91 ($p < .06$), all correlations between the latent variables were significant.

Subsequently, we tested the hypothesized structural model (see Figure 1). This model fits rather closely to the data (see Table 4), although not all predicted structural relationships were significant.

Table 3
Correlations Among the Latent Variables ($N = 91$)

Variable	1	2	3	4	5	6
Time 1						
1. Financial problems	—					
2. Husbands' health complaints	.54***	—				
3. Wives' health complaints	.37**	.40***	—			
Time 2						
4. Financial problems	.72***	.61***	.35*	—		
5. Husbands' health complaints	.34**	.82***	.23	.43***	—	
6. Wives' health complaints	.32*	.62***	.69***	.43**	.50***	—

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

First, we found no support for Hypothesis 1, according to which, over a 10-year time period, financial problems are predictive of health complaints: The paths leading from T1 financial problems to T2 health complaints were not significant for either husbands or wives. Second, Hypothesis 2, which predicted the reversed relationship leading from health complaints to financial problems, was supported for husbands: The more health complaints husbands had at the first measurement moment, the more severe were the couples' T2 financial problems. Results did not show an effect of wives' T1 health complaints on the couples' T2 financial problems. Finally, concerning Hypothesis 3 predicting a long-term crossover effect of health complaints between spouses, the model showed an effect of husbands' T1 health complaints on wives' T2 health complaints, but not vice versa.

In the final step of the SEM analyses, we removed all nonsignificant relationships from the model. The final model is displayed in Figure 2. The percentage of variance explained by the model was 13% for financial problems, 17% for husbands' health complaints, and 14% for wives' health complaints.

Additionally, we explored whether the variables included in the model sufficiently explained all systematic variance between the variables at T2, by allowing the disturbance terms, or unique factors, of T2 latent variables to covary. None of these covariances between the T2 disturbance terms turned out to be significant; consequently, adding these parameters to the model did not improve the fit of the model significantly, $\Delta\chi^2(3, N = 91) = 0.89, p > .10$ (see Table 4). This means that the relative stability of financial problems and husbands' and wives' health complaints, the relationships between these variables at T1 and the longitudinal relationships between, on

the one hand, the T1 husbands' health complaints and, on the other hand, T2 financial problems and wives' T2 health complaints sufficiently explained the relationships between the latent variables at T2.

Discussion and Conclusions

This study set out to test both causal and reversed causal relationships between couples' financial problems and husbands' and wives' mental and physical health complaints over a 10-year time period. Additionally, we investigated a possible long-term crossover effect of health complaints from husbands to wives and vice versa. The relationships were tested simultaneously, using SEM.

The first interesting finding was the relative stability of both financial problems and health complaints. Financial problems in 1986 explained 10% of financial problems in 1996. For health complaints, these percentages ranged from 12% for wives to 15% for husbands. This means that farm couples who had more financial problems or more health complaints than other couples in 1986 also tended to have them 10 years later. High relative stability of both financial problems and health complaints is not unusual and was, for example, also found in an earlier farm study by Lorenz et al. (1993), who explained it in terms of a "dynamic equilibrium." According to the dynamic equilibrium model (Heady & Wearing, 1989), exogenous forces generally cause only temporary changes in levels of (life) event exposure and health complaints. Stable personality characteristics would cause these levels to return to their original baselines. Rephrased in terms of Hobfoll's (1988, 1989) COR theory, personality characteristics would be one of the resources people have to counteract (potential)

Table 4
Fit Indices of the Different Structural Models (N = 91)

Model	df	χ^2	p	Scaled χ^2	p	CFI	NNFI	NFI	RMSEA	90% confidence interval RMSEA
Hypothesized structural model	38	33.90	.66	35.19	.60	1.00	1.02	.92	.00	.00-.06
Revised structural model	42	36.41	.71	37.28	.68	1.00	1.02	.92	.00	.00-.06
Revised structural model with correlated Time 2 residuals	39	35.52	.63	36.27	.60	1.00	1.02	.92	.00	.00-.06

Note. CFI = comparative fit index; NNFI = nonnormed fit index; NFI = normed fit index; RMSEA = root mean square error of approximation.

losses, among others such as personal competence, knowledge, and social networks.

Despite the overall stability in both financial problems and health complaints, two lagged effects were found, both of husbands' T1 health complaints. First, supporting our hypothesis of reversed causation (Hypothesis 2), husbands' health complaints predicted the couples' financial problems over a period of 10 years. Note that our measure of financial problems was not merely a self-report but was based on consensus between both spouses about objective aspects of their financial situation. This association indicates that poor mental and physical health may impair running the farm business effectively. There may, however, also be other explanations. Poor health may, for instance, confront a farm couple with high medical costs. However, yet another finding underscores the likelihood of reduced effectiveness: In contrast to husbands' health complaints, wives' health complaints did *not* predict financial problems. Whereas medical costs would probably not explain this gender difference, reduced effectiveness would. After all, the husbands in our sample were all farm operators and primarily responsible for the business. Their wives' primary responsibility was the home and the family, even though many of them did farm work as well and participated in decision making. This division of labor resulted in, for example, husbands spending far more hours doing actual farm work. For this reason, husbands' (reduced) effectiveness may have had more impact on the couples' financial situation than wives' effectiveness.

Second, over a 10-year period, husbands' health complaints were predictive of wives' health complaints (Hypothesis 3), but no long-term crossover effect was found of wives' health complaints on husbands' health complaints. Although this latter finding is not consistent with results from some previous studies showing the crossover effect to be bidirectional (e.g., Bookwala & Schulz, 1996; Pleck & Staines, 1985; Westman & Etzion, 1995; Westman & Vinokur, 1998), there are some plausible explanations. First, as some authors have found, women may be more vulnerable to "catching" other people's psychological distress, because traditional gender roles may have taught women to be more sensitive to emotions displayed by others, in comparison with men. Additionally, interpersonal stressors may be more relevant to them and, consequently, have stronger stress effects (Hatfield et al., 1994). Second, men and women may react differently when confronted with spousal stress. In studies on dyadic adjustment processes (Bolger et al., 1989; Pittman et al., 1996),

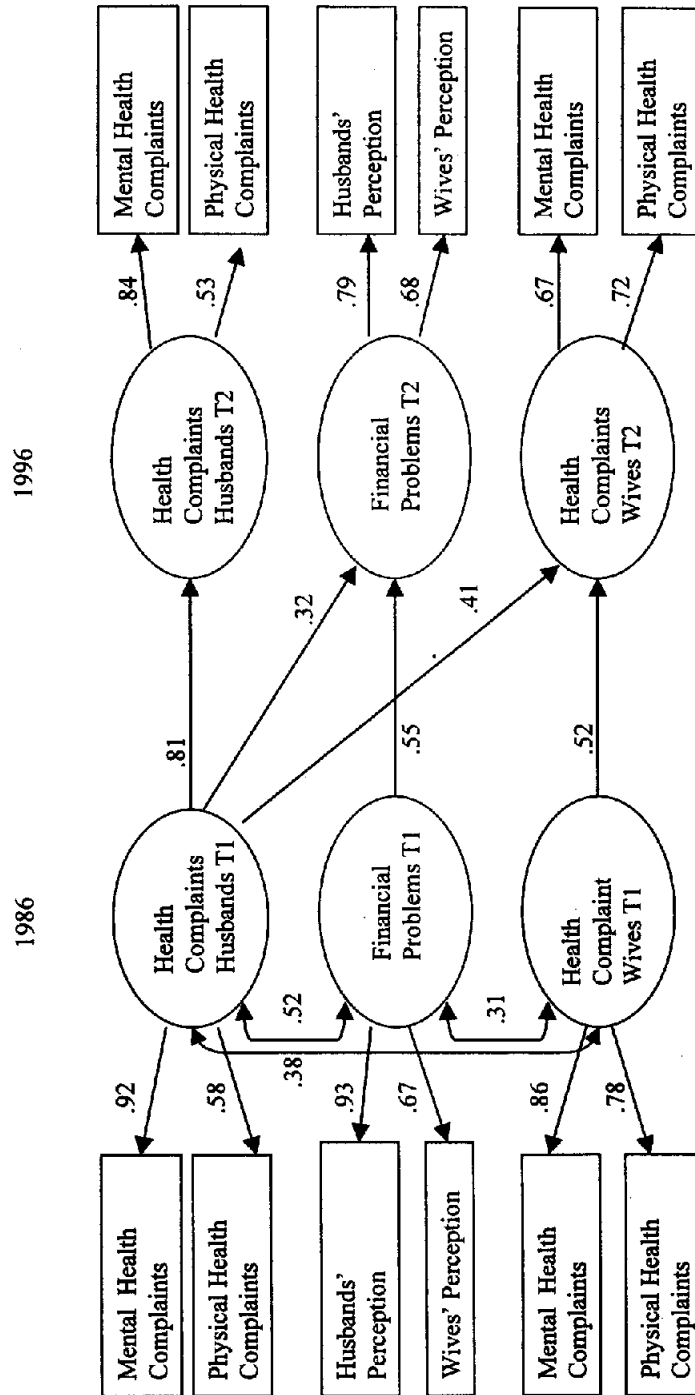


Figure 2. Long-term relationships between financial problems and health complaints among farm couples: final solution of the structural model. $N = 91$. T1 = Time 1; T2 = Time 2.

women tended to react by taking over household tasks to compensate for their spouses' job stress. Such a complementary reaction was not found for men. Third, when confronted with stressors, husbands may appeal more strongly to their spouses, as suggested by the findings of a study by Jones and Fletcher (1996), who found that husbands tended to have smaller social networks and therefore depend more on their wives for social support. We believe that the latter two dyadic processes are particularly relevant for farm couples. Farming requires constant attendance and physical presence, so when the farmer is ill and cannot fulfill his tasks, such as feeding the cattle or milking, someone else needs to take over. As a previous study has shown (Giesen, 1991, 1993), it is common practice for farm wives to step in when necessary, whereas for farmers it is far less common to take over their wives' tasks (including household tasks). Furthermore, anecdotal material of Giesen's (1993) study showed that husbands indeed shared personal problems only with closest kin, whereas wives also shared them with other relatives or friends.

No support was found for a long-term effect of financial problems on health complaints for either husbands or wives (Hypothesis 1). This seems to contrast with the results of other farm studies using shorter time lags (Lorenz et al., 1993; Swisher et al., 1998). However, the cross-sectional relationships at T1 in the present study (see Table 3) suggests that such a short-term relationship from financial problems to health complaints may be present. The absence of a long-term effect of financial problems on health complaints is perhaps not surprising. The couples in this study had experienced rather mild financial problems, as the low average scores on this scale indicated (see Table 1). Furthermore, their financial situation had not changed significantly over time. Had their financial problems been more severe, or had their situation seriously deteriorated between T1 and T2, a "loss spiral" might have occurred (cf. Hobfoll, 1988, 1989), and the health effects might have lasted longer. Results of a study among employees at low risk for financial problems (Aldwin & Revenson, 1986) also indicated that the severity of financial problems makes a difference. Although that study used a relatively short time lag (1 year), health complaints turned out to be stronger predictors of financial problems than financial problems were of health complaints.

Our findings have interesting theoretical implications for stress research in general. Most importantly, they show that the bidirectional nature of the rela-

tionship between stressors and strains cannot be neglected, especially in the long run and in cases in which the incidence and magnitude of stressors are rather small. Furthermore, the fact that the results differ from the outcomes of studies with a shorter time lag emphasizes that stress researchers should be aware of the effect of the time frame used in their study (see also Bailey & Baghat, 1987; Kessler, 1987).

This study has a number of limitations. First, the long time lag, which is the strength of this study, is also its weakness. Our design with two time points spaced over a 10-year time period is inadequate to study the short-term dynamics of the stress process. Future studies would benefit from using more measurement moments with shorter time intervals, which would provide more insight into the waxing and waning of stressors and strains over time. Using at least three measurement moments would also make it possible to test a dynamic equilibrium model (Heady & Wearing, 1989; Ormell & Schaufeli, 1991). Second, our model contained only a limited number of variables. To gain more detailed insight into the dynamics of this model, one might find it fruitful to add the variables we discussed earlier. Examples are personality characteristics or other personal resources that may clarify the effect of health complaints on the financial situation, such as managerial qualities (see Wright et al., 1993). Including variables related to interaction processes between spouses would also be interesting (see Vinokur et al., 1996).

Third, our power was limited to the number of couples (i.e., $N = 91$). Using a small sample in SEM increases the risk of not detecting relationships that are actually present in the population (Kaplan, 1995). Therefore, it would be advisable to test the model in a larger population to test the generality of our findings.

Finally, this study addressed a specific subsample of the self-employed, namely, Dutch dairy farm couples who had been doing relatively well up to the time of data collection (Landbouw Economisch Instituut, 1996). Therefore, this study has likely captured chronic conditions rather than acute events. Future studies may benefit from including self-employed couples facing more serious financial hardship. Furthermore, it is unclear to what extent our findings could be generalized to female business operators and their partners.

In spite of its limitations, this study has unique features that provide valuable insights into the relationship between financial problems and health complaints. It reveals the long-term perspective, which

generally remains hidden, and it does so for a poorly researched group, namely, self-employed couples. This study has not only theoretical implications but also practical relevance. Our findings emphasize the importance of husbands' health as a resource for both the family and the business, in a setting in which the husband is primarily responsible for the business. Professionals assisting the self-employed during hard times should therefore not discard health complaints as mere stress outcomes, focusing only on solving the financial problems and helping the self-employed to deal with financial adversity. The relationship between health and financial problems works both ways, and improving health may additionally help counteract financial problems as well as prevent the self-employed person from encountering financial problems in the future. Special attention should be paid to the self-employed person's wife, considering the fact that financial problems are more likely to affect her in a different way than her husband. The results of this study suggest that she may be influenced through social processes. For this reason, actions aimed at helping self-employed couples cope with financial problems should also direct attention to the interaction processes between spouses.

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