The farm crisis: stress, alienation, and the political orientation of Iowa farm operators

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THE FARM CRISIS: STRESS, ALIENATION, AND THE POLITICAL ORIENTATION OF IOWA FARM OPERATORS

Iowa State University

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The farm crisis:
Stress, alienation, and the political orientation of
Iowa farm operators

by

Jack Mitchell Geller

A Dissertation Submitted to the
Graduate Faculty in Partial Fulfillment of the
Requirements for the Degree of
DOCTOR OF PHILOSOPHY

Department: Sociology and Anthropology
Major: Rural Sociology

Approved:

Signature was redacted for privacy.

In Charge of Major Work

Signature was redacted for privacy.

For the Major Department

Signature was redacted for privacy.

For the Graduate College

Iowa State University
Ames, Iowa
1986
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CHAPTER ONE
INTRODUCTION

Statement of Problem

To fully understand the current financial crisis in American agriculture, it is necessary to appreciate the changes that have taken place in the economy since the early 1970s. In the 1970s, there was much concern about increasing world population and subsequent food shortages. Agricultural exports increased during this decade, and government policies were oriented toward expanding agricultural output (Lasley, 1986).

During this period, inflation was high, but real interest rates were relatively low. Many farmers reacted to these very favorable conditions by investing heavily in land and machinery. Such capital investments, along with inflation, brought greatly increased farmland values and increased total farm value, in some cases by over 400 percent (Lasley, 1986). A much publicized result of this heavy capital investment in agriculture was a 20 percent increase in the nation's food production capacity (USDA:ERS, 1985).

The agricultural recession began in 1980 following a change in the monetary policy by the Federal Reserve Board. With a new goal of reducing inflation, the Board
sharply tightened the money supply. This resulted in a domestic recession (both in agriculture and the general economy), a sharp rise in real interest rates (by 6 to 7 percent), and a stronger U.S. dollar. These developments triggered, in turn, a sharp decrease in both foreign demand for U.S. agricultural products and farmland values.

The combination of low farm prices, low farm income, and slumping land values has created a serious debt problem in agriculture. As to whether the debt problem is of crisis proportion is debatable. Clearly, there have been other periods in our history which witnessed a greater degree of off-farm migration than we are currently witnessing. However, some have argued that it is not the change in the agricultural economy that has created the perception of a crisis, but, rather, the accelerated pace with which the change came. Lasley (1986) notes that the pace of agricultural change has increased so greatly that it makes both financial and social adjustment to the change difficult.

Examples of this accelerated pace abound. For example, as land values continue to decline (an average of 56 percent in Iowa since 1981) so has net worth. It is estimated, for example, that average net worth in Iowa declined 25 percent in a recent one year period
(1984-1985) (Jolly and Barkema, 1985). Most of this loss in equity is attributable to depreciated assets rather than to accumulating debt, suggesting that the sagging farm economy is undermining the equity of farmers regardless of their management practices, size of farm, or level of debt. Jolly and Barkema (1985) have shown that farm operations with low to moderate debt (i.e., under 40 percent debt-to-asset ratio) display the same trends as operations with much higher debt; that is, reduced assets, increased debts, and diminishing net worth.

There is evidence that, given the current rate of returns and interest rates, farms that are highly leveraged (i.e. have a debt-to-asset ratio over 40 percent) are under considerable financial stress. Farms that are leveraged over 70 percent are experiencing severe financial problems. It is estimated that between 10 to 12 percent of Iowa farm operators are leveraged in excess of 70 percent (Lasley, 1984; Jolly, 1984). If economic conditions remain unchanged, these highly leveraged farmers stand to lose approximately 50 percent of their net worth each year! Consequently, their continued tenure in farming is limited, at best, to two or three years (ISU Economics Dept., 1984; Lasley, 1984). Furthermore, if present trends continue
unabated, with farms and farmland values continuing to decline, many of those operators who are now only moderately leveraged (i.e., less than 40 percent) will soon lose sufficient equity to place them in serious financial trouble.

Because a decline in farm equity affects all farm operators, there is no one "type" of farmer who is in trouble. But many of those farmers who are experiencing the most severe financial stress are the "progressive" farmers who expanded in the 1970s and adopted state-of-the-art production technologies. Ironically, as noted by Jennings (1984), if trends in the 1970s had persisted through the 1980s many of these farmers would today be in strong economic positions.

Some farmers are in financial trouble because they entered farming during the 1970s; a period when the start up costs (especially land prices and inputs) were at all-time highs, leaving them vulnerable to a sudden downturn in the farm economy (Campbell et al., 1984). Also exposed were farmers who expanded during the 1970s to permit the entry of children into their operations. Still others are in financial trouble because of inefficiency in their operations, or because of land speculation.

While there are many causes of the present
financial difficulties among farmers, it doesn't seem that those in the deepest trouble are a representative cross-section of the farm population. To the contrary, research has shown them to be a selective population. Studies by Jolly (1984), Jolly and Barkema (1985), Lasley (1984), and Bultena et al. (1985) reveal that operators who are in the most serious financial trouble tend to be younger, on larger farms, better educated, and making the highest gross farm sales. Most were brought to their predicament by farm expansion (for whatever reason) during the 1970s.

Boehlje (1984) contends that the "Rulebook for Agriculture" has changed in the 1980s. Noting a 500 percent increase in the Production Credit Association (PCA) loan volume in liquidation since 1981, he argues that traditional strategies to insure economic survival are no longer appropriate. Operators who fail to adjust to many of the emergent economic realities in agriculture and who continue to rely on traditional strategies, will find themselves in serious financial difficulty.
Social and Psychological Effects of an Economic Crisis

Durkheim (1897), in his classic work on suicide, identified what he called "anomic suicide." This type of suicide was felt to be especially prevalent during periods of societal unrest, such as an economic crisis or depression (Ritzer, 1983). During unsettled times, individuals were seen as cut adrift from many of the structures that give meaning to their lives (e.g., family, friends, and religious institutions). Empirical studies of the relationships of business activity and unemployment rates to suicide have generally supported Durkheim's thesis (Dublin and Bunzel, 1933; Henry and Short, 1954; Brenner, 1976).

Other studies have demonstrated a relationship between economic instability and adverse social-psychological outcomes (e.g., depression, anxiety, or psychosomatic illness) (Aiken et al. 1968; Cobb and Kasl, 1977; Buss and Redburn, 1983). Specific to the farm crisis, Heffernan and Heffernan's (1986) study of farmers who lost their farms because of financial problems shows that they exhibited many of the same reactions as persons losing their jobs in other sectors of the economy. Namely, a majority of both displaced farmers and their spouses became depressed, withdrew
from family and friends, experienced insomnia, feelings of worthlessness and mood changes, and became unusually silent for long periods of time.

Several studies have examined the moderating effects of various factors on the relationship of economic crisis to psychological distress (Lipsky, 1970; Strange, 1977; Dean and Lin, 1977; Kaplan et al., 1977). Among the variables felt to be especially important to this relationship are age, education, and perception of hardships.

Unfortunately, little research has been done on the social and psychological vulnerabilities of persons who continue to be actively engaged in farming. The factors causing psychological upheavals and attitude change among financially stressed farmers remain obscure.

Theoretical Concerns

Although the farm crisis has been well studied by economists, there have been few sociological analyses. Research on related topics has shown, however, that severe economic turmoil can spawn numerous social and psychological upheavals, including distress, social disintegration, social movements, and changes in class and stratification structures.
This study examines the farm crisis from a social-psychological perspective. Specifically, attention is paid to personal stress, alienation, and the political orientation of Iowa farm operators as they cope with the economic difficulties that engulf them.

Much of the current literature on the social and psychological effects of the farm crisis are journalistic case studies of farmers and farm families who have experienced high levels of stress. Not surprisingly, these stories often single out the most "tragic" aspects of the farm crisis, including families losing their farms, suicide, murder, and the like. Some journalistic reports have a public service emphasis, describing symptoms of stress, and providing other useful information in the hope of helping farmers secure needed referral or treatment service. Finally, there are reports written by mental health professionals that draw upon previously developed models and theories about stress to explain adjustment problems occurring from the current crisis in agriculture.

Until now, few studies have empirically gauged the social and psychological impacts of the farm crisis. A prominent exception is a recent study by Heffernan and Heffernan (1986) of 42 Missouri farm families who had recently lost their farms because of financial problems.
The present study builds upon these earlier findings, but is distinguished in two ways. First, the respondents are still actively farming. Second, they are drawn from a statewide sample of farm operators, rather than, as in the case of the Heffernan study, being a sample of displaced operators in a single county.

Objectives of the Study

Clearly, the current financial crisis in agriculture has put the relationship between many farmers and their livelihood in a fragile state. Recent estimates suggest that 10,000 Iowa farm operators are in immediate jeopardy of losing their farms, and another 30,000 could face a similar fate if the farm economy continues to stagnate.

This study examines several of the social psychological impacts of the emergent farm crisis. Specifically, the analysis:

1. Explores the extent to which Iowa farm operators are experiencing personal and familial stress.
2. Tests hypotheses about some variables that are thought to be causal determinants of stress.
3. Examines the extent to which Iowa farm operators are experiencing feelings of alienation.

4. Tests hypotheses about some variables that are thought to be causal determinants of alienation.

5. Tests hypotheses about some variables that are thought to mediate the relationship between economic hardship and stress.

6. Tests hypotheses about the impacts of the farm crisis on the political orientations of farm operators.
CHAPTER TWO
THEORETICAL PERSPECTIVE

Many sociologists have written about the bond between man and the workplace (Hughes, 1951; Sennett and Cobb, 1972). Aiken et al. (1968) argue that this relationship is the most fundamental of all relationships for two reasons: first, because such a significant part of the day is spent at the workplace, and, second, because so many other relationships are contingent upon the work role. In this regard, the farmer is truly in a unique position. Because farmers both reside and work at the same location, they can rarely separate their work time from the remainder of the day. The act of farming as an occupation is so intertwined with the concept of farming as a lifestyle that it is nearly impossible to separate the two for the operator of a family-sized farm.

Some sociologists argue that the work role is part of one's social identity. Work is felt to be so fundamental that to understand the human condition one must understand persons' relationships to the workplace. In this regard, Hughes (1951) writes:

"A man's work is one of the more important parts of his identity of his self; indeed, of
his fate in the one life he has to live, for there is something almost as irrevocable about choice of occupation as there is about choosing a mate."

Echoing this argument, Sennett and Cobb (1972:267-268) write:

"... The source of social legitimacy in a capitalist society comes primarily from what a person does, and it is from this that inferences are drawn about who he essentially is."

The present study focuses on identifying some likely social-psychological consequences of a breakdown of the work relationship; i.e., a threatened job loss or a serious economic strain.

Although few empirical studies have examined the social-psychological impact of economic hardship among farm families, there is a rich literature on this issue in the industrial sector. Studies of plant closings and mass unemployment are of particular value.

Both Dooley and Catalano (1980) and Buss et al. (1983) have recently reviewed these studies and they suggest that there are three types of empirical evidence of economic hardship contributing to social-psychological disorders. First are case studies of unemployed workers, families, and/or their communities (Bakke, 1940; Slote, 1969; Strange, 1977). While flawed methodologically, these case studies are invaluable for providing insights, as well as developing hypotheses.
The second class of studies are cross-sectional and measure relationships between socioeconomic status and negative social-psychological symptoms (Srole et al., 1962; Leighton et al., 1963; Durham, 1976). Despite consistent findings of inverse relationships between measures of SES and social-psychological disorders, both Dooley and Catalano (1980) and Buss et al. (1983) argue that these studies are very limited in their usefulness. Both reviewers claim these studies reveal little about the dynamics of the relationships, specifically the direction of causality.

The third class of studies, which are claimed to be most useful and methodologically sophisticated, are longitudinal studies at both the individual and aggregate levels (Brenner, 1973; 1976; Cobb and Kasl, 1977; Parnes and King, 1977; Cohn, 1978; Buss and Redburn, 1983). At the aggregate level, Brenner's work is most prominent. Brenner (1973, 1976) used economic indicators such as unemployment and inflation rates and related multiyear and regional variations in these rates to aggregate indicators of social-psychological disorders. His findings suggest that increases in first-time hospital admissions, suicides, and stress-related illnesses follow increases in these economic indicators.
At the individual level, the work of Cobb and Kasl (1977) is particularly prominent because they were able to draw a sample of workers before they were terminated. Additionally, a control group was drawn from workers in plants that were not at risk of closing. Their findings indicate that job loss tends to be associated with increased depression, anomie, anger, suspicion, and other stress symptoms. Job loss was also found to be associated with increased stress-related illnesses. Additionally, self-reports of illness were highest during the period just before the plant closed, suggesting that the fear or perception of economic hardship may be as damaging as the actual job termination. More specific to farming, Heffernan and Heffernan's (1986) study of farmers who lost their farms found that these families reported increased stress, marital conflict, feelings of worthlessness, and withdrawal from friends and neighbors.

Previous studies have clearly demonstrated causal linkages between economic hardship and social-psychological disorders. The present study builds upon the literature by examining the social-psychological impacts of the current financial crisis in agriculture. Specifically, this study investigates how the changing economic position of Iowa farm operators affects their
stress levels, feelings of alienation, and political orientations. As to be elaborated, these are responses that previously have been studied in other occupational areas and have been found to be important. The ensuing discussion examines the likely relationships between economic hardship and the three studied social-psychological responses (stress, alienation, and political orientation). This is followed by a discussion of the interrelationships between the variables in the form of a theoretical model which is to be tested.

Economic Hardship and Stress

The concept "stress" is a generic term usually associated with mental tension or strain. Wallis (1983) notes that for all its popularity, the term stress has only recently found its way into the medical vocabulary. One of the primary reasons for this omission was the lack of an adequate, or standard, definition of the concept. Indicators of stress have ranged from migraine headaches and stomach cramps to insomnia, lethargy, and confusion. Consequently, few studies operationalize stress the same way.

Acknowledging these limitations, many studies have
found a positive relationship between economic hardship and indicators of stress (Cobb and Kasl, 1977; Cohn, 1978; Schlozman and Verba, 1978; Buss and Redburn, 1983; Heffernan and Heffernan, 1986). Cobb and Kasl's (1977) study of 100 workers found that job loss and subsequent economic hardship was strongly related to increased depression, suspicion, psychosomatic illness, and other indicators of stress. Cohn's (1978) study of 500 unemployed workers found that job loss led to decreased self-esteem and increased self-dissatisfaction. A study by Schlozman and Verba (1978) reported positive associations between job loss and both dissatisfaction with life and increased family tension. Finally, Buss and Reburn's (1983) study of unemployed steelworkers reported positive associations between unemployment and increased levels of aggression, anxiety, and alcohol abuse.

There is a large body of literature examining the causal, as well as intervening links in the complex relationship between economic hardship and stress. Two separate bodies of literature examine this issue, with the first being the life-events perspective, while the second examines many individual variables and how they moderate the relationship between economic hardship and stress.
From the life-events perspective it is argued that environmental stimuli, both economic and non-economic (or life events), lead to lifestyle adjustments, and it is these readjustments that induce stress (Holmes and Rahe, 1967; Dohrenwend and Dohrenwend, 1974; 1978; Dooley and Catalano, 1980). The amount of stress experienced by individuals is dependent upon how much lifestyle readjustment is needed to cope with the life event. Much of the research in this area has focused on estimating the stressfulness of particular life events. Holmes and Rahe (1967) for example, developed the "Social Readjustment Rating Scale," which identifies 43 different life events (e.g., death of a spouse or loss of a job), and ranks them by their stressfulness. Thus, from this perspective, stress is operationalized in terms of the amount of readjustment that is needed to cope with a particular life-event.
Moderating Variables

Dooley and Catalano (1980) recently reviewed much of the literature on economic change as a causal factor of behavioral disorders and attempted to synthesize the material into a general model. They suggest that economic change leads to changes in lifestyle which, consequently, leads to stress symptoms and behavioral disorders. Especially relevant to this study is their use of moderating variables. These variables, such as social support, are thought to also mitigate the negative effects of economic change. Regarding moderating variables, they suggest that:

"A greater understanding of the interaction of these variables with the primary variables and of their relationship to demographic characteristics may help to explain the complex lags, signs, and population subgroups found in the longitudinal aggregate literature" (Dooley and Catalano, 1980:462).

The present study views economic hardship as a personal crisis and, as such, anticipates that individuals will react to economic hardship with differing degrees of stress. Dooley and Catalano (1980) suggest that an examination of various moderating variables may, in fact, explain the variation in personal stress.
Four sets of variables have been hypothesized in this study as moderating variables. It should be emphasized that these variables are not thought to directly affect stress levels, but, rather, that they affect the relationship between economic hardship and stress. The first set of moderating variables are personal characteristics and includes age, education, and off-farm work experience.

**Personal Characteristics** Several studies have examined the relationship between age and personal stress. Both Lipsky (1970) and Strange (1977) found that older workers are likely to remain unemployed longer after a job loss than younger workers, and thus sustain higher levels of stress for longer periods of time. It also seems reasonable that the financial problems on the farm may be taken less stressfully by operators at the beginning or at the end of their farming career, than those who are middle-aged. This is because younger workers and those close to retirement have less invested in their jobs than middle-aged workers. Middle-aged farmers who are at a point in life where finances are being taxed the greatest, and who have the most invested in their operations (both financially and psychologically), seemingly would experience the greatest amount of stress.
A recent study by Bultena et al. (1985) examined the socio-demographic profiles of the farming population in Iowa. Their findings suggest that many older farmers today are choosing early retirement (or as they put it "bailed out" of farming) possibly to avoid confronting many of the financial problems other farmers are facing. This curvilinear relationship between age and stress is described by Aiken et al. (1968) when they note that after losing a job, the oldest and the youngest workers had the most positive feelings about their life situations, while middle-aged workers expressed the least positive feelings. These latter workers were caught in the middle, being: "... too old to work and too young to retire" (Aiken et al., 1968:75).

Another variable related to personal stress is education. Farmers with limited educational attainment often possess skills that are keyed specifically to the occupation of farming and, thus, may find fewer opportunities to bolster their family income with off-farm earnings. In other words, farm operators who are better educated tend to have skills that are more portable. Increased portability of educational credentials and skills not only opens the door to more off-farm opportunities to help bolster family income, but in the event that the farm operation fails, the
better-educated farmers will likely be those best able to financially support their families. Aiken et al. have also noted that higher education gives the individual a greater sense of mastery and understanding of the world regardless of his economic situation.

Much of the literature that examines the social-psychological effects of job loss suggest that it is the economic insecurity and inability to locate other employment that produces the most stress. As mentioned earlier, for farmers, the ability to bolster family income with off-farm employment would seem to help lessen levels of stress. For this reason, it is suggested that the advantage of having previous off-farm employment experience is likely to lessen levels of stress produced by economic hardship. Like education, having previous off-farm employment experience increases opportunities to supplement farm income as well as provides a potential safety net if the farm operation fails.

Family Characteristics The second set of moderating variables are family characteristics, which include marital status and the number of children living at home. Marital status is utilized as a moderating variable because one's spouse is viewed as playing a major role in the social support system. Many studies
have shown that social support is an important buffer of stress during times of life crisis, and specifically during economic crisis. For example, Cobb and Kasl (1977) found that those who were unemployed the longest and with the least amount of social support experienced the greatest amount of stress. Although as Kessler et al. (1985) note, many of these studies have a long way to go to more closely articulate the relationship between social supports and stress, many studies do show a substantial relationship (Dean and Lin, 1977; Kaplan et al., 1977).

The specific relationship between spouse support and adjustment to life crisis is more ambiguous than the generic issue of social support. Some studies suggest that the presence of a spouse has no impact upon social adjustment and stress. Buss and Redburn (1983), for example, concluded that social support should not be equated with marital status. They found that single workers experienced no greater levels of stress than married workers after the closing of the Youngstown steel mills. But other studies by Bakke (1944) and Strange (1978) suggest that if one is married, the spouse's perception is a critical factor in the husband's definition of the situation.

Although one can envision a large family providing
a great amount of social support, from an economic perspective the more children that are living at home, the more financial demands there are placed upon the family finances. This is especially true during periods of financial hardship. Farm operators who have low or negative farm incomes are likely to experience higher stress levels if they cannot provide for their children's needs. This is especially true in today's society where the demands to provide children with many luxuries has increased. Obviously, the more children that are living at home, the greater the demand upon incomes. This pressure, added to the already mounting pressure of today's economic outlook in agriculture, can produce extremely high levels of stress among farm operators.

Farm-Firm Characteristics The third set of moderating variables are farm-firm characteristics, which include gross farm sales, total acres operated, and percent of family income derived from farming.

Percent of family income derived from farming reflects the family's dependence on farm income. From an economic perspective, families that are highly dependent on farm income for necessities are the most likely to be affected by the current agricultural crisis. With farm prices at their lowest level of this
decade, operators who are highly dependent upon farm income face more adjustments than those with lesser dependence. Thus, it is predicted that the effect of economic hardship on stress will be greater for operators whose family incomes are more dependent upon farming than for those who are less dependent upon farm revenues.

Both gross sales and total acres operated may be moderating variables in the relationship between economic hardship and stress. These variables are both indicators of socio-economic status (SES). Although SES measures usually contain income, occupation, and education, it may be more useful if SES measures include indicators of occupational prestige. Because all respondents in this study are farmers, it seems reasonable that the best strategy to hierarchically differentiate them is via measures of farm size (i.e., gross sales and total acres operated).

The question then becomes, does SES moderate the relationship between economic hardship and stress? Or, put another way, will farmers of large farms with high gross sales respond to economic hardship more stressfully than operators with smaller farms and lower gross sales.

Durkheim (1897) indirectly addressed this point in
his discussions about anomie. Durkheim noted that as the division of labor increased and society developed into a mass industrial society, one result was sudden and frequent shifts in status. These shifts, in turn, were accompanied by a weakening of basic group loyalties and normative patterns — which he termed anomie. Durkheim noted further that during periods of societal disruption (e.g., economic depressions) currents of anomie are unleashed, which lead to increased rates of anomic suicide (Ritzer, 1982).

In a parallel vein, it can be argued that the present period of economic hardship in agriculture has brought frequent and sudden shifts. Besides losing their farms (the obvious status shift), many farmers are adopting strategies that not only affect their operations, but their lifestyles as well. These adjustment strategies are presently being studied (Padgitt and Lasley, 1984; Bultena et al., 1985). One result is a shift in status, although not as drastic as the loss of the farm.

It is suggested that operators who have larger farms are the most likely to experience severe shifts in status. Essentially, farmers who had large, successful operations and are now in financial trouble are seen as experiencing status shifts to a greater degree than
those who operate small to medium-sized operations. For this reason, it is predicted that farmers who operate the larger farms will react to financial hardship more stressfully than operators of small and medium-sized farms. A study by Goodchilds and Smith (1963) of unemployed men supports this assertion. In their study, they found that unemployed workers who were previously of higher status found unemployment much more debilitating than those of lower status.

**Orientational Characteristics** The final set of moderator variables between economic hardship and stress are attitudinal orientations, which include commitment to farming and perception of economic hardship. Until now, most of the discussion has centered on how personal and other characteristics are related to economic factors, which can moderate the effects of economic hardship upon stress. But it should also be noted that relinquishing one's livelihood, regardless of economic circumstances (e.g., retirement) can produce high levels of stress. It is often mentioned that farming is not only a business, but also a lifestyle. Those who endorse this sentiment have a psychological investment in farming. Their livelihood, as noted by Hughes (1951) and Sennett and Cobb (1972), is a strong part of their social identity. This seems especially true for farmers
who are second and third generation farmers of the same operation. For that reason, it is suggested that those who have a heavy psychological investment in farming will display higher levels of stress when faced with economic hardship.

Also affecting the relationship between economic hardship and personal stress is perceived economic hardship. This variable was introduced because many social psychologists believe that how one perceives an objective stimuli is more important in determining its effects than the stimuli itself. Some believe that this phenomenological viewpoint is crucial to the social-psychological perspective.

If a worsening of one's financial situation is perceived as being catastrophic, then the expectation would be that that person would deal with the situation more stressfully that one who perceives a worsening financial situation as serious, but manageable. Thomas (1923) used the term "defining the situation" to describe this phenomenon. This is not to say that objective reality is unimportant, but, rather, that it alone cannot determine a persons' interpretation or response to a situation.

As mentioned earlier, a study of worker stress by Cobb and Kasl (1977) found that the time when concern
for financial and job security was at its highest was during the anticipation period prior to the layoff. The fear of losing a job had similar effects to the actual loss of a job. Thus, economic change or hardship may not solely impact psychological well-being, but be reinforced by perceived change or hardship. Dooley and Catalano (1980:462) address this point when they state that:

"... economic change might effect individual symptoms without the mediation of life change. One possible mechanism ... is the threat of economic downturns carried by rumors or the media. The resulting fear may affect the morale or optimism of individuals, even though they are not presently forced to make life adaptations."

In sum, the literature examining the relationship between economic hardship and stress strongly suggests a positive relationship. However, it is also found that the relationship may be complex. One body of literature argues that this complexity lies in the readjustments one must make to life-events, while another body of literature suggests that there are many different variables that can moderate the relationship between economic hardship and stress.

We next turn attention to the second dependent variable, alienation. As in the discussion of stress,
examination is first made of the concept alienation, and then its likely relationship to economic hardship is assessed.

Economic Hardship and Alienation

Two competing perspectives dominate sociological discussions of alienation. The first is a macro-structural perspective in which alienation is viewed as an objective condition of society. Originating from Marx's work on the impact of the relations of production and other economic parameters on social structure, issues such as societal exploitation and the processes of estrangement are examined. The second perspective is social-psychological, in which alienation is viewed as a psychological state. This perspective directs studies to the perceptions individuals have of their place in society and their relationships with others. The present study is focused on this latter interpretation of alienation.

Theoretical discussions of alienation from a social-psychological perspective have been strongly influenced by the work of Melvin Seeman. In a seminal article, "On the Meaning of Alienation", Seeman (1959) sought to synthesize the alienation literature into five
dimensions. The first of these dimensions was "powerlessness." This dimension most closely conforms to Marx's ideas of alienation. From the individual's viewpoint, powerlessness can be defined as the belief that one's own behavior cannot control outcomes of situations. The individual, in effect, has lost control of his situation and sees himself as a victim.

A second dimension of alienation is "meaninglessness." This dimension refers to the individual's understanding of his situation. According to Seeman (1959:786), "We may speak of high alienation, in the meaninglessness usage, when the individual is unclear as to what he ought to believe - when the individual's minimal standards for clarity in decision-making are not met." Essentially, the events surrounding the individual have seriously shaken his beliefs, and uncertainty prevails.

The third dimension of alienation is "normlessness." This dimension is concerned with the means used to achieve given goals. Durkheim (1897) described what he called anomie as a condition of normlessness, where prevailing normative patterns were weakened. Within this dimension, it is thought that one can speak of high levels of alienation when the individual believes that socially unapproved means are
the only way to achieve desired goals.

The fourth dimension of alienation is "isolation." This dimension describes what can be called apartness from society, where the highly alienated individual has standards and beliefs that are at considerable variance from the norm. Seeman (1959:789) notes that these individuals "...assign low reward values to goals or beliefs that are typically highly valued in the given society."

The final dimension of alienation is "self-estrangement." Here, Seeman points out that a person is seen as being estranged from some ideal human condition (e.g., Marx's utopia). Within Marx's discussions on human potential, man works because it is one of the most meaningful of all relationships (i.e., the relationship between man and the products of his labor). When objective behavior becomes dependent upon anticipated future rewards (i.e., a wage or salary), man can be said to have become estranged from himself, or is self-estranged.

In a later work, Seeman (1972) adds a sixth dimension of alienation, that of "social isolation." This dimension expresses the individual's expectancy for inclusion and social acceptance. Indicators of this dimension usually tap feelings of loneliness and
This study examines the impacts of economic hardship on two social-psychological dimensions of alienation; powerlessness and social isolation. Several studies have examined aspects of this relationship and have consistently found a positive relationship.

Aiken et al. (1968) studied the adjustment of 314 workers to job displacement as a result of the closing of the Packard Motor Car Company in 1956. The hypothesized relationship between economic hardship and alienation was based upon Durkheim's (1897) ideas of anomie. They argued from Durkheim's writings that anomie was a function of the sudden and frequent status shifts that are inherent in mass industrial society. Because plant closings, and thus displacement, are prime examples of status shifts, they hypothesized that economic hardship would be positively related to feelings of alienation. Their findings not only supported this hypothesis, but they also found that economic hardship was the best single predictor of alienation.

Specifically, their findings indicate that workers who were the most economically deprived scored highest in alienation (a measure consistent with Seeman's social isolation dimension). Furthermore, that economic
deprivation was related to a general withdrawal, with those workers who were the most economically deprived having the least amount of contact with friends and neighbors. The social isolation dimension was also shown to be of importance in the Heffernan's (1986) study of displaced farm operators. They report that almost two-thirds of the respondents withdrew from friends and family in the course of losing their farms. Additionally, 45 said that they were less active now than the average citizen in community groups, organizations, and clubs. The authors go on to note that a majority of the respondents felt they were more socially active before losing their farms.

Previous research has also demonstrated a significant relationship between economic hardship and powerlessness. Buss and Redburn (1983) for example, examined the effects of the closing of a steel mill in Youngstown, Ohio. Similar to earlier studies, the researchers found increased levels of feelings of victimization and loss of control among the unemployed. Even more interesting were the findings that the workers who remained unemployed scored higher in victimization and loss of control than those who were rehired and then laid off again. This suggests that it is not just
joblessness itself that precipitates feelings of alienation, but also the economic hardships associated with unemployment.

Another study by Parnes and King (1977) followed a panel of workers who had worked at least five years for their employer as of 1967. Between 1969 and 1971, 40 panel members reported an involuntary job loss. In both 1969 and 1971 the entire panel was given the Internal-External Locus of Control Scale (Rotter, 1966). Although the 40 panel members who lost their jobs were not significantly different in their Locus of Control scores in 1969 (prior to job loss), their scores were significantly different in 1971. More specifically, the unemployed workers were more externally-oriented than the other panel members. The unemployed workers felt that success was more a function of external sources than personal initiative, or of other areas of their lives they could control. In other words, they felt greater powerlessness.

In sum, the literature suggests a positive relationship between economic hardship and alienation. Regardless of the dimension examined (powerlessness or social isolation), the findings are fairly consistent; that is, individuals who experience higher levels of economic hardship are also those displaying the greatest
Attention is now turned to the final dependent variable, political orientation. The discussion focuses on the relationship between economic parameters and political orientation in the agricultural, as well as industrial sector.

Economic Hardship and Political Orientation

A prominent piece of research in the area of political sociology is Lipset's Political Man (1959). A central theme in this work is that political orientation is a function of one's economic position. By economic position Lipset refers to two different concepts -- level of income and income security. These concepts are discussed separately here.

Level of Income

Lipset argues that farmers with the larger incomes tend to vote conservatively, while those with lesser incomes are more liberal. In this light he more generally notes:

More than anything else the party struggle is a conflict among classes, and the most impressive single fact about political party
support is that in virtually every economically developed country the lower income groups vote mainly for parties of the left while the higher income groups vote mainly for parties of the right" (Lipset, 1959:224).

Lipset goes on to support his thesis by citing several studies from developed countries (e.g., France and Italy) demonstrating that wealthy farmers are more likely to vote for conservative parties while farmers who operate small farms, tenant farmers, and farm workers are more likely to vote for liberal or communist parties.

Lipset argues that leftist voting is generally an expression of discontent, and leftist parties represent themselves as instruments of social change in the direction of equality. With this in mind, Lipset's explanation of the voting patterns seems to be essentially based upon economic self-interest.

Campbell et al. (1960) examined the political orientation of American farmers during the 1956 presidential election. Among his findings were that although farmers were less partisan than other occupational groups, those who operated small farms were more likely to vote Democratic than operators of larger farms. However, there are some measurement and design problems with this study. Because the incumbent
president was Republican in 1956 (Eisenhower), it was difficult to determine whether a Democratic vote was a vote for the left, or a vote against the incumbent.

Building upon the work of Campbell et al. (1960), Knoke and Long (1975) examined the political orientation of American farmers through four presidential elections (1956-1968). They found the relationship between farm size and political orientation to be inconsistent. In fact, they concluded that the relationship held for select years in the southern region, but not in other years or in other regions.

More recently, Lasley (1982) examined the party identification of Iowa farm operators. He found that roughly one-half (49.7 percent) of all Iowa farm operators identified with the Republican party. However, when respondents were broken down by farm size the degree of party identification varied. More specifically, farmers operating small farms were less likely to identify with the Republican party than farmers with larger farms.

Finally, using 1980 CBS News/N.Y. Times survey data, Sigelman (1983) examined many of the hypotheses of the Campbell et al. (1960) study. Although he found that farmers were more partisan than most other occupational groups, and that their party identification
was largely Republican (contrary to the Campbell study), he did not attempt to correlate income or farm size with political orientation.

Overall, the literature examining level of income and political orientation among farm operators is inconclusive. While some studies suggest a relationship between these variables, others do not.

**Income Security**

Income security was second concept Lipset (1959) related to political orientation. Several studies have examined this relationship (Centers, 1944; Lipset, 1950; Campbell et al. 1960; Aiken et al. 1968; Knoke and Long, 1975; Sigelman, 1983). These studies are usually set within the context of the economic sensitivity of the farm vote. Economic sensitivity refers to changes in voting patterns relative to corresponding changes in economic parameters (e.g., commodity prices or interest rates).

In a study of Canadian farmers and their support for the Cooperative Commonwealth Federation (CCF) in Saskatchewan, Lipset (1950) argued that the farm vote was extremely sensitive to economic change. The CCF was the only Socialist government in North America to
control a political division larger than a municipality. A large sector of their support came from economically distressed farmers. Lipset (1950) argued that one-crop farmers are more economically insecure than diversified farmers and, consequently, have higher rates of leftist voting. This is especially true for the North American wheat farmer. Lipset states that price instability or drought has hit the wheat belt at least once every generation, making the North American wheat farmer the most leftist of all farmers in times of economic crisis. In contrast, smaller diversified farmers whose income level, although smaller, is more steady, tend to support more conservative parties.

Campbell et al. (1960) also examined the economic sensitivity of the farm vote and concluded that the 1956 presidential vote was strongly related to perceived trends in commodity prices. Specifically, they found that the more farmers perceived that farm prices had declined over the past four years, the more likely they were to vote for the Democratic candidate. However, as mentioned before, since the incumbent was a Republican, it is difficult to determine whether voting for the Democrat in this case was a vote toward the left or a vote simply against the incumbent.

Knoke and Long's study (1975) failed to confirm the
earlier findings in the Campbell et al. study. Using similar data for 12 years, they concluded that unlike the Campbell findings, the general hypothesis about the economic sensitivity of the farm vote seems to have been highly particular to the Eisenhower period.

A more recent study by Sigelman (1983) produced findings similar to those of Campbell, et al. (1960). More specifically, Sigelman notes that like the earlier study, farmers in 1980 were more economically sensitive than any other occupational group. However, in his findings he failed to address the relationship between economic hardship and liberal voting. Rather, he found that operators who perceived that their situations had worsened over the past four years were more likely to vote out the incumbent (Carter) even though he was a Democrat.

There also have been investigations outside of agriculture into the relationship between economic insecurity and political orientation. Aiken et al.'s (1968) study of displaced auto workers found that indicators of economic insecurity were related to economic liberalism and political extremism. In their study, economic liberalism referred to direct governmental intervention in keeping the plant from closing, while political extremism referred to the
government taking over the plant and running it. The findings suggested not only that economic insecurity was related to political orientation, but that workers who were the most economically insecure were also those who were the most liberally.

Finally, in a post-depression study, Centers (1944) found that 43 percent of workers who had never been unemployed reported that they were politically conservative. However, among workers who had previously experienced unemployment, and whose income was less secure, only 14 percent reported themselves to be politically conservative.

In conclusion, although a majority of studies substantiate a relationship between income security and political orientation, it should be noted that the evidence is far from conclusive. Besides some findings showing no relationship (Knoke and Long, 1975), most of the studies do not examine the direction of the relationship. Although many of the studies confirm a relationship between economic insecurity and political orientation, they do not examine whether economic insecurity leads to a more liberal or conservative political orientation. Finally, however, it should be noted that among those studies that do examine the direction of the relationship (Centers, 1944; Lipset,
1950; 1959; Aiken et al., 1968) all have found that economic insecurity to be associated with a more liberal political orientation.

**Toward a Theoretical Model**

Next, examination is made of the likely interrelationships of variables that seemingly contribute to the degree of psychological trauma experienced during times of economic hardship. This is not to suggest that the independent effects of economic hardship are insignificant in explaining stress, alienation, and political orientation, but rather that the interrelationships among these variables are also important to this explanation. These alternative explanations are consistent with viewing economic hardship as a personal crisis, meaning that simply knowing the degree of economic hardship is not enough to explain variations in stress, alienation, and political orientation. In examining each of the three dependent variables, the alternative hypotheses that explain their variation are discussed.
Stress

The evidence is fairly consistent of a positive relationship between economic hardship and stress. However, two alternative explanations aid in understanding the variation in stress levels. The first is the life-events perspective which suggests that the relationship between economic hardship and stress is primarily attributable to the fact that economic hardships precipitate lifestyle adjustments, which, in turn, create stress. If valid, a significant relationship should be obtained between family and farm adjustments and stress. The second perspective singles out some personal variables as moderating the relationship between economic hardship and stress.

Alienation

Like the literature on stress, the literature on alienation is generally consistent in its findings of a positive relationship between economic hardship and alienation. Along with the direct relationship between economic hardship and alienation, this study will also examine two alternative predictors of alienation; stress and number of financial adjustments.
Stress and alienation are viewed here as being distinct concepts. Stress is primarily a psychological term which is associated with a mental tension or strain. It represents one type of personal response to environmental stimuli. Indicators of stress are always cast at the individual level (e.g., insomnia, psychosomatic illness, or confusion). Alienation, on the other hand, is a social-psychological term referring to an individual's relationship with his social system. When an individual perceives himself to be estranged, he can be said to be alienated.

A personal crisis such as economic hardship can precipitate both alienation and stress. However, it is argued here that the actor must first experience a personal reaction to a situation before perceiving himself to be in an estranged relationship. Therefore, it is suggested that stress is actually an intervening variable between economic hardship and alienation. Accordingly, a significant direct relationship can be expected between both economic hardship and stress, as well as between stress and alienation.

The other interrelationship to be examined is between family and farm adjustments and alienation. Because these adjustments represent financial sacrifices, it seems reasonable that the more
adjustments made in an attempt to "hunker down," the less social contact the family will have with other community residents. Heffernan and Heffernan (1986) report that children would often forego participation in 4-H and FFA in an attempt to help the family financial situation. Undoubtedly parents made similar, if not greater, sacrifices which increased their feelings of social isolation. It also seems likely that as the viability of the farm erodes via the selling of land and equipment, or the foregoing of needed farm purchases, there will be an increase in feelings of powerlessness would be felt.

**Political Orientation**

Unlike the previous discussions of stress and alienation, the literature is inconsistent as to the direction or significance of the relationship between economic hardship and political orientation. It is suggested here that the reason for this lack of conclusiveness is because past research has focused upon the direct, rather than indirect impacts of economic hardship.

The indirect impacts of economic hardship are the observable results, such as stress, family and farm
adjustments, and alienation. Operators who are the most economically distressed will make the most financial adjustments and experience the greatest stress. It seems that personal responses to economic hardship are more likely to affect political orientation than are objective economic factors such as debt-to-asset status. Additionally, it should be remembered that the relationship between alienation and political orientation is deemed crucial to the critical perspective in sociology. According to Marxist thought, it is alienation of the proletariat that leads to class consciousness and, ultimately, to political and economic revolution.

In sum, this discussion has examined some indirect impacts of economic hardship. Although relationships between economic hardship and stress, alienation, and political orientation have been well documented, it seems that the effects of the indirect impacts need to be examined more closely. The model presented below incorporates both the direct and indirect effects of economic hardship.
A Theoretical Model

Several bivariate and multivariate relationships can be extracted from the existing literature. These relationships have been integrated into a theoretical model (Figure 1) which delineates both direct and indirect effects of economic hardship on stress, alienation, and political orientation. The model views economic hardship as an exogenous variable that has a direct effect on personal stress. Additionally, economic hardship affects stress indirectly through the family and farm adjustments that are often made during economic hard times. This indirect effect represents the life-events perspective.

Because economic hardship is perceived in this study as a personal crisis, it implies that the same experience can produce differing degrees of individual crisis (or stress) in different individuals; and in some cases, no crisis at all. The model incorporates three factors in explaining the variation in stress levels produced by economic hardship. First is the direct effect of economic hardship on stress. Second is the life-events perspective, which explains stress based upon the degree of readjustment needed to cope with economic hardship. The third set of factors are
Figure 1. The Theoretical Model
personal and other characteristics that moderate the effects of economic hardship. These moderating variables include personal characteristics (age, education, and off-farm work experience), farm-firm characteristics (gross farm sales, total acres operated, and percent of family income derived from farming), family characteristics (marital status, and number of children living at home), and orientational characteristics (perceived economic hardship and commitment to farming).

An important feature of this model is the inclusion of stress as an intervening variable between economic hardship and alienation. The model suggests that a person must develop a personal response to an economic situation before it alters his relationship with his social system.

Two dimensions of alienation are incorporated in the model — powerlessness and social isolation. The first reflects feelings of victimization, or loss of control of the situation. The second reflects Seeman's 1972 addendum to his earlier differentiation of alienation. This dimension taps feelings of apartness from society, loneliness, and rejection. The model incorporates both direct and indirect effects of economic hardship on alienation, with the indirect
effects being transmitted through stress and family and farm adjustments.

Finally, the model examines political orientation. This construct reflects attitudes toward various government interventions in response to the farm crisis. Lipset (1959) argues that labels such as "left" and "right" are based upon many different issues, one of them being interventionist vs. lassiez-faire economics. Therefore, we can get a reasonable measure of political orientation from this scale. The expectation is that those who are the most economically impacted will most vocally support governmental intervention in the agricultural economy. Of course, as in the case of the other dependent variables, the model also incorporates the indirect effects on political orientation transmitted through alienation, stress, and family and farm adjustments.

Hypotheses

Several bivariate and multivariate hypotheses are tested within the context of the model.

1. Economic hardship is positively related to personal stress.
2. The effects of economic hardship on stress are greater for operators who perceive the hardships to be very serious than for those who perceive them to be manageable.

3. The effects of economic hardship on stress are greater for middle-aged farmers than for younger or older farmers.

4. The effects of economic hardship on stress are greater for operators who are poorly educated than for those who are better educated.

5. The effects of economic hardship on stress are greater for operators who have a heavy psychological commitment to farming than for those who have lesser commitment.

6. The effects of economic hardship on stress are greater for operators who have no off-farm work experience than for those who have such experience.

7. The effects of economic hardship on stress are greater for operators who have larger gross sales than for those who have smaller gross sales.

8. The effects of economic hardship on stress are greater for operators who operate more acres than for those who operate fewer acreages.

9. The effects of economic hardship on stress are greater for operators whose family incomes are more dependent on farm income than for those whose incomes are less dependent.

10. The effects of economic hardship on stress are greater for operators who are unmarried than for those who are married.

11. The effects of economic hardship on stress are greater for operators who have a large number of children living at home than for those who have fewer children at home.

12. There is a positive relationship between economic hardship and the number of family and farm adjustments.

13. There is a positive relationship between economic hardship and stress.
14. There is a positive relationship between economic hardship and powerlessness.
15. There is a positive relationship between economic hardship and social isolation.
16. There is a positive relationship between economic hardship and governmental intervention.
17. There is a positive relationship between commitment to farming and the number of family and farm adjustments.
18. There is a positive relationship between commitment to farming and stress.
19. There is a positive relationship between the number of family and farm adjustments and stress.
20. There is a positive relationship between the number of family and farm adjustments and powerlessness.
21. There is a positive relationship between the number of family and farm adjustments and social isolation.
22. There is a positive relationship between the number of family and farm adjustments and governmental intervention.
23. There is a positive relationship between stress and powerlessness.
24. There is a positive relationship between stress and social isolation.
25. There is a positive relationship between stress and governmental intervention.
26. There is a positive relationship between powerlessness and governmental intervention.
27. There is a positive relationship between social isolation and governmental intervention.
CHAPTER THREE
METHODOLOGY

Sampling

These data are from the Iowa Farm and Rural Life Poll, a semi-annual statewide panel survey of Iowa farm operators. The poll was began in 1982 and has collected eight waves of data as of spring, 1986.

To assure a representative sample, the poll drew its random sample from the master list maintained by the Iowa Department of Agriculture, Division of Statistics. This list is annually updated to insure inclusion of new farm operators, as well as removal of those who exit agriculture. Because the poll is a panel study, additional concerns regarding representativeness over time must be considered. Three major concerns are attrition, maturation, and the inclusion of new members in the sample as persons enter the population.

Attrition refers to the loss of panel members from the study over time due to death, retirement, relocation, or lack of interest. If the poll does not somehow supplement the panel to make up for those who have attritioned out, it will soon fail to be representative of the population of interest. Reactive
or interactive effects of testing refers to a sample becoming unrepresentative due to prolonged contact with the researchers. Due to the continuing contact with the researchers through both polling and dissemination of poll results, a sample can lose its representativeness. Finally, failure to include new members in a sample could render a sample unrepresentative. This is especially true if the new members are different than the existing population.

Fortunately, these concerns were foreseen by Farm and Rural Life Poll. To handle these additional concerns, the poll periodically draws supplemental samples from the updated master list maintained by the Iowa Department of Agriculture. For further information regarding the design and development of the poll, see Lasley and Skow (1983) (for a breakdown of sample size by wave, and the attrition over time, see appendix B).

The sample was examined two ways to insure its representativeness. First, their residential locations were plotted to determine the adequacy with which counties throughout Iowa were proportionately represented in the sample. A graphic display of the dispersion is shown in Figure 2. The mean percentage that respondents comprised of all farmers in the 99 counties was 3.4. The county with the smallest
Figure 2. Percent of Operators in Sample by County
percentage was Linn county, with 2.4. The county with the highest percentage was Madison county, with 4.5. Overall, the geographic dispersion seems to be random.

The second criteria used to assess the sample's representativeness was to compare it to the 1982 Census of Agriculture for Iowa on selected operator and farm-firm characteristics. This comparison is shown in Table 1. In comparing these two data sets, two differences are noteworthy. First, the average age of the sample respondents is slightly older for the base population (50.3 years vs 47.6 years). Second, the farm operations represented in the sample are somewhat larger than in the base population. The discrepancy seems to be greatest among the operations that have 50 or fewer acres. Whereas this group makes up approximately 18 percent of Iowa's farms, it constitutes only five percent of the sample.

This difference may reflect the Census Bureau's definition of a farm operation. Currently any enterprise, regardless of size, that sells $1,000 of agricultural products is classified as a farm. This includes many very small, part-time, and/or hobby enterprises. Many of these operators may not really consider themselves farmers and, therefore, may have failed to respond when contacted by the Iowa Farm and
Table 1. Comparison between Iowa sample and 1982 Census of Agriculture on Selected operator and farm-firm characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Census of Ag</th>
<th>Study Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean size of Farm (acres)</td>
<td>283</td>
<td>385</td>
</tr>
<tr>
<td>Mean age of Operator (years)</td>
<td>47.6</td>
<td>50.3</td>
</tr>
<tr>
<td>Percent of Farms Raising:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corn</td>
<td>80.0</td>
<td>75.0</td>
</tr>
<tr>
<td>Soybeans</td>
<td>63.4</td>
<td>61.6</td>
</tr>
<tr>
<td>Hogs</td>
<td>39.6</td>
<td>38.0</td>
</tr>
<tr>
<td>Cattle</td>
<td>54.1</td>
<td>45.4</td>
</tr>
<tr>
<td>Chickens</td>
<td>6.6</td>
<td>9.6</td>
</tr>
<tr>
<td>Percent of Farms by Size:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 - 9 acres</td>
<td>6.9</td>
<td>.7</td>
</tr>
<tr>
<td>10 - 49 acres</td>
<td>10.7</td>
<td>4.6</td>
</tr>
<tr>
<td>50 - 179 acres</td>
<td>26.8</td>
<td>23.1</td>
</tr>
<tr>
<td>180 - 499 acres</td>
<td>40.1</td>
<td>45.8</td>
</tr>
<tr>
<td>500 - 999 acres</td>
<td>12.9</td>
<td>21.4</td>
</tr>
<tr>
<td>1000 - 1999 acres</td>
<td>2.4</td>
<td>3.9</td>
</tr>
<tr>
<td>2000 and over</td>
<td>.3</td>
<td>.6</td>
</tr>
<tr>
<td>Percent of Farms by Gross Sales:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 2500</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>2500 - 9999</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>10000 - 19999</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>20000 - 39999</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>40000 - 99999</td>
<td>27</td>
<td>32</td>
</tr>
<tr>
<td>100000 and over</td>
<td>27</td>
<td>30</td>
</tr>
</tbody>
</table>
Rural Life Poll.

This discrepancy in farm size also manifests itself in gross farm sales, as the sample contains a larger proportion of farm operators with gross sales of $40,000 and over than does the population. Overall, however, the poll seems to be reasonably representative of the farm operations in Iowa. It should be noted, however, that the Census of Agriculture provides little data about farm operators. Therefore, a determination cannot be made directly of the extent to which those sampled are representative of farm operators in Iowa.

Measurement of Primary Variables

The primary variables in the model are those that have a direct causal linkage with other variables. The primary variables include economic hardship, personal stress, powerlessness, social isolation, political orientation, and farm and family adjustments. The operational definitions of these variables follow.

Economic Hardship

Debt-to-asset ratio is used to measure the financial vulnerability of the farm operations.
Although no one measure can adequately represent all of the variables in the agricultural economy, many economists and rural sociologists have used debt-to-asset ratios as the best single measure of the economic viability of the farm (Jolly, 1984; Lasley, 1984; Melichar, 1984; Bultena et al., 1985).

Debt-to-asset ratios (D/A ratios) reflect the ratio of equity the operator has in his farm. The greater the ratio, the less the equity and, consequently, the greater the economic hardship. The D/A ratio is used to operationalize economic hardship in this study. To calculate these ratios, respondents were asked:

1. As of January, 1984 what was the estimated current market value of your farm assets (please include land, machinery, buildings, and livestock)?

2. As of January, 1984 what was your estimated total liabilities, including all loans for land, machinery, buildings, and livestock?

To compute debt-to-asset ratios, the response to the estimated liabilities was divided by the estimated assets. This computation yielded a measure ranging from 0.0 (where the farmer owned 100 percent of his assets) to 1.0 and greater.
Personal Stress

Three subjective indicators of stress were used to operationalize personal stress. The responses from the following three questions were used:

1. Over the past three years, would you say that the level of stress in your family has (1) increased greatly, (2) increased slightly, (3) remained the same, (4) decreased slightly, or (5) decreased greatly.

2. How concerned are you with your level of stress? (1) not concerned, (2) slightly concerned, (3) moderately concerned, or (4) very concerned.

3. On a day to day basis, how much stress do you experience? (1) none, (2) a little, (3) some, or (4) a great deal.

The responses to these three questions were summed to create a cumulative scale which reflects each respondent's level of stress.

Family and Farm Adjustments

This concept was operationalized by the number of adjustments the respondents had made between February 1984 and February 1985 in their families' budget and purchasing plans and in their farming operations. Respondents were asked to indicate which of the following adjustments they had made during the past 12
months:

1. Family member has taken off-farm employment to help meet expenses
2. Used savings to meet expenses
3. Sold possessions or cashed in insurance
4. Purchased more items on credit than we used to
5. Postponed major household purchase
6. Let life insurance lapse
7. Cut back on charitable contributions
8. Changed food shopping or eating habits to save money
9. Changed transportation patterns to save money
10. Reduced household utility use
11. Cut back on social activities and entertainment expenses
12. Postponed medical care to save money
13. Forfeited a land contract or mortgage
14. Postponed major farm purchases
15. Have not been able to pay property taxes
16. Have sold some land

Positive responses were coded "1," and negative responses "0". Thus, the scale score is a summation of the number of adjustments made by each family.

Powerlessness

Powerlessness was operationalized by responses to the statement:

"Increasingly, farmers are being "left out" of many important agricultural decisions."

The respondents were asked to indicate whether they (1) strongly agree, (2) somewhat agree, (3) were uncertain, (4) somewhat disagree, or (5)
Social Isolation

Social isolation was operationalized with an 8-item scale. The scale contained the following items:

1. I'm so busy now-a-days I don't seem to have time to visit with my neighbors.
2. I can always count on my neighbors if I need help.
3. People don't depend upon each other as they once did.
4. Our neighborhood is closely knit.
5. People don't seem to be willing to help each other as they once did.
6. I'm not as active in community affairs as I should be.
7. About the only time I see my neighbors is when they drive past my farm.
8. Whenever someone in our neighborhood needs help, there are always plenty of neighbors willing to help them.

Respondents were asked to indicate if they (1) strongly agree, (2) somewhat agree, (3) were uncertain, (4) somewhat disagree, or (5) strongly disagree with each statement. Their responses were summed to produce a cumulative scale (questions that were negatively
Political Orientation

Political orientation was measured by a series of questions that examined the extent to which governmental intervention was perceived as necessary to help farmers during this time of financial distress. Each item taps a different intervention strategy. Adding the responses produced a cumulative scale which reflects a continuum from a lassiez-faire, free market orientation to a more social reform, governmental interventionist orientation.

The six items making up this scale are:

1. Restructuring farmers' debts through government guarantees to private lenders who agree to stretch out loan repayments of heavily indebted farmers, who in turn would reduce the principal owed by 10 to 20 percent. This would be a voluntary program between borrowers, lenders, and the federal government, which would not involve forgiveness of principal or interest for the borrowers. This is known as the Harl-Leach proposal.

Respondents were asked whether they (1) strongly supported, (2) somewhat supported, (3) were uncertain, (4) somewhat opposed, or (5) strongly supported the proposal.
2. To what extent should the federal government be involved with preserving the family farm.

3. To what extent should the federal government be involved in providing financial assistance to beginning farmers.

4. To what extent should the federal government be involved in price and income supports.

For questions 2 through 4 the respondents were asked to indicate whether they thought the federal government (1) should not be involved, (2) be moderately involved, or (3) should be greatly involved.

5. How do you feel about the recent call for a moratorium on farm foreclosures in the state?

Respondents were asked to indicate whether (1) a moratorium is definitely needed, (2) a moratorium is probably needed, (3) uncertain, (4) a moratorium probably isn't needed, or (5) a moratorium is definitely needed.

6. How you you feel about the federal government offering a 4 percent interest subsidy to only those farmers with debts of 40 percent or more of their assets?

Respondent were asked to indicate whether they (1) strongly supported the proposal, (2) somewhat supported the proposal, (3) were uncertain, (4) somewhat opposed the proposal, or (5) strongly opposed the proposal.
Measurement of Moderating Variables

The moderating variables in the model are predicted to be important in understanding relationships between the primary variables. The model does not test the direct effects of these variables (i.e., there are no causal links predicted between moderating variables and primary variables).

All of the moderating variables in the model are felt to affect the relationship between economic hardship and stress. The moderating variables include four sets of factors: personal characteristics, farm-firm characteristics, family characteristics, and orientational characteristics. For an examination of the zero-order correlations amongst all interval and ordinal variables to be analyzed, see Table 2.

**Personal Characteristics**

1. Age - The respondent's chronological age.

2. Education - The respondents highest level of educational attainment.

3. Off-farm work experience - An ordinal level variable reflecting the number of days per year the operator worked off the farm. Ordinal categories were coded 0 if the operator did not work off the farm, (1) for less than 50 days, (2) for 50 to 100 days, (3) for 100 to 200 days, and (4) for full-time off-farm employment.
Table 2. Correlation matrix of variables in the analysis

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Farm-Firm Characteristics

1. Gross Farm Sales - Reported gross sales receipts for all agricultural products sold. Responses were categorized (1) less than $2,500 (2) $2,500 - $9,999 (3) $10,000 - $19,999 (4) $20,000 - $39,999 (5) $40,000 - $59,999 (6) $60,000 - $79,999 (7) $80,000 - $99,999 (8) $100,000 - $199,999 (9) $200,000 and over.

2. Total acres operated - number of acres farmed by the farmer, including both owned or rented acreages in cropland, pasture, or timberland.

3. Percent of family income derived from farm income - estimate percentage categorized as (1) less than 10% (2) 10% - 30% (3) 31% - 50% (4) 51% - 75% (5) over 75%.

Family characteristics

1. Marital Status - coded as (1) married, (2) never married, and (3) widowed or divorced.

2. Number of children living at home - The number of children the operator had under the age of 18.

Orientational Characteristics

1. Commitment to Farming - A 5-item cumulative scale measuring the operator's psychological investment in farming. The 5 items were:

A. If by some chance you were to get enough money to live comfortably without farming, do you think you would continue to farm anyway?

B. Would you recommend farming to a friend?

C. If you had to do it over again, would you still choose to be a farmer?
Respondents were asked to indicate how they felt about these questions by responding (1) yes, definitely, (2) yes, probably, (3) uncertain, (4) no, probably not, (5) no, definitely not.

D. All in all, how satisfied are you with your job as a farmer? Are you (1) very satisfied, (2) somewhat satisfied, (3) undecided, (4) somewhat dissatisfied, or (5) very dissatisfied.

E. How much of the time do you feel satisfied with your job as a farmer? (1) all of the time, (2) a good deal of the time, (3) about half of the time, (4) occasionally, or (5) practically never.

2. Perceived Economic Hardship - a single item indicator asking operators how concerned they are about their farm's financial condition. Respondents were to indicate that they are (1) not concerned (2) slightly concerned (3) moderately concerned or (4) very concerned.

Analysis Strategy

Although the model depicted in Figure 1 is an accurate representation of the theoretical arguments, it is not empirically testable as is. Most causal modeling techniques are unable to test the interaction effects of the moderator variables. Thus, it was deemed
necessary to use a two stage analysis strategy. First, examination is made of the relationship between economic hardship and stress. Specifically, the analysis tests if, and how, the moderator variables affect the relationship between these two primary variables. Multiple regression, incorporating a multiplicative interaction term, is used for this purpose. The key to the analysis is in the significance of the interaction term. An example will clarify this point.

Consider the relationship between economic hardship, stress, and the moderator variable commitment to farming. Theory suggests that those farmers who have a strong commitment to farming will experience more stress towards economic hardship than those with lesser commitment. In operational terms what is meant is that the slope between economic hardship and stress will be greater for those farmers with more, than lesser, commitment to farming.

To test this hypothesis, the following multiple regression equation was used:

\[ Y' = b_0 + b_1X_1 + b_2X_2 + b_3(X_1X_2) \]

... where \( Y' \) is the predicted value of the dependent variable stress; \( X_1 \) is economic hardship; \( X_2 \)
is commitment to farming; and \((X_1X_2)\) represents the interaction between economic hardship and commitment to farming.

As mentioned above, the key to this analysis is the examination of the interaction term. If \(b_3\) is significant, it can be interpreted as indicating that the relationship between economic hardship and stress is different (i.e., the slope changes) at various levels of commitment to farming. The sign associated with the parameter estimate indicates whether the slope between economic hardship and stress changes with increasing levels of commitment to farming. Thus, this design provides a direct strategy for examining the effects of moderator variables on the relationship between these two primary variables.

If the parameter estimate associated with the interaction term proves to be significant, the moderator variable is categorized and the slopes between economic hardship and stress plotted to visually display their differences across categories of the moderator variable.

One problem often found when using interaction terms is multicollinearity. Simply put, multicollinearity exists when two or more independent variables are highly correlated with each other. The usual effects of multicollinearity are twofold. First,
it distorts the parameter estimates (b) and, second, it increases the standard errors of the estimates, thus decreasing their t-values and subsequent statistical significance. Because the interaction term is a linear combination of the main effect variables, this problem is not uncommon.

To reduce the magnitude of this problem, the variables have been "centered." This means that the mean value of each variable has been subtracted from the absolute value. Thus, the centered variables now have a mean of zero. Table 3 shows the correlations between the moderator variables, debt-to-asset ratio, and the interaction terms for both centered and uncentered data. As can be seen, centering causes the correlations to decline significantly, thus reducing problems associated with multicollinearity.

Because both the scale and distribution of the moderator variables were not identical, some minor modifications in the design were made. For variables that were interval or near interval level (with the exception of total acres and age), the procedure described above was used. Variables that were categorical (e.g., marital status), were dummy-coded and utilized in an analysis of covariance design. Because the hypothesis about the moderating effects of age
Table 3. Zero-order Correlations between Main effects and Interaction terms\textsuperscript{a} - Centered\textsuperscript{b} and (uncentered)\textsuperscript{c}

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\textsuperscript{a}Interaction terms are the multiplicative combination between D/A ratio and a second primary variable. For example, Intage is the interaction between D/A ratio and age. Intcom is the interaction between D/A ratio and commitment to farming.

\textsuperscript{b}Centered correlations are the Zero-order correlations between centered variables. Where the centered variable $X = X - \bar{X}$.

\textsuperscript{c}Uncentered correlations are synonymous with zero-order correlations.
suggested a curvilinear relationship, the square of age was used in the regression equation instead of age. The interaction term, was actually the interaction between economic hardship and this second-order polynomial. Finally, since there was a very large range in total acres operated (range=4,972) and a skewed distribution (medium=301, mean=385, skewness=3.58), the log of this variable was incorporated in the regression equation instead of the variable itself. A log transformation is commonly used when variables have a large range with just a few cases at the extreme ends of the distribution. Blalock (1979:427-428) notes that once a certain value is reached with such variables, further increases produce less and less effect on the dependent variable. The effect becomes one of saturation, or diminished returns. The effect of taking the log of total acres rather than total acres itself was to aggregate the extremely large scores, therefore lessening the "bending effect" that occurs when estimating the effects of these variables.

The second part of the analysis utilized path analysis. Path analysis permits the researcher to estimate coefficients and to examine both direct and indirect effects of variables arranged in a specified order. The ordering of the variables represents a
hypothesized causal process. Essentially, a path model is a quantifiable representation of a social process; although, as Land (1969) points out, it is usually an oversimplified model of reality.

Path analysis is a powerful technique for estimating and assessing the strength of causal relationships among variables. Coefficients that are estimated are called path coefficients. Because these are usually standardized (i.e., have a mean of 0 and a standard deviation of 1.0), a general interpretation of $P_{ij}$ is that a one standard deviation unit change in $X_j$ produces a $P_{ij}$ standard deviation unit change in $X_i$ (Miller, 1977).

Path models must be constructed under certain assumptions, which are briefly described below.

1. The hypothesized relationship between variables in a path model must be linear, additive, and causal. Path models cannot handle multiplicative relationships ($Y \neq XZ$) or curvilinear relationships ($Y = X^2$).

2. The path model must be recursive. This means that the model contains no reciprocal causations or feedback loops (i.e., if $X$ causes $Y$, $Y$ cannot reciprocally cause $X$).

3. Residuals are not correlated with predetermined variables (all preceding variables in the model), or with themselves. Endogenous variables are considered linear combinations of exogenous variables or other endogenous variables in the model.
The variance of exogenous variables is determined outside of the model; therefore, exogenous variables are treated as "given" (Kerlinger and Pedhauzer, 1973).

4. Variables are measured with a high reliability.

5. The usual methodological assumptions involved in multivariate regression analysis are met (Heise, 1969:57). These assumptions include independent sample units, variables are measured at the interval or near interval level, homoscedasticity, and a lack of high levels of multicollinearity.

As mentioned earlier, a major advantage of path analysis is that it permits a "decomposition of effects." But before one can discuss the decomposition of effects, a distinction must be made between total association and total effect. The total association between two variables is reflected in its zero-order correlation. The total effect between two variables is that part of the total association that specifies how much change in an endogenous variable is induced by a change in an exogenous variable in the model (Alwin and Hauser, 1975). This implies that the total effect between two variables does not always explain the total association between the two variables. In fact, this is usually the case. The total effect can be considered the causal component of the total association, and the residual can be thought of as the noncausal component.

Included within the causal component (the total
effect) are both direct and indirect effects. The direct effect is that part of the total effect that remains when all intervening variables are held constant. The path coefficient represents the direct effect. The indirect effect is that part of the total effect that is transmitted by variables that intervene between the two variables of interest.

Within the noncausal component of the total association are spurious effects and unanalyzed effects. Spurious effects exist when part of the total association is due to dependence upon a common cause. Unanalyzed effects occur when part of the total association is dependent upon the correlation between two exogenous variables. Because the variance of exogenous variables are explained outside of the model, this effect remains unanalyzed.

The path model (with appropriate path notation) appears in Figure 3. Besides decomposing the total effects into direct and indirect effects, goodness-of-fit measures are calculated to determine the adequacy with which the hypothesized path model fits the data.
Figure 3. The Path Model
CHAPTER FOUR
FINDINGS

Stage One

The first stage in the analysis was to examine the relationship between economic hardship and stress, and how the hypothesized moderator variables affected this relationship. For this purpose, multiple regression, utilizing a multiplicative interaction term, was used. The significance of the interaction term can be interpreted as a significant change in the slope between economic hardship and stress at different levels of the moderator variable. The statistical significance of the interaction terms constitutes tests of the multivariate hypotheses stated in Chapter two (hypotheses 2 through 11).

Given 10 moderator variables, there were 10 multiple regression equations. Each equation had stress as the dependent variable and debt-to-asset ratio, a designated moderator variable, and the interaction term as independent variables. The parameter estimates for the equations and their associated statistical significance are given in Table 4.

In all but one of the 10 equations, debt-to-asset
Table 4. Parameter estimates & significance for multiple regression equations with multiplicative interaction terms

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<tr>
<th>Predictor Variable</th>
<th>Beta$^a$</th>
<th>Probability</th>
</tr>
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<tr>
<td>D/A Ratio</td>
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<td>.0000</td>
</tr>
<tr>
<td>Age</td>
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<td>.0173</td>
</tr>
<tr>
<td>Age$^2$</td>
<td>-.060</td>
<td>.0906</td>
</tr>
<tr>
<td>Age$^2$ * D/A Ratio</td>
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<td>.6641</td>
</tr>
<tr>
<td>D/A Ratio</td>
<td>.403 **</td>
<td>.0000</td>
</tr>
<tr>
<td>Education</td>
<td>-.004</td>
<td>.9010</td>
</tr>
<tr>
<td>Education * D/A Ratio</td>
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<td>.5147</td>
</tr>
<tr>
<td>D/A Ratio</td>
<td>.382 **</td>
<td>.0000</td>
</tr>
<tr>
<td># Kids at home</td>
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<td>.1180</td>
</tr>
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<td>.3425</td>
</tr>
<tr>
<td>D/A Ratio</td>
<td>.385 **</td>
<td>.0000</td>
</tr>
<tr>
<td>Total Acres Operated</td>
<td>.067 *</td>
<td>.0428</td>
</tr>
<tr>
<td>Acres * D/A Ratio</td>
<td>-.026</td>
<td>.4164</td>
</tr>
<tr>
<td>D/A Ratio</td>
<td>.376 **</td>
<td>.0000</td>
</tr>
<tr>
<td>Gross Farm Sales</td>
<td>.047</td>
<td>1.1483</td>
</tr>
<tr>
<td>Gross Sales * D/A Ratio</td>
<td>.075 *</td>
<td>.0169</td>
</tr>
<tr>
<td>D/A Ratio</td>
<td>.379 **</td>
<td>.0000</td>
</tr>
<tr>
<td>% income from Farming</td>
<td>-.001</td>
<td>.9680</td>
</tr>
<tr>
<td>% income * D/A Ratio</td>
<td>-.002</td>
<td>.9553</td>
</tr>
<tr>
<td>D/A Ratio</td>
<td>.364 **</td>
<td>.0000</td>
</tr>
<tr>
<td>Commitment to Farming</td>
<td>.284 **</td>
<td>.0000</td>
</tr>
<tr>
<td>Commitment * D/A Ratio</td>
<td>-.047</td>
<td>.1139</td>
</tr>
<tr>
<td>D/A Ratio</td>
<td>.175 **</td>
<td>.0000</td>
</tr>
<tr>
<td>Perception of Hardship</td>
<td>.436 **</td>
<td>.0000</td>
</tr>
<tr>
<td>Perception * D/A Ratio</td>
<td>.032</td>
<td>.3309</td>
</tr>
<tr>
<td>D/A Ratio</td>
<td>.407 **</td>
<td>.0000</td>
</tr>
<tr>
<td>Off-Farm Experience</td>
<td>.042</td>
<td>.3518</td>
</tr>
<tr>
<td>Off-Farm * D/A Ratio</td>
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<td>.5625</td>
</tr>
<tr>
<td>D/A Ratio</td>
<td>.215</td>
<td>.0838</td>
</tr>
<tr>
<td>Marital Status</td>
<td>.044</td>
<td>.4021</td>
</tr>
<tr>
<td>Marital * D/A Ratio</td>
<td>.214</td>
<td>.1010</td>
</tr>
</tbody>
</table>

$^a$ Standardized Regression Coefficient.
* Probability < .05.
** Probability < .01.
ratio is a significant predictor of stress. More central to the analysis, however, is the nonsignificance of all but one (gross farm sales) of the interaction terms. In this regard, the analysis was somewhat disappointing. The other moderator variables (age, education, number of kids at home, marital status, total acres operated, percent of income derived from farming, perception of hardship, and commitment to farming) had no significant effect on the relationship between debt-to-asset ratio and stress. Thus, all the multivariate hypotheses stated in Chapter Two were rejected except for hypothesis 7.

Gross farm sales was the only moderator variable shown to have a significant effect on the relationship between economic hardship and stress. More specifically, it was hypothesized that the effects of economic hardship on stress would be greater for operators who have higher levels of gross farm sales than for those who had smaller gross farm sales (hypothesis 7). Although the main effects of gross farm sales are nonsignificant (prob.=.148), the interaction effect is significant (prob.=.017).

To more closely examine the interaction effects of gross farm sales, the slope between stress and economic hardship (operationalized as debt-to-asset ratio) was
plotted at two different levels of gross farm sales (see Figure 4). The graph has two slopes plotted, one representing operators with gross farm sales under $40,000 and the other representing operators with sales greater than $40,000.

As can be seen, the slopes for the two groups are not parallel, thus indicating a significant interaction. Although both slopes are positive, it is apparent that the slope for operators with sales over $40,000 is steeper. This indicates that the effect of economic hardship on stress is greater for those with the larger farm sales. This conclusion is reinforced by examining the separate parameter estimates for the two groups. Although the intercepts are nearly identical (7.9 vs. 8.1), the regression coefficient is 2.1 for operators with gross sales under $40,000, and 3.3 for those greater than $40,000. Thus, for operators with sales under $40,000, a one unit change in D/A ratio will bring a 2.1 unit change in stress, while a similar change for those with larger sales brings a 3.3 unit change in stress. This finding supports hypothesis 7 concerning the moderating effects of gross farm sales.

Two additional findings are noteworthy. First, although commitment to farming had an nonsignificant interaction effect, its main effect on stress was
Figure 4. Plot of slopes between debt-to-asset ratio and stress for operators with gross sales under and over $40,000
significant (prob .0000). Second, perception of hardship had a significant main effect (prob .0000).

Stage Two

The second stage of the analysis was to have entailed the testing of the model shown in Figure 3. However, based upon the findings in the first stage of the analysis, this model was modified. Because the analysis in stage 1 discerned a strong relationship between commitment to farming and stress, it was decided to incorporate the commitment variable into the structural model as an exogenous variable. In addition to inclusion of a structural path between commitment to farming and stress, a path from commitment to farming to adjustment was also added. The justification for this model revision was that farmers who had the greatest psychological commitment to farming would likely be those who would do whatever it took to remain in farming. It was hypothesized that those operators would also make the greatest number of family and farm adjustments. The modified path model is shown in Figure 5.

The model was tested using LISREL (Joreskog and Sorbom, 1981), which uses a maximum likelihood solution
Figure 5. The Revised Path Model
to estimate path coefficients. Secondly, the program provides a chi-square statistic to assess the goodness-of-fit of the model. Because it has been argued that the chi-square statistic is sensitive to deviations in sample size and normality assumptions (Bentler and Bonett, 1980), many researchers have preferred to focus on the ratio of chi-square to degrees of freedom as a measure of goodness-of-fit (Hoelter, 1983). Values of this ratio that indicate a good fit range from 5 or less (Wheaton et al., 1977), to a more conservative 2 to 3 (Carmines and McIver, 1981).

Hoelter's (1983) most recent development of the critical "N" statistic provides a method for estimating the sample size needed to statistically fail to reject a specific model. Although there are no firm guidelines for assessing the magnitude of the critical "N" in relation to the goodness-of-fit, initial analysis suggests that values of 200(G) (where G is the number of groups being analyzed) or greater are needed before it can be assume that a particular model adequately fits the data.

When using a maximum likelihood solution, there is an attempt to generate a variance-covariance matrix (called sigma) based upon model specifications. This generated matrix is then compared to the input matrix,
with the difference being a matrix of residuals. If it is determined that the model fits the data (using the techniques described above), then it is appropriate to discuss the significance of the internal structure of the model. In other words, discussion about the significance or contribution of a specific structure (i.e., path) in the model is conditional upon the determination of a good fit. For this reason, attention is first turned to the issue of goodness-of-fit.

**Goodness-of-Fit Measures**

Three different criteria can be used in determining the goodness-of-fit of a model. Because none of the three are thought to be superior, all three criteria are used here. The model shown in Figure 5 has a chi-square of 15.33 with 4 degrees of freedom (prob.=.004). It should be remembered that we are trying to develop a model that fits the data, and that a low chi-square and a high probability are indicative of a good fit. Using this statistical criterion, the stated model clearly fails to fit the data.

The second criterion to assess goodness-of-fit is the ratio of chi-square to degrees of freedom. Using this criterion the model yields a ratio of (15.33/4)
Although the model does not fit the data based upon the stringent criterion of 2 to 3 (Carmines and McIver, 1981), it falls into the acceptable range of 5 or less advocated by Wheaton and associates (1977).

The final criterion is Hoelter's (1983) critical "N" statistic. This statistic is computed as follows:

\[
\text{Critical "N"} = \left( \frac{Z_{\text{crit}} + 2df - 1}{2(\chi^2/ \text{N} - G)} \right)^2 + 1
\]

... where \( Z_{\text{crit}} \) is the critical value of the normal variate \( Z \) for a selected probability level, \( G \) is the number of groups being analyzed, and \( N \) is the sample size. Using a .05 probability level the following is obtained:

\[
\text{Critical "N"} = \left( \frac{1.65 + 2(4) - 1}{2(15.33) / 568 - 1} \right)^2 + 1 = 353
\]

Based upon Hoelter's criterion of 200(G) or greater, the model is acceptable.

**Internal Structures**

Because the model reasonably fits the data for two of the three criteria, attention is next turned to the significance of the internal structures, or paths, within the model. Similar to ordinary least squares estimation, the LISREL program provides t-values which
are the ratio of the parameter estimates to their standard errors. Based upon the distribution of t, estimates that have t-values of 1.96 or greater can be interpreted as being significant at the .05 probability level. Table 5 gives the parameter estimates (or path coefficients), along with t-values and $R^2$ for the endogenous variables. Also given is the total $R^2$ for the structural equations.

It was hypothesized that operators with the highest D/A ratios would make the most family and farm adjustments, experience the highest levels of stress, experience the greatest feelings of powerlessness and social isolation, and be most politically oriented toward governmental intervention (hypotheses 12 through 16). The analysis supports most of these hypotheses with the exception being the posited relationships between economic hardship and feelings of alienation (i.e., powerlessness and social isolation).

The relationship between D/A ratio and powerlessness (hypothesis 14) was not statistically significant (t-value= -0.530). Additionally, although the relationship between D/A ratio and social isolation (hypothesis 15) was significant, it was an inverse, rather than the anticipated positive relationship. Therefore, both these hypotheses must be rejected.
Table 5. Maximum Likelihood Estimates, T-Values, and $R^2$ for Structural Model

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Predictor Variable</th>
<th>Estimate</th>
<th>T-Value</th>
<th>R-square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjustment</td>
<td>D/A Ratio</td>
<td>.368</td>
<td>10.06 **</td>
<td>.238</td>
</tr>
<tr>
<td></td>
<td>Commitment</td>
<td>.269</td>
<td>7.34 **</td>
<td></td>
</tr>
<tr>
<td>Stress</td>
<td>D/A Ratio</td>
<td>.174</td>
<td>4.97 **</td>
<td>.406</td>
</tr>
<tr>
<td></td>
<td>Commitment</td>
<td>.112</td>
<td>3.32 **</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adjustment</td>
<td>.499</td>
<td>13.64 **</td>
<td></td>
</tr>
<tr>
<td>Powerlessness</td>
<td>Adjustment</td>
<td>.104</td>
<td>2.04 *</td>
<td>.037</td>
</tr>
<tr>
<td></td>
<td>Stress</td>
<td>.110</td>
<td>2.14 *</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ratio</td>
<td>-.024</td>
<td>-.530</td>
<td></td>
</tr>
<tr>
<td>Social Isolation</td>
<td>Adjustment</td>
<td>-.041</td>
<td>-0.79</td>
<td>.024</td>
</tr>
<tr>
<td></td>
<td>Stress</td>
<td>.153</td>
<td>2.96 **</td>
<td></td>
</tr>
<tr>
<td></td>
<td>D/A Ratio</td>
<td>-.094</td>
<td>-2.05 *</td>
<td></td>
</tr>
<tr>
<td>Political Orientation</td>
<td>Adjustment</td>
<td>.255</td>
<td>5.32 **</td>
<td>.168</td>
</tr>
<tr>
<td></td>
<td>Stress</td>
<td>.143</td>
<td>2.96 **</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Powerlessness</td>
<td>.120</td>
<td>3.11 **</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Soc. Isolation</td>
<td>-.027</td>
<td>-.72</td>
<td></td>
</tr>
<tr>
<td></td>
<td>D/A Ratio</td>
<td>.102</td>
<td>2.41 *</td>
<td></td>
</tr>
</tbody>
</table>

$X^2$ with 4df = 15.33 (prob. = .004)  
$X^2$/df = 3.80  
Critical "N" = 353  
Total $R^2$ for Structural Equations = .296

* Significant at .05 probability.  
** Significant at .01 probability.
It was hypothesized that operators with the highest levels of commitment to farming would have the greatest levels of stress and the greatest number of family and farm adjustments (hypotheses 17 and 18). As shown in table 5, both of these hypotheses are supported.

It was hypothesized that farmers who made the most family and farm adjustments would also display the highest levels of stress, most powerlessness and social isolation, and be most accepting of governmental intervention in agriculture (hypotheses 19 through 22). All of these hypotheses were supported, with the exception of social isolation (hypothesis 21). The analysis found the relationship between adjustments made and social isolation to be insignificant.

It was hypothesized that those who had the highest stress levels would also display the most powerlessness and social isolation, and be the most politically oriented toward governmental intervention in agriculture (hypotheses 23 through 25). As shown in Table 5, all three of these hypotheses were supported.

Finally, it was hypothesized that farm operators who scored the highest on powerlessness and social isolation would be those most accepting of governmental intervention in agriculture (hypotheses 26 and 27). In this case, the argument for powerlessness was supported
(hypothesis 26), but not that for social isolation (hypothesis 27).

In sum, all but three of the hypotheses were supported (hypotheses 15, 21, and 27), which is not surprising given the reasonable overall fit of the model. The three hypotheses that were not supported dealt with the two alienation measures.

**Decomposition of Total Effects of the Model**

As mentioned earlier, the "total effect" is that part of the association (i.e., the zero-order correlation) that can be explained within the context of the model. The direct effect can best be described as the effect of one variable upon another, when all other variables in the model are held constant. The remaining part of the total effect is the indirect effect. This indirect effect is the effect one variable has upon another via transmission through other variables in the model. It is in the decomposition of effects that the model is tested as a social process, as opposed to examining each path independently. The decomposition of the total effects of the revised model is given in Table 6.

An example aids interpretation of this table.
Table 6. Decomposition of Total Effects

<table>
<thead>
<tr>
<th>Endogenous Variable</th>
<th>Predictor Variable</th>
<th>Total Effects</th>
<th>Direct Effects</th>
<th>Indirect Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjustments</td>
<td>D/A ratio</td>
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<td>.368</td>
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</tr>
<tr>
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<td>Commitment</td>
<td>.269</td>
<td>.269</td>
<td>---</td>
</tr>
<tr>
<td>Stress</td>
<td>D/A Ratio</td>
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<td>.174</td>
<td>.184</td>
</tr>
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<td>.112</td>
<td>.134</td>
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<tr>
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<td>Adjustment</td>
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<td>.499</td>
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</tr>
<tr>
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<td>D/A Ratio</td>
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<td>.058</td>
<td>---</td>
<td>.058</td>
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<tr>
<td></td>
<td>Adjustment</td>
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<td>.111</td>
<td>.057</td>
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<tr>
<td></td>
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<td>.115</td>
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<td></td>
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<td>.039</td>
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<tr>
<td></td>
<td>Adjustment</td>
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<td>.088</td>
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<td></td>
<td>Stress</td>
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<td>.175</td>
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<tr>
<td>Political Orientation</td>
<td>D/A Ratio</td>
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<td>.102</td>
<td>.134</td>
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<td></td>
<td>Commitment</td>
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<td></td>
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<td>.118</td>
<td>.010</td>
</tr>
<tr>
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<td>Powerlessness</td>
<td>.122</td>
<td>.122</td>
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</tr>
<tr>
<td></td>
<td>Social Iso.</td>
<td>-.020</td>
<td>-.020</td>
<td>---</td>
</tr>
</tbody>
</table>
Consider the relationship between debt-to-asset ratio (economic hardship) and stress. We may want to know how much of the effect of D/A ratio on stress is directly attributable to economic hardship, and how much is mediated through the family and farm adjustments that are made when operators are faced with economic hardship. Decomposing the effects of D/A ratio on stress provides a direct answer to this question. It is shown in Table 6 that the total effect of D/A on stress is .358. Of this total effect, .174 is directly attributed to economic hardship and .184 is indirectly transmitted through family and farm adjustments. Thus, slightly more than half of the total effect is transmitted indirectly.

The Effects of D/A Ratio

We examine first the effects of economic hardship on family and farm adjustments, stress, powerlessness, social isolation, and political orientation. As specified by the model, the total effect and the direct effect for family and farm adjustments are the same (.368). The total effect for stress is .358, with .174 being direct, and .184 being indirectly transmitted via family and farm adjustments. It should be noted that, in this case, the indirect effect is greater than the direct effect.

The total effect of economic hardship on
powerlessness is .058, with -.024 being direct, and .082 being indirectly transmitted via stress and family and farm adjustments. However, in this case, the direct effect is statistically nonsignificant. Again, we find that the indirect effect is greater than the direct effect. It should also be noted that although the direct effect has a negative sign it does not mean that the relationship is negative. Because the path is not significant, the relationship cannot be construed as being different from zero, and the sign is not interpretable (i.e., there was an equal probability that the sign could have been positive).

The total effect for social isolation was -.037, with -.094 being direct, and .057 being indirect. In this case, there is a negative direct effect and a positive indirect effect. The indirect effect might accrue through either or both stress and family and farm adjustments. But since the direct effect of family and farm adjustments on social isolation isn't significant, the indirect effect seems to be being transmitted primarily through stress.

The total effect for political orientation is .236, with .102 being direct, and .134 being indirectly transmitted via powerlessness, stress, and family and farm adjustments. Although the indirect effect could
potentially be transmitted via social isolation, this is unlikely since the path between social isolation and political orientation is not significant.

**The Effects of Commitment to Farming**

Next, we examine the effects of commitment to farming on family and farm adjustments and stress. As specified by the model, the direct effect of this variable on adjustment is equal to the total effect (.269). We are, however, able to decompose the effects for stress. The total effect is .246, with .112 being direct and .134 being indirectly transmitted via family and farm adjustments. Note here that the indirect effect transmitted via family and farm adjustments is greater than the direct effect.

**The Effects of Family and Farm Adjustments**

As specified by the model the direct effects of adjustments on stress are equal to the total effects (.499). The total effect for powerlessness was .68, with .118 being direct and .057 being indirectly transmitted through economic hardship and stress. The total effect for social isolation was .072, with -.016 being direct (nonsignificant), and .088 being indirect through economic hardship and stress. Finally, the total effect for political orientation was .306, with the majority of the effect being direct (.228), and a small residual
being transmitted via stress, powerlessness, social isolation, and economic hardship.

**The Effects of Stress**  The direct effect of stress on both powerlessness and social isolation was equal to the total effect (.115 and .175 respectively). Only the effects of stress on political orientation can be decomposed into direct and indirect effects. The total effect for political orientation was .128, with most of the effect being direct (.118), with a small residual (.010) being transmitted indirectly via powerlessness, social isolation, family and farm adjustments, and economic hardship.

**The Effects of Alienation**  As specified by the model, the direct effects alienation (both powerlessness and social isolation) on political orientation are equal to the total effects. The total effects for powerlessness on political orientation was .122, whereas the total effect of social isolation on political orientation was -.020, which was found to be nonsignificant.
CHAPTER FIVE

SUMMARY AND CONCLUSIONS

Summary

This study tested for some social-psychological impacts on Iowa farm operators of the contemporary financial crisis in agriculture. A two stage research design was used in the analysis.

The first stage of the analysis involved a detailed examination of the relationship between economic hardship (debt-to-asset ratio) and personal stress. The effects of several "moderator" variables upon this relationship were explored. Surprisingly, the analysis provided little support for the hypothesized effects of the moderator variables. The only significant interaction effect was shown for gross farm sales. The analysis revealed the effects of D/A ratio on stress was greater for operators with higher, than lower, levels of gross farm sales.

Two of the moderator variables (commitment to farming and perception of hardship) were found to have significant main effects on stress. As a result commitment to farming was introduced as an exogenous variable in the second stage of the analysis. Perception of hardship was not used because of its
strong association with the objective measure of hardship (D/A ratio), introducing a multicollinearity problem. Additionally, perception of hardship was an ordinal level variable with only four value categories, thus constraining its inclusion in the path analysis.

Overall, the first stage of the analysis yielded little substantive support for the importance of several variables posited as affecting the relationship between economic hardship and stress. The analysis did, however, weed out several variables and thus brought increased clarity to the model tested in the second stage of the analysis.

The second stage of the analysis tested a structural model of the impact of economic hardship on stress, alienation, and political orientation. Using LISREL to estimate the structural parameters, it was determined that the model reasonably fit the data. The total coefficient of determination ($R^2$) for the model was .296, with the coefficients of determination for the individual endogenous variables ranging from .017 (for social isolation) to .406 (for stress). Two of the three goodness-of-fit criteria suggested we had a good fitting model, with only the most stringent criterion failing to support this conclusion. The greatest deficiency in the model was for social isolation, Where
only two percent of the variance was explained. When the internal structures of the model were examined, it was found that all but three of the paths were statistically significant. The nonsignificant paths were for direct effects of debt-to-asset ratio on powerlessness, family/farm adjustments on social isolation, and social isolation on political orientation. The theoretical implications of these several findings are discussed below.

Conclusions and Implications

Stage One

Although the first stage of the analysis produced disappointing results in the rejection of most of the hypotheses, it nevertheless elevated some questions for attention. For example, why were all but one of the interaction effects insignificant?

The regression equations suggest that operators who have high debt-to-asset ratios are also experiencing high levels of stress. In only one instance when other variables were incorporated into the equation is the relationship between debt-to-asset ratio and stress affected. Thus, these findings seem to suggest the
presence of "economic determinism." Farmers who display the greatest economic hardship also experience the highest levels of stress, and there are few factors that seemingly buffer or alter that relationship.

From an intervention or treatment perspective, these findings may seem ominous. They suggest that operators with heavy financial burdens experience high levels of stress, and that there are few factors that moderate these effects.

However, this is not necessarily true. First, if we more closely examine the relationship between economic hardship and stress we find that the zero-order correlation is .396 (explaining approximately 16 percent of the variance in stress). This clearly suggests that although economic hardship is an important causal factor of stress, its prediction power is not great enough to justify the notion of economic determinism. Obviously there are other factors contributing to an individual's stress level.

Second, if we more closely examine the moderator variables, we find that they are predominantly static characteristics of the individual, or the farm operation (e.g., education, marital status, or total acres operated). Other studies have shown that variables such as social support and coping ability have a significant
impact upon a person's stress level during times of economic crisis (Kaplan et al., 1976; Gore, 1978). Additionally, it was found in the second stage of the analysis that the number of family and farm adjustments made by the family was the overall best predictor of stress. It seems more likely that these action-oriented variables (variables that are indicators of some type of action taken) may be better able to moderate stress levels than static characteristics of the individual.

These findings suggest the need to examine factors that effectively alleviate stress. In other words, given the demonstrated high levels of stress within the agricultural community, what intervention strategies might be the most effective in helping people cope with their problems. Again, factors such as availability of family support, information, local support groups, organizational support, as well as political involvement should be examined.

Another finding from the first stage of the analysis is noteworthy. This regards the moderating effects of gross farm sales. As presented earlier, the interaction between D/A ratio and gross farm sales was found to be significant, thus, supporting the argument that operators with higher levels of SES were reacting to economic hardship more stressfully than those of
lower status.

But closer examination revealed that the amount of variance explained by the interaction of gross farm sales and debt-to-asset ratio was small. In fact, the addition of the interaction term in the equation raised the explained variation by less than one percent (from .157 to .164). Thus, although statistically significant, the impact of farm sales upon the base relationship was marginal at best.

Overall, the results of the first stage of the analysis suggest that the impact of economic hardship on stress is not mediated by the factors tested here. That is, operators with high D/A ratios had higher levels of stress regardless of their age, education, number of children at home, or other personal, farm-firm, or family characteristic.

Before attention is turned to the second stage of the analysis, several additional points should be addressed. First is the appropriateness of using estimated debt-to-asset ratios as an indicator of economic hardship. Questions can be raised concerning the accuracy with which the respondents reported their financial assets and liabilities. This issue is similar the more general issue of self-reporting in all survey designs. If it were possible to have obtained the data
from more objective secondary sources this would have been preferred. However, since such financial information is regarded as confidential this was not possible. Additionally, it could be argued that since farm operators customarily receive operating loans each year, they, more than many other types of businessmen (or businesswomen) have this information more readily available.

A second adjacent issue can be raised about the use of debt-to-asset ratios as an indicator of economic hardship over alternative measures, such as total debt, total assets, or net worth. To address this issue one must first examine the theoretical definition of economic hardship. It is only then that a determination can be made as to the best operational indicator.

In this study economic hardship does not refer to how much money an operator has, but rather to how close a farmer is to losing his farm due to financial distress. Because this theoretical definition is a relative one, it suggests that its operational indicator also be relative. Indicators such as net worth and total debt are absolute -- not relative. Perhaps an example will help clarify this point. If two operators have the same net worth e.g., $100,000, this does not mean that they are equally close to losing their farms.
In fact, one operator could have $1,000,000 in assets and $900,000 in liabilities (and obviously be on the brink of foreclosure), while the other operator can have $125,000 in assets and $25,000 in liabilities. Although both operators have equal net worth, they are clearly in different financial positions. A similar argument can be made for total debt, or any other absolute measure.

A debt-to-asset ratio on the other hand, is a relative indicator of the ratio of equity a farm operator has in his farm. If two farm operators have the same D/A ratio, even if they have different values of assets and liabilities, the relative proximity to financial distress is more likely to be equal. This is not to suggest that any one single measure can address all the economic parameters associated with economic hardship and the potential of foreclosure, but rather that if one measure is to be used, the D/A ratio seems to be a good choice.

A final issue to be addressed before moving on to the second stage of the analysis is the issue of using cross-sectional data to examine causal processes. Because the data used in this study was cross-sectional, social change can, at best, only be inferred. This is an issue that many social researchers have to address. Clearly if longitudinal data were available than change
could be observed. We would then be better able to test the relationships of interest via observation. For example, do increases in D/A ratios over time affect similar changes in the number of family and farm adjustments, stress levels, and feelings of alienation. If longitudinal data were available, conclusions and implications could be made more forcefully because these changes were observed.

Stage two

Unlike the first part of the analysis, in which emphasis was given to the characteristics of the respondents for their differential responses to economic hardship, the second part examined causal interactions between several social-psychological responses to economic hardship. Inherent in the analysis were several alternative hypotheses.

First examination was made of some posited determinants of stress. Two factors were studied -- economic hardship and responses to life events. The "life-events perspective" suggested that certain events, such as loss of a job or a death in the family would precipitate changes in lifestyle (what Holmes and Rahe call readjustments) which bring increased tension or
stress. The life-events perspective suggests a two-stage causal flow, with changed situations leading to lifestyle readjustments, which, in turn, bring elevated stress. Thus, the life-events perspective is actually a complimentary elaboration of the economic hardship-stress relationship, rather than a competing perspective. It does however have real implications for predicting the likelihood of having stress-related problems. If the life-events perspective is supported, it would suggest that predicting stress-related problems solely on the basis of economic position could be problematic.

The study findings indicate, as hypothesized, that economic hardship has a significant direct effect on stress. However, this does not necessarily imply a rejection of the life-events perspective. The life-events perspective does not deny this direct relationship, but rather, it argues that economic hardship would lead to lifestyle readjustments, which, in turn, leads to increased stress levels. Operational to this study, if a significant part of the effect of economic hardship on stress were transmitted through farm and family adjustments, the life-events perspective would be supported.

The findings on Table 6 show that a majority of the
effect of economic hardship on stress is in fact, transmitted through farm and family adjustments. Furthermore, it was found that the adjustment variable was, by far, the best predictor of personal stress. Thus, these findings lend strong support to the life-events perspective.

In the examination of alienation (powerlessness and social isolation), we again tested alternative causal explanations. Although the literature consistently shows positive relationships between economic hardship and alienation, it was argued here that this relationship might be more indirect than direct. Specifically, that stress could be a major factor affecting how economic hardship produced alienation. From a theoretical perspective, an individual must psychologically react to economic hardship before it is manifest as alienation. Operationally, we would expect the indirect effects of economic hardship on alienation to be greater than the direct effects, and for personal stress to be instrumental in affecting the nature of this relationship.

The findings provide some support for this argument. First, the direct effects of stress on both measures of alienation -- powerlessness and social isolation -- were significant. However, when the
effects of economic hardship on alienation were decomposed, two distinct patterns emerged. For powerlessness, the indirect effects of economic hardship were greater than the direct effects. But for social isolation that the direct effect of economic hardship was significant, and exceeded the indirect effect. Additionally, the direction of the relationship was counter to the hypothesized direction (i.e., inverse). Unfortunately, aside from measurement error, the author has little explanation for this phenomenon.

The findings also supported some prominent arguments regarding political orientation. Lipset (1959), for example, argued that as a group, farm operators are politically conservative, but that this orientation changes with altered economic conditions. He distinguished between two economic concepts that were related to political orientation -- income level and income security.

Using degree of governmental intervention as an indicator of political orientation, findings of this present study supports Lipset's thesis in that operators who are in the worst financial shape are also those most accepting of "liberal ideology."

In examining the dynamics of this relationship, it was argued that the indirect impacts of economic
hardship on political orientation would be greater than direct impacts. Specifically, that operators were unlikely to shift their political orientation because of their debt situation. Rather, that the personal sacrifices and psychological adjustments that accompany economic hardship would more likely precipitate changes in political orientation. This argument is supported in the study findings. Although a significant direct relationship was obtained between economic hardship and political orientation, the indirect effects were larger. Not only does economic hardship have a significant impact upon political orientation, but operators who were the most economically distressed will be the most accepting of liberal ideologies.

Lipset (1950) has examined the rise of the Cooperative Commonwealth Federation in Saskatchewan, the only North American socialist party to govern a political unit larger than a municipality. The Federation rose to power during a time when agricultural prices were low, and farmers were experiencing great economic stress. The Federation received the bulk of its support from farmers and union workers. Today, we are seeing the beginning of a farmer-labor coalition in the midwest, as the current administration is perceived by these two groups as being anti-family farms, and
anti-labor. Although this coalition is in its infancy, the failure of economic conditions to improve could have profound impacts upon future voting behavior.

This is not to imply that the farm crisis has created an atmosphere in the midwest conducive to the rise of agrarian socialism. However, throughout the 1980s, the rural midwest has been supportive toward the conservative Republican agenda. Further deterioration of the farm economy between now and the 1988 election could very well be interpreted by rural constituents as a betrayal of this support.

In sum, four major conclusions can be drawn from this study. First, Iowa farm operators who are the most economically pressed have the greatest psychological stress. This relationship suggests some degree of economic determinism, especially in that the relationship remains unchanged regardless of age, education, number of children at home, total acres operated, percent of income derived from farming, commitment to agriculture, perception of hardship, off-farm work experience, or marital status. However, as noted earlier, there are other variables that are thought to affect this relationship that have not been tested here.

Second, the findings provide strong support for the
life-events perspective in examining stress. Although it was found that economic hardship and commitment to farming had significant direct effects on stress, most of this effect is transmitted through family and farm adjustments. The implication is that life events can not only be stressful in themselves, but made even more so to the extent they force a readjustment of lifestyles.

Third, the findings show the importance of stress as an intervening variable between economic hardship and alienation. Because the support is inconclusive it is difficult to strongly advocate its use, but it does suggest that it is something that should be further investigated. The usefulness of incorporating psychological and social psychological perspectives in the examination of alienation is suggested by these findings. Perhaps further investigations can more clearly delineate the relationships suggested, and the utility of the approach.

Finally, the findings lend support to Lipset's thesis regarding economic conditions and political orientation. Clearly, farm operators who are in the greatest financial difficulty are also experiencing most psychological stress, making the greatest number of financial adjustments, and are the most receptive of
liberal public-interventionist policies. As previously mentioned, the emerging alliance between agriculture and labor may have a substantial impact on future voting behavior in rural areas. Farm communities that have traditionally supported conservative Republican candidates may find more liberal political positions being taken. Lipset noted that leftist or liberal voting is a general expression of discontent. Clearly, unless economic conditions improve in Iowa's rural communities, and specifically in agriculture, political discontent will continue to grow.

Recommendations for Further Research

One clear implication of this, and other studies of the farm crisis, is that the displacement of farm operators is likely to continue for some time. It is for this reason that further research on the farm crisis is strongly recommended.

This study only examined the social-psychological impacts of the farm crisis. Research into the structural dimensions of the crisis is also needed. Research specific to changes in rural class structure, or the acceleration in those changes precipitated by the farm crisis is specifically encouraged. Below are
several recommendations for further research (in no specific order) which reflect some of the deficiencies in this study, as well as some adjacent issues not addressed in this study.

1. The link between agricultural policy and the agricultural economy has been controversial for a long time. Research into the effects of long-term policy orientations on the farm crisis, as well as the reciprocal effects of the farm crisis on policy is greatly needed.

2. As mentioned earlier, whether the debt problem in agriculture is of crisis proportion is debatable. While many small organizations have been established in response to the farm crisis, other larger organizations, such as the Farm Bureau, have often publicly stated that the problems in agriculture are temporary and overestimated. It is clear from this debate, and others like it, that the degree of interorganizational conflict among agricultural groups has increased. Research into these conflicts, and their effects on future policy orientations is greatly needed.

3. Research specifically oriented toward the farm crisis and its effect on political orientations and voter preferences is recommended. Changes in voting patterns precipitated by the farm crisis have significant consequences and should be thoroughly researched.

4. Although causal factors of stress are a significant part of this study, related issues of treatment of, and buffers to, stress are also extremely important. Research on organizational, as well as individual personal support and its effects are needed. If a significant part of the farm population is experiencing a great deal of stress, the importance of research from a "treatment" perspective cannot be underestimated.
5. Research is greatly needed on the adjustments and challenges faced by those who exit agriculture as a response to the farm crisis. The study by the Heffernans is a good start, but continued monitoring of these displaced individuals from a more scientific research design would be much more fruitful in the examination of challenges these individuals face.

6. Finally, the greatest measurement problem in this study was in the operationalization of alienation. The social isolation variable was ineffectual, and the powerlessness variable, although statistically significant, had little variation. Because of this, it was difficult to achieve one of the primary objectives of the study; that being, to assess the degree of alienation among Iowa farm operators. Therefore, it is recommended that further study be made of the alienation hypothesis, using stronger measures so as to more effectively test the correlates of alienation among farm operators.
Because the model was revised by including the commitment variable before testing it in its original form, it is no longer testable with the existing data. To test this revised model would require a new set of data. Technically, the process here is one of model development rather than model testing.
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ACKNOWLEDGEMENTS

The author wishes to express his appreciation to Dr. Gordon L. Bultena and Dr. Paul Lasley for their guidance and assistance throughout this study. Appreciation is also extended to Drs. Fred Lorenz, Gordon Bivens, and Charles Mulford for their constructive comments and input.

I am additionally indebted to my wife Diane, without whom this project could never have been completed.

Lastly, I wish to express my love and thanks to my parents, Herman and Edith Geller, to whom this dissertation is dedicated to.
### Interval Level Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Range</th>
<th>Mean</th>
<th>S.D.</th>
<th>Alpha $^1$</th>
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<td>2.6</td>
<td>.31</td>
<td>.33</td>
<td>--</td>
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<td>18</td>
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<td>.82</td>
</tr>
<tr>
<td>Adjustments</td>
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<td>16</td>
<td>6.4</td>
<td>3.1</td>
<td>.84</td>
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<tr>
<td>Political</td>
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<td>24</td>
<td>18</td>
<td>15.7</td>
<td>2.7</td>
<td>.65</td>
</tr>
<tr>
<td>Social Orientation</td>
<td>9</td>
<td>40</td>
<td>31</td>
<td>24.3</td>
<td>5.3</td>
<td>.72</td>
</tr>
<tr>
<td>Isolation</td>
<td>3</td>
<td>13</td>
<td>10</td>
<td>9.1</td>
<td>2.3</td>
<td>.73</td>
</tr>
<tr>
<td>Stress</td>
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<td>91</td>
<td>71</td>
<td>51.5</td>
<td>12.7</td>
<td>--</td>
</tr>
<tr>
<td>Age</td>
<td>1</td>
<td>4973</td>
<td>4972</td>
<td>385</td>
<td>346</td>
<td>--</td>
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<tr>
<td>Total acres</td>
<td>0</td>
<td>9</td>
<td>9</td>
<td>.85</td>
<td>1.3</td>
<td>--</td>
</tr>
<tr>
<td>Number of</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kids at home</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$^1$Since the scales are unidimensional, an appropriate test to test their reliability is by using Cronbach's Alpha (Cronbach, 1951). The alpha is a measure of internal consistency, which ranges from 0.0 to 1.0. The closer the measure comes to 1.0, the greater the internal consistency, and thus, the greater the reliability.
### Ordinal and Nominal level Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Percent</th>
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<tbody>
<tr>
<td><strong>Years of Education</strong></td>
<td></td>
</tr>
<tr>
<td>0</td>
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</tr>
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<td>1</td>
<td>1.1</td>
</tr>
<tr>
<td>2</td>
<td>1.1</td>
</tr>
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<td>0.4</td>
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<td>5</td>
<td>0.1</td>
</tr>
<tr>
<td>6</td>
<td>0.4</td>
</tr>
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<td>7</td>
<td>0.4</td>
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</tr>
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<td>9</td>
<td>2.8</td>
</tr>
<tr>
<td>10</td>
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<td>11</td>
<td>2.3</td>
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<td>12</td>
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<td>1.1</td>
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<td>0.3</td>
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<td>0.0</td>
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<tr>
<td><strong>Off-Farm Work Experience</strong></td>
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<tr>
<td>Yes</td>
<td>27.4</td>
</tr>
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<td>No</td>
<td>72.6</td>
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<tr>
<td><strong>Gross Farm Sales</strong></td>
<td></td>
</tr>
<tr>
<td>Less than $2500</td>
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</tr>
<tr>
<td>$2500 - $9,999</td>
<td>8.4</td>
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<tr>
<td>$10,000 - $19,999</td>
<td>9.1</td>
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<tr>
<td>$20,000 - $39,999</td>
<td>16.1</td>
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<td>$40,000 - $59,999</td>
<td>12.0</td>
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<td>$60,000 - $79,999</td>
<td>9.8</td>
</tr>
<tr>
<td>$80,000 - $99,999</td>
<td>10.7</td>
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<tr>
<td>$100,000 - $199,999</td>
<td>18.7</td>
</tr>
<tr>
<td>$200,000 or more</td>
<td>10.5</td>
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</table>
Variable Percent

**Percent of Income derived from Farming**

<table>
<thead>
<tr>
<th>Income Range</th>
<th>Percent</th>
</tr>
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<tbody>
<tr>
<td>Less than 10%</td>
<td>10.6</td>
</tr>
<tr>
<td>10% - 30%</td>
<td>9.0</td>
</tr>
<tr>
<td>31% - 50%</td>
<td>9.9</td>
</tr>
<tr>
<td>51% - 75%</td>
<td>13.7</td>
</tr>
<tr>
<td>Over 75%</td>
<td>56.9</td>
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</table>

**Marital Status**

<table>
<thead>
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<th>Status</th>
<th>Percent</th>
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</thead>
<tbody>
<tr>
<td>Married</td>
<td>92</td>
</tr>
<tr>
<td>Not Married</td>
<td>8</td>
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</tbody>
</table>

**Powerlessness:**

"Increasingly farmers are being "left out" of many important agricultural decisions"

<table>
<thead>
<tr>
<th>Agreement Level</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>52</td>
</tr>
<tr>
<td>Somewhat agree</td>
<td>38</td>
</tr>
<tr>
<td>Uncertain</td>
<td>6</td>
</tr>
<tr>
<td>Somewhat disagree</td>
<td>4</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>1</td>
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</tbody>
</table>

**Perception of Hardship:**

"How concerned are you about your farm's financial condition"

<table>
<thead>
<tr>
<th>Concern Level</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not concerned</td>
<td>4</td>
</tr>
<tr>
<td>Slightly concerned</td>
<td>18</td>
</tr>
<tr>
<td>Moderately concerned</td>
<td>39</td>
</tr>
<tr>
<td>Very concerned</td>
<td>39</td>
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</table>
APPENDIX B. DETAILED SAMPLE CHARACTERISTICS

Respondent Attrition

<table>
<thead>
<tr>
<th>Year</th>
<th>N of Original Panel</th>
</tr>
</thead>
<tbody>
<tr>
<td>1982</td>
<td>1,931</td>
</tr>
<tr>
<td>1983</td>
<td>1,326</td>
</tr>
<tr>
<td>1984</td>
<td>876</td>
</tr>
<tr>
<td>1985</td>
<td>698</td>
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</tbody>
</table>

Date of Survey Response for Variables in the Model

<table>
<thead>
<tr>
<th>Variable</th>
<th>Date of Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>D.A Ratio</td>
<td>Fall 1984</td>
</tr>
<tr>
<td>Commitment to Farming</td>
<td>Fall 1984</td>
</tr>
<tr>
<td>Farm/Family Adjustments</td>
<td>Spring 1985</td>
</tr>
<tr>
<td>Political Orientation</td>
<td>Fall 1984 &amp; Spring 1985</td>
</tr>
<tr>
<td>Social Isolation</td>
<td>Spring, 1984</td>
</tr>
<tr>
<td>Powerlessness</td>
<td>Spring 1984</td>
</tr>
<tr>
<td>Stress</td>
<td>Spring 1985</td>
</tr>
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</table>