LEARNED HELPLESSNESS AND INTERNAL-EXTERNAL LOCUS OF CONTROL IN THE ELDERLY

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The present research has focused on an often-neglected segment of society—the aged. Gerontologists have attempted to define the variables or processes associated with successful aging, but theories of aging have not been entirely satisfactory in describing optimal patterns of aging or predicting life satisfaction.

A number of phenomena which appear relevant to a study of aging have been discussed and the pertinent literature reviewed. Specifically, learned helplessness, depression, internal-external locus of control, and disengagement versus activity have been examined. The present research was divided into two studies. Study Number 1 has investigated internal-external locus of control in an elderly sample and related it to indices of activity and morale. Study Number 2 has extended Seligman's (1975) theory of learned helplessness to an elderly population and investigated the phenomenon in individuals with either an internal or an external locus of control.

Study Number 1 has correlated internal-external locus of control with measures of activity and morale. Participants
included 100 elderly volunteers aged 65 years or older, who were ambulatory, verbal, coherent, literate, and maintaining community residence. Groups of individuals were administered two locus of control scales, a morale scale, depression inventory, life satisfaction scale, background data questionnaire, and an activity scale. The matrix of intercorrelations indicated that all dependent measures correlated significantly with both locus of control scales at the .01 level. Elderly individuals with more internal loci of control tended to report more positive morale, greater life satisfaction, higher levels of activity, and less depression than more external individuals. Results were discussed in light of the activity and disengagement theories of aging.

Study Number 2 has provided an experimental demonstration of the induction of learned helplessness and learned competence in an elderly sample. Participants included sixty individuals from Study Number 1 whose scores were at least .5 standard deviation above and .5 standard deviation below the mean on the Levenson Locus of Control Scale. Thirty internals and thirty externals were randomly assigned to one of three treatment groups: (a) soluble discrimination problems, which included response contingent feedback; (b) insoluble discrimination problems, which were designed to induce failure by means of noncontingent response feedback; and (c) control, in which no
discrimination problems were presented. The group pretreated with insoluble discrimination problems performed significantly worse on a sequenced anagram task than the control and soluble pretreated groups. Moreover, the group pretreated with soluble discrimination problems performed significantly better on the sequenced anagram task than the control group. Results suggest that exposure to insolubility interfered with subsequent behavior or produced "helplessness," while exposure to solubility facilitated subsequent behavior or produced "competence." Internals performed significantly superior to externals on the anagram test task. However, the results did not give cleargut evidence concerning the relationship between locus of control and learned helplessness.

The locus of control construct (Rotter, 1966) and the theory of learned helplessness (Seligman, 1975) appear to have immediate relevance for the treatment of aging individuals. The present study suggests that exposure to controllable reinforcement may break-up or alleviate learned helplessness in elderly individuals.
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LEARNED HELPLESSNESS AND INTERNAL-EXTERNAL LOCUS OF CONTROL IN THE ELDERLY

In recent years, the proportion of aged individuals in our society has increased significantly. From 1900 to 1950, the total population of the United States doubled, but the number of people over sixty-five quadrupled. Federal government figures indicate that over nineteen million Americans, one in every ten persons, is sixty-five years of age or older. During the 1970s, the United States can expect its aged population to increase to twenty-five million (Brotman, 1971).

Everyone who lives long enough can expect to join this newest, largest, and fastest-growing minority—the aged. "Oddly enough, though this group eventually encompasses all other minorities, as well as the majority, and though everyone struggles to join it, it is a not well-treated minority" (Brotman, 1971, p. 1). The aged are often ignored, rejected, discriminated against, and isolated from society. In our youth-oriented society, there appears to be a general devaluation of the aged, not only by society, but by the aged themselves (Botwinick, 1970; Lugo & Hersey, 1974; Rosow, 1967).
The problems confronting the aged appear multifacted and interrelated. In addition to a general devalued social status, Rosow (1967) has suggested that the elderly individual must cope with a number of major losses. For example, the aged are typically confronted with declining health and physical functioning, decreased income and the loss of meaningful work, changing marital and family roles, and a shrinking social world. The various, often inevitable, losses that the elderly experience may contribute to an increased turning inward and withdrawal from society. Botwinik (1973) suggests that psychological and social forces interact to produce a narrowed social world:

Many older people, perhaps most older people, at some point in their lives direct their attention to themselves and away from others - they grow less responsive to the larger world about them; they narrow their social world. At the same time, the world of people and institutions pushes them out. Events curtail their roles and their functions, and they are often stigmatized in the process. (p. 50).

Cumming and Henry (1961) formulated a theory of disengagement based on the observation than aged people tend to withdraw from society and curtail their activities. The authors noted that "...aging is an inevitable mutual withdrawal or disengagement between the aging person and others in the social systems he belongs to" (p. 14). Disengagement was presumed to be a natural process, accepted and desired by the aging person. Since disengagement was a
natural or desirable process, it was felt that the disengaged elderly individual was likely to be a happy person, with high morale and life satisfaction.

In contrast to the disengagement theory, the activity theory (Havighurst, Neugarten, & Tobin, 1964) postulates that society withdraws from the aging person against his will and desire. Within this theory, the optimal pattern of aging would consist of extending the activities of middle age or finding substitute activities for the elderly person. The happy, well-adjusted person would remain moderately active, and would resist the narrowing of his social world.

In the Kansas City Study of Adult Life, Cumming and Henry (1961) interviewed more than 200 people aged 48 to 96. They examined their subjects over a three-year period and found evidence for a process of disengagement. Using data from the Kansas City Study of Adult Life, Havighurst, Neugarten, and Tobin (1964) suggested an alternative view:

...those older persons who are highly engaged in various social roles generally have greater life satisfaction, then those who have lower levels of engagement. At the same time, the relationship is not a consistent one. Presumably there are certain personality types who, as they age, disengage with relative comfort. Others disengage with great discomfort and show a drop in life satisfaction. (p. 422)

Subsequent research by Havighurst et al. (1968) and Neugarten, Havighurst, and Tobin (1968) suggests that activity more than non-activity is related to life
satisfaction, but with many exceptions. The authors conclude that neither the activity nor the disengagement theory accounts for the variations of successful aging. Neugarten et al. (1968) suggest that personality, not activity, is most important in describing patterns of aging and predicting degree of life satisfaction.

Maddox and Eisdorfer (1962) used questionnaires to study activity and morale of people aged 60 to 94 years. Subjects were divided into four typologies according to high versus low activity and high versus low morale. Based on the disengagement theory, one would predict that low activity would be associated with high morale, and high activity with low morale. Contrary to the disengagement theory, the authors found that 73 percent of their subjects were either high in both activity and morale, or low in both. However, some support for the disengagement theory was suggested in the finding that "... the mean satisfaction score was higher among subjects who reported high non-interpersonal activity and low interpersonal activity than among those for whom the relationship between subscores (type of activity) was reversed" (Maddox, 1965, p. 123). In addition, Maddox (1965) has also shown that as age increased beyond 70, activity may decrease without affecting the satisfaction of living. Again, it appears that neither the activity
nor the disengagement theory adequately explains the results. Perhaps variables other than activity are also important. For example, Maddox and Eisdorfer (1962) found that low morale was associated with poorer health regardless of the level of activity.

Using an unique approach, Lowenthal and Boler (1965) examined a large number of elderly individuals and categorized them according to voluntary versus involuntary disengagement. Although both groups had little social interaction, the involuntary-disengaged group was socially deprived because of forced retirement, recent widowhood, or physical disability. There were also two active groups: the active-not-deprived group and the active-deprived group. The involuntary-disengaged group had low morale, but the voluntary-disengaged had high morale—almost as high as the active-not-deprived group. Lowenthal and Boler (1965) propose that deprivations may be more important in determining morale than level of activity.

In a thorough review of the literature, Botwinick (1970, 1973) suggests that the theory of disengagement has generated more controversy and stimulated more research than any other concept in geropsychology. He notes that the majority of published research appears to support the activity theory and reject the theory of disengagement. According to Botwinick, few investigators would deny that
some disengagement or withdrawal occurs, but most maintain that disengagement is forced upon the elderly person by society and by circumstances beyond his control.

Whether one favors the activity or the disengagement theory of aging, there is little doubt that people differ in their adjustment to the aging process. Individual differences are probably greater within the elderly group than within any other age group (Kaluger & Kaluger, 1974; Neugarten et al., 1968). Conceivably, the inadequacy of both the disengagement and the activity theories is due, in part, to the sheer diversity of aging patterns.

Havighurst (1961, 1963) has documented the need for a theory of successful aging, but offered the following caveat "... it appears unlikely that any simple theory of successful aging will account for all the people who are happy and satisfied in their later years" (p. 12).

Several researchers have suggested that theories addressing themselves to processes of learning, perception, and cognition will have an increasing impact on the field of geropsychology (Alexrod, 1963; Barrett, 1972; Botwinick, 1967, 1973; Cautela, 1972; Geist, 1968). Cautela (1972) has proposed that learning theories not only have implications for continuing research, but have immediate relevance for the treatment of aging individuals. Seligman
(1975) has presented a theory of learned helplessness which appears highly germane to the study of aging.

Seligman (1975) suggests that noncontingent reinforcement produces learned helplessness, a generalized tendency to behave in controllable situations in a helpless manner, as if no response made any difference. Instrumental learning theory has traditionally focused on a single conditional probability—the probability of reinforcement following the occurrence of a response (Skinner, 1948). Baum (1973) has referred to the traditional position as a contiguity-based law of effect. Seligman, Maier, and Soloman (1971) have proposed what Baum (1971) calls a correlation-based law of effect, i.e., organisms are concurrently sensitive to two probabilities—the probability of reinforcement given the occurrence of a response and the probability of reinforcement in the absence of that response. When the two probabilities are equal, then the organism learns that this response does not control reinforcement. If none of the responses available to the organism affects the probability of reinforcement, then the organism has no control over reinforcement in that situation. Learned helplessness occurs when an organism is repeatedly exposed to a situation where his responses exert no control over reinforcement.
Laboratory studies with animals have provided analogues for the study of learned helplessness in man. Seligman and Maier (1967) restrained dogs in a Pavlovian hammock and exposed them to inescapable electric shock. These animals were later placed in a two-sided shuttlebox where they were supposed to learn to escape or avoid shock by jumping over a barrier. Naive dogs learn this escape task rather quickly, but dogs with prior exposure to inescapable shock demonstrated rather bizarre behavior. At first they ran around frantically, but soon laid down and quietly whined. On succeeding trials, these dogs seemed to give up, passively accepted the shock, and failed to escape. Seligman (1969) suggests that learned helplessness disrupts the ability to learn: "Most helpless dogs do not catch on after one escape; they soon revert to taking shocks . . . Learning that reward and response are unconnected is an active form of learning, and as such can interfere with the learning of new relationships" (pp. 43-44).

Seligman and Maier (1967) used a triadic design to demonstrate that it is not shock itself, but the inability to control shock which produces failure to escape. One group of dogs could escape shock by pressing a panel with their noses. A second, yoked group, received shocks identical to the escape group, but they had no control over the shock. A control group received no shock. Later
all three groups received escape-avoidance training in a shuttle box. The dogs with prior exposure to escapable shock and the naive control group readily learned to jump the barrier to escape shock. In contrast, more than half of the yoked group failed to escape and the remainder showed deficits in learning to escape. Using the same triadic design, Maier (1970) demonstrated that dogs which have learned to make a passive response to control shock can later learn to make an active response to control shock. Seligman (1975) notes that the crucial factor in failure to escape is "... learning that no response at all—neither active nor passive—can control trauma" (p. 27).

A number of investigations have demonstrated learned helplessness in man (Posco & Greer, 1971; Glass & Singer, 1972; Hiroto, 1974; Hiroto & Seligman, 1975; Racinskas, 1971; Roth & Kubal, 1975; Thorton & Jacobs, 1971). Using a human analogue to an animal shuttle box, Hiroto (1974) provided an interesting demonstration of learned helplessness. One group of college students could escape loud noise by pushing a button. A yoked group received inescapable noise and a control group received no noise. All groups were then exposed to controllable noise in a two-way shuttle box. However, the group with prior exposure to inescapable noise tended to sit passively, accepting the aversive noise, and failing to escape.
Seligman (1975) has reviewed the literature and noted that the motivational deficits produced by learned helplessness have been shown in a wide variety of species, including dogs, cats, fish, rats, monkeys, and men. Moreover, the generality of learned helplessness across tasks or situations has been demonstrated. Hiroto and Seligman (1975) have presented evidence for the generality of learned helplessness in man. The authors found that a group of subjects exposed to insoluble cognitive tasks was debilitated at instrumental escape from an aversive tone. Likewise, a group pretreated with an inescapable aversive tone was debilitated at anagram solution. This finding of cross-modal helplessness provides strong support for the generality of learned helplessness.

In his recent book, Seligman (1975) lucidly describes learned helplessness as an active form of learning which decreases the motivation to respond, produces emotional disturbance, and disrupts the ability to learn. A variety of research studies suggest that learned helplessness produces passivity (Seligman & Maier, 1967); a negative cognitive set (Miller & Seligman, 1975); anxiety (Weiss, 1968; Mowrer & Viek, 1948); depression (Miller & Seligman, 1975); decline in aggressive or assertive responses (Maier, Anderson, & Liberman, 1972); and
reduction in competitiveness (Kurlander, Miller, & Seligman, 1974). These symptoms are not unlike those described by MacDonald and Butler (1974) in an elderly sample. They suggest that mere residence in an institution for the aged can have deleterious effects producing helplessness, passivity, dependency, apathy, lack of motivation, and physical deterioration. Seligman (1975) has proposed that the aged are particularly susceptible to learned helplessness:

If a person or animal is in a marginal physical state, weakened by malnutrition or heart disease, a sense of control can mean the difference between living and dying. There is one aspect of the human condition that invariably entails physical weakening——growing old. The aged are most susceptible to loss of control, particularly in American society; no group, neither blacks, Indians, nor Mexican-Americans, are in as helpless a state as our aged. The mediocre life span of Americans, relative to other prosperous nations, may be a testimony not to mediocre medical care, but to the way we treat our aged psychologically. We force them to retire at 65, we place them in old aged homes. We ignore our grandparents, we shunt them aside— we are a nation that deprives old persons of control over the most meaningful events in their lives. We kill them. (pp. 184-185)

The relationship between learned helplessness and depression, as formulated by Seligman (1973, 1975), appears highly relevant to the study of aging. Several researchers have expressed concern over the widespread depression in the elderly (Botwinick, 1970, 1973; Lewinsohn & Mac Phillamy, 1974; Stenback, 1973; Zinberg & Kaufman, 1963). Botwinick (1970) suggests that depression may be a factor
in disengagement. Suicide, the most extreme form of disengagement, is more frequent among the elderly than any other age group (Botwinick, 1970; Geist, 1968).

Stenback (1973) has charged that the high rate of depression in the elderly occurs because of the loss of social roles which later results in the affective disturbance. Typically, aged individuals who show elevations on the Depression scale of the MMPI also peak on Social Introversion and Hypochondriasis (Botwinick, 1973). Although it seems reasonable to infer a pattern of poor health accompanied by depression and social withdrawal, Palmore and Luikart (1972) found that self-rated health was significantly more related to life satisfaction than objective status of health as assessed by a physician.

Seligman (1975) draws parallels between learned helplessness and depression and suggests that they are similar in terms of (a) behavioral and physiological symptoms, (b) etiology, (c) cure, and (d) prevention. Common symptoms include passivity with a lack of aggression, appetite and weight loss, social and sexual deficits, and norepinephrine depletion. Familiar events which may set off reactive depression are "... death, loss, rejection by or separation from loved ones, physical disease, failure in work or school, financial setback, and growing old" (Seligman, 1973, p. 44). Since the aged are frequently confronted with a
number of these experiences, it is no wonder that depression is so widespread among the elderly.

"Learned helplessness is caused by learning that responding is independent of reinforcement; . . . the cause of depression is the belief that action is futile" (Seligman, 1975, p. 93). Miller and Seligman (1973) studied college students and found that depressed college subjects perceived reinforcement as more response-independent than nondepressed subjects in skill tasks, but not in chance tasks. Studying the relationship between age and engagement in pleasant activities, Lewinsohn and MacPhillamy (1974) found that a decrease in the subjective enjoyability of pleasant events was uniquely associated with depression, but not with age. The authors suggest an inverse relationship between positive reinforcement and depression: "... the low rate of response-contingent positive reinforcement is antecedent to depression, i.e., the person feels depressed because he is not engaging in behaviors which elicit positive reinforcement" (p. 293).

Since everyone experiences some noncontingent reinforcement and comes into contact with potentially depressing events, such as failure and rejection, why isn't everyone helpless? Even though a person is subjected to uncontrollability, he does not have to form an expectation that events in general are uncontrollable. Seligman (1975) has
recently suggested that the expectation or belief that responding and outcome are independent mediates between information about the contingency of reinforcement and helpless behavior. Interestingly, a person can become helpless by simply being told that he is helpless (Glass & Singer, 1972; Seligman, 1975). Thus, the belief or expectation, as well as the objective condition of uncontrollability, is important in producing helplessness.

Seligman (1975) notes that "... there are at least three factors limiting an expectation of uncontrollability: immunization by a contrary expectation, immunization by discriminative control, and relative strength of the outcomes"(p. 60). Seligman and Maier (1967) found that dogs who were first exposed to escapable shock did not develop learned helplessness when later exposed to inescapable shock. Individuals who have a history of control and mastery over their environment should be resistant to learned helplessness, but people who have experienced only successes may be extremely susceptible to depression when faced with a loss (Seligman, 1973).

The crux of helplessness is learning that responding and reinforcement are independent (Seligman, 1975). Hiroto (1974) has provided cogent evidence of the similarity between learned helplessness and Rotter's (1966) internal-external locus of control construct. Locus of control, a
generalized expectancy, refers to the degree to which individuals perceive reinforcement as contingent on their behavior. Externals tend to perceive reinforcement as independent of their behavior and to attribute reinforcements to luck, chance, fate, or powerful others. Internals tend to perceive reinforcement as a consequence of their behavior and to believe that reinforcement is under their control. In Hiroto's study, both externals and individuals subjected to a series of inescapable aversive tones had greater difficulty in learning an escape/avoidance response than did internals and individuals subjected to a series of escapable aversive tones.

The concept of control has been assigned a primary role by both learned helplessness and internal-external theories. In studies of learned helplessness, control typically refers to the way in which the experimenter arranges the reinforcement—as independent of responding. Studies of the internal-external construct focus on the reported perception of control. Hiroto (1974) found that a perceptual set could produce helplessness. Subjects given an instructional set of chance were more helpless than those under skill instructions. Results of Hiroto's study indicate that both locus of control and chance instructional set produced a helplessness effect similar to inescapability.
Hiroto (1974) suggests that "... a single process may underlie learned helplessness, externality, and the perceptual set of chance—the expectancy that responding and reinforcement are independent" (p. 192).

Further support for the similarity between learned helplessness and external locus of control is provided by Yates, Kennelly, and Cox (1975). Studying college students, Yates et al. found that externals were more likely to remember their parents as noncontingently punishing than internals. Kennelly and Kinley (1975) found that sixth-grade boys with an external locus of control tended to perceive teacher-administered punishments as equally likely whether or not misbehavior occurred, but internals perceived reinforcement as contingent on the occurrence of misbehavior. These results lend strong support for the similarity of learned helplessness and external locus of control.

The locus of control construct has stimulated extensive research into the personality and behavioral correlates of internal and external control. Several major review articles have been published (Lefcourt, 1966, 1972; Rotter, 1966; Joe, 1971) and a bibliography containing more than 300 separate entries on locus of control through 1969 has been published by Troop and MacDonald (1971). At least ten different tests of locus of control
have been devised (Battle & Rotter, 1963; Bialer, 1961; Crandall, Katovsky, & Crandall, 1965; Dean, 1961; Dies, 1968; Nowicki & Duke, 1974; Nowicki & Strickland, 1973; Rotter, 1966; Valecha & Ostrom, 1974; Levenson, 1972), along with demonstrations of reliabilities and construct validity.

In general, research has demonstrated that the locus of control construct is a powerful one relating to a variety of behaviors in a number of different populations. Research has shown that internals (individuals who believe they control their own reinforcements), in contrast to externals, (a) are more successful in school (Crandall et al., 1965; Kennelly & Kinley, 1975; McGhee & Crandall, 1967); (b) are less conforming (Crown & Liverant, 1963); (c) demonstrate more coping behavior on a perceptual task (Phares, 1962); (d) are more resistant to influence or coercion (Gore, 1963); (e) have more accurate information about their environment (Seeman & Evans, 1962); (f) adjust their expectancy of success more closely with prior experience of success or failure (Rotter, 1966); (g) are better able to stop smoking (Platt, Krassen, & Mausner, 1969); (h) have more positive personality profiles (Hersch & Scheibe, 1967; Ryckman & Sherman, 1973); (i) are less likely to demonstrate extreme and nonadaptive behavior (DuBett & Wolk, 1972); (j) are more likely to delay gratification (Bailer, 1961); (k) have higher self-esteem (Ryckman &
Sherman, 1973); (1) demonstrate less anxiety (Ray & Katahn, 1968; Watson, 1967); (m) are more persistent in efforts to complete a complex task (Thurber, Heacock, & Peterson, 1974); and (n) tend to be more cognitively active (Lefcourt, 1972).

Although internal-external locus of control has been extensively studied, researchers have typically employed elementary, high school and college students. Elderly individuals have rarely, and only recently, been subjects in locus of control research. This paucity of research is particularly dismaying in light of the increasing proportion of elderly individuals in American society.

Theoretically it has been predicted, and empirically demonstrated, that people tend to become more internal with increasing age (Penk, 1969; Nowicki & Strickland, 1973; Lao, 1974). That is, teenagers tend to be more internal than children, and adults more internal than teenagers. Developmentally, it appears reasonable to predict an increment in the child's internal locus of control as he experiences increasing mastery and control of his environment. However, the relationship between age and locus of control may not be linear, but curvilinear. If aged individuals lose some autonomy and mastery over their environment, or if they are alienated and withdrawn from
society, then it would seem logical to predict that elderly persons would be more external than middle-age adults. Lefcourt (1966) has suggested that groups whose social position is one of minimal power tend to score in the external direction.

Duke, Shaheen, and Nowicki (1974) note that the disengagement theory of aging is congruent with the hypothesis of increasing externality among the aged, but the activity theory would suggest that the locus of control of an aging population would be about the same as that of a middle-aged sample.

A review of some theories of aging, however, yields differential points of view as well as alternate predictions. For example, the activity theory implies that older people are basically the same as middle-aged persons with similar psychological and social needs. This view maintains that the decreased social interaction and interpersonal control of the elderly is not desired by the aged themselves. The optimal pattern is to maintain the activities of middle-age and to resist the pressures of the social world. If this theory is accurate, one would expect the locus of control score of a geriatric population to be no different from that of a middle-aged sample.

Still another theory of aging, however, termed the 'disengagement theory' yields another view. Cumming and Henry consider an elderly person to have reached a new developmental stage characterized by altered relationships and decreased social interaction. Their line of thinking (similar to social learning theory) seems to indicate that the complex variables operating on an elderly person would cause him to feel that his reinforcement would be less contingent on his own behavior than they were at an earlier age. Thus on the basis of their physical liabilities and psychosocial change inherent in aging, it would be expected that geriatric subjects would be more external than middle-aged and younger adults.

(pp. 278-279)
Studying elderly females aged 69 to 90, Duke et al. (1974) found that the mean locus of control for this group was not significantly different from the mean score for college-age adults. Moreover, the elderly group was actually more internal than a previous group of ninth- and tenth-grade high school students. The authors suggest that their results support the activity theory of aging, i.e., elderly in this sample were as internal as middle-aged or younger adults.

Using a cross-sectional approach, Lao (1974) studied the developmental trend in locus of control. Subjects ranging in age from 15 to 85 years were administered Rotter's Internal-External Control of Reinforcement Scale and divided into seven age groups. Statistical analyses indicate that the 15-year-olds were significantly less internal than the middle-age groups. However, the two elderly groups were not significantly different from the middle-age groups. Lao (1974) noted that her results suggest that internality reached its peak in the 30 to 39-year-old group and then leveled off, remaining stable with only a slight decline in the elderly group. The young elderly group (60-69) was not significantly different from the older group (70-85). However, a post hoc analysis showed that the nonretired over-60 group was significantly more internal than the retired over-60 age group. These results are comparable with the
results obtained by Duke et al. (1974) and appear congruent with the activity theory of aging.

Kuypers (1972) investigated the relationship between internal-external locus of control, ego functioning, and personality characteristics in an elderly sample. Sixty-four male and female subjects were administered a short form of Rotter's Internal-External Locus of Control Scale. Extensive interviews (four to seven hours with each subject) were clinically rated for 30 ego process measures and 100 personality characteristics. A strong significant pattern emerged suggesting that more positive personality profiles were associated with an internal locus of control. Elderly individuals with an internal locus of control were more active, reality oriented, differentiated, adaptive, flexible, purposive, and cognitively complex than externals. Subjects with an external locus of control tended to be closed, defensive, fearful, disorganized, and nonadaptive in their mode of interaction with the environment.

Using data from the Duke Adaptation Study, Palmore and Luikart (1972) examined the relationship between life satisfaction and a variety of health and social factors. The Duke Adaptation Study was an interdisciplinary longitudinal study of 502 persons aged 45-69 at the beginning of the study. In aged subjects, internal locus of control was found to be the second most important variable related to
life satisfaction. Only self-rated health, but not objective physical health, showed a stronger relationship to life satisfaction. These results appear especially important in view of the large number of variables, such as income, marital status, objective physical health, intelligence, social contacts, etc. which were studied.

Felton and Kahana (1974) investigated the relationship between perceived locus of control and adjustment among institutionalized aged. Locus of control was assessed by nine hypothetical situations chosen to represent problems of monotony, privacy, conformity, emotional expression, environmental ambiguity, activity, coping with losses, motor control, and autonomy. The respondents' solutions to the problems were coded into categories of self, staff, and significant others. Responses indicative of self-action or responsibility were deemed internal while those solutions relying on staff or significant others were considered external. Adjustment was measured by the Lawton (1972) Morale Scale, the Cantril (1965) Rating Ladder, and staff reports of adjustment and life satisfaction. Subjects with an external locus of control were found to be significantly better adjusted than those with an internal locus of control.

Results of Felton and Kahana's study are somewhat surprising in light of the results obtained by Kuypers (1972)
and Palmore and Luikart (1972). The fact that Felton and Kahana's respondents were institutionalized may provide an explanation for this discrepancy. In Kuypers' and Palmore and Luikart's studies, their subjects were maintaining community residence. Another likely explanation for the incongruence related to the type of locus of control measure used by Felton and Kahana. Their locus of control measure differed considerably both in format and conceptualization from Rotter's (1966) scale. Felton and Kahana note that locus of control may have a different meaning in institutional settings and suggest that an external locus of control might be more in keeping with reality and therefore more adaptive for institutionalized aged.

The present research has been divided into two studies designed to investigate phenomena which appear relevant to the elderly. Study Number 1 has investigated internal-external locus of control in an elderly sample and related it to indices of activity and morale. Study Number 2 has extended Seligman's (1975) theory of learned helplessness to an elderly population and investigated the phenomenon in individuals with an internal versus external locus of control.
Study Number 1 - The Correlates of Locus of Control in the Aged

A number of phenomena which appear highly relevant to a study of aging have been discussed and the pertinent literature reviewed. Specifically, learned helplessness, depression, internal-external locus of control, and disengagement versus activity have been examined. Study Number 1 had two major goals. First, internal-external locus of control was investigated in an elderly sample and related to indices of activity and morale (Philadelphia Geriatric Center Morale Scale, Beck Depression Inventory, and Cantril Life Satisfaciton Ladder). Second, the results were discussed in light of predictions of the activity and disengagement theories of aging.

Internal-External Locus of Control

The internal-external locus of control construct, although widely researched, has rarely been studied in the aged. In a review of the literature, fewer than six studies were found which addressed themselves to locus of control in elderly samples. Theoretically, it has been predicted that aged individuals tend to be more external than younger adults. However, empirical data from two recent studies
failed to support that contention (Lao, 1974; Duke et al., 1974). The present research investigated internal-external locus of control in an elderly sample and discussed the results in relation to the earlier studies of Lao (1974) and Duke et al., 1974.

Locus of Control and Morale

One goal of the present study has been to relate internal-external locus of control to indices of morale. Internal-external locus of control was correlated with three measures of morale. It was predicted that high morale and life satisfaction (as measured by the Philadelphia Geriatric Center Morale Scale and Cantril Life Satisfaction Ladder) would be positively related to internal locus of control. Previous research has suggested that internals in comparison to externals have more positive personality profiles (Hersch & Scheibe, 1967; Ryckman & Sherman, 1973) and are better adjusted (Ducette & Wolk, 1972). In elderly samples, Kuypers (1972) found internals had more positive personality profiles and Palmore and Luikart (1972) found that internals reported greater life satisfaction. In contrast, Felton and Kahana (1974) reported that externals were better adjusted than internals in an institutionalized elderly sample. Results of the present study were expected to
support the findings of Kuypers (1972) and Palmore and Luikart (1972).

Depression, frequently observed in the aged (Botwinick, 1970, 1973), appears logically related to locus of control. If learned helplessness and external locus of control are similar, and if, as Seligman (1973, 1975) has suggested, learned helplessness and depression are similar, then elderly individuals with an external locus of control should report more depression than internals. It was predicted that depression, as measured by the Beck Depression Inventory, would be positively related to external locus of control in an elderly sample. Miller (1971) found a significant, positive correlation between an external locus of control and scores on the Beck Depression Inventory. Likewise, Amramowitz (1969) found a significant, positive correlation between an external locus of control and depression as measured by the Guilford Scale. However, Miller and Seligman (1973) found that an external locus of control, as measured by Rotter’s (1966) I-E Scale, and scores on the Beck Depression Inventory were not well correlated. These studies have typically employed college students and more research utilizing other populations would appear to be warranted.

Locus of Control and Activity

One other variable was correlated with locus of control,
activity, as measured by the Geriatric Activity Scale. Although activity has frequently been studied in the aged, it has rarely been related to locus of control. Palmore and Luikart (1972) reported small, but significant correlations between activity and an internal locus of control in an elderly sample. Lao (1974) found that non-retired aged were significantly more internal than retired elderly. In accord with these earlier studies, it was predicted that activity would be positively related to internal locus of control.

Study Number 1 included 100 participants and examined the relationship between locus of control and indices of morale and activity. One hundred Levenson Locus of Control Scales were scored in the internal direction and four hypotheses were tested.

Hypotheses

Hypothesis I - Morale, as measured by the Philadelphia Geriatric Center Morale Scale, will be significantly and positively correlated with an internal locus of control.

Hypothesis II - Life satisfaction, as measured by the Cantril Life Satisfaction Ladder, will be significantly and positively correlated with an internal locus of control.

Hypothesis III - Depression, as measured by the Beck Depression Inventory, will be significantly and negatively correlated with an internal locus of control.
Hypothesis IV - Activity, as measured by the Geriatric Activity Scale, will be significantly and positively correlated with an internal locus of control.

Method

Subjects

Study Number 1 included 71 female and 27 male volunteers aged 65 years or older. Two additional individuals began, but did not complete the testing procedure, one due to illness and the other to a poor grasp of the English language. Participants ranged in age from 65 to 83, with a mean age of 68. Only individuals without incapacitating physical impairment and judged by the experimenter to be interviewable were included in the sample. All participants were ambulatory, verbal, coherent, and literate. The sample included only elderly persons who were maintaining residence in their own living quarters. Individuals living in their own homes accounted for 73% and the remaining 24% resided in apartments. The majority (89%) were retired. Married individuals accounted for 51%, widowed 41%, divorced 6%, and single 2%. The range of income for the group was very broad ($108. - $2500. per month), but the median income was $368. per month and the mean income was $484. per month. Most individuals rated their health as good (52%), with only 4% rating their health as poor. The group appeared well-educated with a mean of 9.97 and a median of 10.4 years of schooling.
Additional background data is presented in Table 7 of Appendix A.

Instruments

**ANSIE - Form G.** The Adult Nowicki-Strickland Locus of Control Scale - Form G (Duke et al., 1974) was designed for an elderly population and consists of 38-items which are to be answered either "yes" or "no". To construct the ANSIE - Form G, Duke et al. (1974) deleted two items and modified six items on the Adult Nowicki-Strickland Locus of Control Scale - Form NC (noncollege adults). The ANSIE can be understood by adults with as low as fifth-grade reading ability and is suitable for group administration. Nowicki and Duke (1974) reported split-half reliability coefficients ranging from .74 to .86 and a test-retest coefficient of .83.

**Levenson Locus of Control Scale.** The Levenson Locus of Control Scale (Levenson, 1972, 1974) was based on the work of Rotter (1966) and consists of 24 items in a Likert format. The total scale contains three subscales of eight items, with a possible range on each subscale from 0-48. This instrument provides a measure of the degree to which an individual believes reinforcement to be under his control. Levenson (1974) reported Kuder-Richardson reliability coefficients of .64, .77, and .78; split-half reliabilities
of .62, .66, and .64; and test-retest reliabilities of .64, .74, and .78.

**Background Data Questionnaire.** A brief questionnaire was used to obtain demographic data and general information, such as age, sex, marital status, socio-economic status, education, occupation, etc. (see Figure 3 of Appendix B).

**PGC Morale Scale.** The Philadelphia Geriatric Center Morale Scale (Lawton, L972) was designed to provide an appropriate measure of morale for the elderly with the assumption that morale was multidimensional. The Revised PGC Morale Scale (Lawton, 1975) consists of 16 items which are in dichotomous response format. Lawton (1975) has restandardized the PGC Morale Scale on a large number of subjects and demonstrated three stable and replicable factors: agitation, attitude toward own aging, and lonely dissatisfaction. The PGC Scale has the advantages of being easy to read, simple to understand, and suitable for either oral or written administration. Lawton (1975) reported internal consistency coefficients of .81 and .85.

**Life Satisfaction Ladder.** The rating ladder devised by Cantril (1965) was used as a measure of life satisfaction. With this procedure, each individual was presented a picture of a ladder and asked to place himself on a rung.
from 1 to 10 in terms of his perceived life satisfaction. One advantage of this technique is that it is self-anchoring, i.e., relative to each person's conception of maximum and minimum life satisfaction. Palmore and Luikart (1972) suggest another advantage is that it results in a continuous and theoretically equal interval measure.

**Beck Depression Inventory.** The Beck Depression Inventory (Beck, Ward, & Mendelson, 1961) is a 21-item scale. Each item includes four alternative statements ranging in severity from 0 to 3. Beck et al. (1961) reported a split-half reliability coefficient of .93 based on a sample of 598 subjects. Beck (1967) and Metcalf and Goldman (1965) tested more than 1000 patients and reported correlations between Beck Depression Inventory and clinically rated severity of depression ranging from .61 to .67.

**Geriatric Activity Scale.** The present study introduced a new measure of activity level, The Geriatric Activity Scale (see Figure 4 of Appendix C). The Geriatric Activity Scale consists of 30 items dealing with three broad areas of activities: productive activity, social activity, and leisure-time activity. The Geriatric Activity Scale was designed with a consistent response format which yields responses for each question in terms of hours engaged in activity. The internal consistency reliability, coefficient alpha, was .44.
Procedure

Social, civic, religious, and service organizations were contacted by telephone and by letter. The experimenter asked for permission to (a) attend a regularly scheduled meeting, (b) request volunteers from members present, and (c) administer a battery of tests (Adult Nowicki-Strickland Internal-External Locus of Control Scale, Beck Depression Inventory, Cantril Life Satisfaction Ladder, Geriatric Activity Scale, Philadelphia Geriatric Morale Scale, Background Data Questionnaire, and the Levenson Locus of Control Scale). Additional information about procedures used to obtain volunteers is presented in Appendix D. Six groups of volunteers ranging in size from 3 to 34 participants were tested. The median group size was 15. Participants included a group of retired employees, two church groups, two social groups, and a civic group.

Volunteers were first asked to complete a brief Background Data Questionnaire. Then the ANSIE - Form G was administered according to standard instructions, except that each question was read aloud by the experimenter. The administration of the ANSIE - Form G required approximately 15 minutes. The Levenson Locus of Control Scale was then orally administered to the volunteer group. Administration of the Levenson Locus of Control Scale
required approximately 15 minutes. The experimenter then presented each individual with a picture of a ladder numbered from one on the bottom rung up to ten on the top rung (Cantril, 1965). Participants were asked to "suppose that the top rung of the ladder represents the best possible life for you. Where on the ladder do you feel you stand at the present time? Place an 'X' on the rung which represents the point where you feel you stand at the present time if the top rung represents the best possible life for you." The administration of the Cantril Life Satisfaction Ladder required about 5 minutes.

Following administration of the Cantril Life Satisfaction Ladder, participants were presented with the Geriatric Activity Scale and told

Although the number of senior citizens in the United States is increasing rapidly, we do not know much about what kinds of activities they enjoy, the kind of work they do, or how they spend their time. One good way to obtain information about the activities of older individuals is to ask them. This scale is designed to measure your individual activities.

Please read each question and write the number of hours that you spend in the activity in the blank provided. Then check one time period indicating whether you engage in the activity on a daily, weekly, monthly, or yearly basis. For example, if you typically work in the yard two hours per week, you would write '2' in the blank that says hours and then you would place a check mark in the blank that says week. If you do not engage in a particular activity, place a zero in the blank that says hours. For example, if you do not work at a job for which you receive wages, you would place a zero in the blank that says hours on question number one.
Administration of the Geriatric Activity Scale required approximately 20 minutes. Next the Revised Philadelphia Geriatric Center Morale Scale (Lawton, 1975) was orally administered to the volunteer group. Administration of the PGC Morale Scale required approximately 10 minutes. The Beck Depression Inventory was then administered following standard instructions. Administration of the Beck Depression Inventory required about 15 minutes. The total time for the testing was approximately 1 hour and 30 minutes.

**Results and Discussion**

Study Number 1 has investigated internal-external locus of control in an elderly sample and related it to indices of morale, life satisfaction, depression, and activity. Table 1 shows the means, standard deviations, and ranges of the correlational variables.

**Table 1**

**Means, Standard Deviations, & Ranges of the Correlational Variables**

<table>
<thead>
<tr>
<th>Scale</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levenson I-E Scale*</td>
<td>89.51</td>
<td>20.94</td>
<td>43-137</td>
</tr>
<tr>
<td>ANSIE Scale*</td>
<td>28.01</td>
<td>4.91</td>
<td>11-35</td>
</tr>
<tr>
<td>PGC Morale Scale</td>
<td>10.95</td>
<td>3.08</td>
<td>1-16</td>
</tr>
<tr>
<td>Life Satisfaction</td>
<td>7.36</td>
<td>1.98</td>
<td>1-10</td>
</tr>
<tr>
<td>Beck Depression**</td>
<td>7.64</td>
<td>5.81</td>
<td>0-26</td>
</tr>
<tr>
<td>Activity**</td>
<td>83.36</td>
<td>24.23</td>
<td>30-172</td>
</tr>
</tbody>
</table>

*Locus of control scales scored in internal direction.

**Activity scales were summed to obtain weekly score.*
Internal-External Locus of Control

Internal-external locus of control has rarely been studied in the aged, but it has been theoretically predicted that elderly individuals tend to be more external than younger adults. Results of the present study give no support to the hypothesis of increasing externality among the aged.

As presented in Table 1, the Adult Nowicki-Strickland Locus of Control Scale - Form G was scored in the internal direction for all correlational analyses. However, for ease of comparison with previous studies, the ANSIE-Form G was also scored in the external direction. The mean locus of control scored in the external direction was 9.99 (SD=4.91) for the elderly group and is similar to the mean score on the ANSIE for college adults (M= 9.06, SD= 3.89) reported by Nowicki and Duke (1974). Additional data from Nowicki and Duke is presented in Table 2.

Table 2

<table>
<thead>
<tr>
<th>Group</th>
<th>Scale†</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 9 (n=87)</td>
<td>CNSIE</td>
<td>13.06</td>
<td>3.98</td>
</tr>
<tr>
<td>Grade 10 (n=115)</td>
<td>CNSIE</td>
<td>13.02</td>
<td>5.32</td>
</tr>
<tr>
<td>Grade 11 (n=90)</td>
<td>CNSIE</td>
<td>12.40</td>
<td>5.02</td>
</tr>
<tr>
<td>Grade 12 (n=87)</td>
<td>CNSIE</td>
<td>11.81</td>
<td>4.84</td>
</tr>
<tr>
<td>College (n=87)</td>
<td>ANSIE</td>
<td>9.06</td>
<td>3.98</td>
</tr>
<tr>
<td>Community (n=33)</td>
<td>ANSIE-NC</td>
<td>10.96</td>
<td>5.61</td>
</tr>
<tr>
<td>Geriatric (n=66)**</td>
<td>ANSIE-G</td>
<td>8.74</td>
<td>3.59</td>
</tr>
<tr>
<td>Geriatric (n=100)**</td>
<td>ANSIE-G</td>
<td>9.99</td>
<td>4.91</td>
</tr>
</tbody>
</table>

*All scales scored in an external direction.
**Data from Duke et al. (1974).
***Data from present study.
Inspection of Table 2 suggests that the elderly group is no more external than college or middle-age adults and is more internal than high school students. In making inferences from the above data, it should be noted that the different scales designed by Nowicki-Strickland, while extremely similar, are not identical.

Results of the present study are consistent with the findings of Lao (1974) and Duke et al. (1974). Using a cross-sectional approach, Lao (1974) found that internality reached its peak in the 30-39-year-old group and remained stable with only a slight (nonsignificant) decline in the elderly group. Duke et al. (1974) found that the mean locus of control for the geriatric group was not significantly different from the mean score for college-age adults.

The above data give no support to the hypothesis of increasing externality among the aged. However, interpretations should be made with caution due to the cross-sectional nature of the data and the lack of middle-age and young adult comparison samples in the present study. The elderly sample of the present study cannot be considered as representative of institutionalized elderly individuals since they were maintaining their own residence and were active in social, civic, or religious groups.
Correlational Analyses

For all correlational analyses, both locus of control scales were scored in the internal direction following recommended scoring procedures. All reported correlation coefficients are Pearson Product Moment Correlations (McNemar, 1969) and their significance was tested using Fisher's t-test for determining significance of coefficients of correlations (see Guilford and Fruchter, 1973, p. 145). The correlation between Levenson's Locus of Control Scale and the ANSIE-Form G was positive and significant \( r = .86, p < .01 \) suggesting that the two measures are assessing the same construct. Additional correlational data are presented in Table 3. Inspection of the Matrix of Intercorrelations, Table 3, shows that the ANSIE-Form G and Levenson's Locus of Control Scale correlated with the other variables to a similar degree.

Locus of Control and Morale

Previous research has suggested that internals in comparison to externals have more positive personality profiles (Hersch & Scheibe, 1967; Ryckmen & Sherman, 1973) and are better adjusted (DuCette & Wolk, 1972). Internal-external locus of control has been correlated with three measures of morale (Philadelphia Geriatric Center Morale Scale, Cantril Life Satisfaction Ladder, and Beck Depression Inventory). As shown in Table 3, the results indicate that
Table 3

Matrix of Intercorrelations*

<table>
<thead>
<tr>
<th>Variables</th>
<th>ANSIE** Locus of Control</th>
<th>Levenson** Locus of Control</th>
<th>PGC Morale Scale</th>
<th>Life Satisfaction Ladder</th>
<th>Beck Depression Scale</th>
<th>Activity Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANSIE</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Locus of Control</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Levenson</td>
<td></td>
<td>.86</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locus of Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>PGC</td>
<td></td>
<td>.84</td>
<td>.85</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Morale Scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life Satisfaction</td>
<td></td>
<td>.80</td>
<td>.85</td>
<td>.82</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Ladder</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beck</td>
<td></td>
<td>-.77</td>
<td>-.79</td>
<td>-.80</td>
<td>-.75</td>
<td>1.00</td>
</tr>
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<td></td>
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<tr>
<td>Activity Scale</td>
<td></td>
<td>.55</td>
<td>.55</td>
<td>.51</td>
<td>.58</td>
<td>-.55</td>
</tr>
</tbody>
</table>

*All coefficients are Person Product Moment Correlations and all are significant p < .01.

**Both locus of control scales were scored in an internal direction.
higher morale and life satisfaction were associated with greater internality.

The Philadelphia Geriatric Center Morale Scale (Lawton, 1975) was scored following recommended scoring procedures so that higher scores represented greater (more positive) morale. Scores on the morale scale ranged from 1-16, with a mean score of 10.95 (SD = 3.08). The following hypothesis was tested:

Hypothesis I - Morale, as measured by the Philadelphia Geriatric Center Morale Scale, will be significantly and positively correlated with an internal locus of control.

Results of the correlational analysis confirm Hypothesis I, indicating a strong, positive relationship between morale and locus of control (r = .84, p < .01; r = .85, p < .01). Thus, elderly individuals who reported higher morale also tended to have greater internal locus of control scores.

These findings are congruent with the research of Hersch and Scheibe (1967) as well as Ryckman and Sherman (1973). Ryckman and Sherman (1973) found that internals, in contrast to externals, were more optimistic and happy with higher esteem. Hersch and Scheibe (1967) found that internal individuals were more self-confident, with more positive personality profiles than externals.

Locus of Control and Life Satisfaction

Life satisfaction was measured by the Cantril Ladder
Cantril, 1965). Scores on the life satisfaction ladder ranged from 1 to 10, with a mean score of 7.36 (SD = 1.98). The following hypothesis was tested:

Hypothesis II - Life satisfaction, as measured by the Cantril Life Satisfaction Ladder, will be significantly correlated with an internal locus of control.

As shown in Table 3, life satisfaction was significantly and positively related to locus of control ($r = .80, p < .01; r = .85, p < .01$). In support of Hypothesis II, the data suggest that greater life satisfaction was associated with greater internality.

Results of the present study support the earlier research of Palmore and Luikart (1972), but are contrary to the finding of Felton and Kahana (1974). In a longitudinal study of elderly individuals, who were maintaining community residence, Palmore and Luikart (1972) found a significant, positive relationship between internal locus of control and life satisfaction. In contrast, Felton and Kahana (1974) found that elderly individuals with an external locus of control had greater life satisfaction than internals in an institutionalized sample.

Differences in subject populations may account for the discrepancy in these studies. Felton and Kahana's subjects were institutionalized. Conversely, elderly individuals in the present study represented a fairly successful group of
of survivors (only 4% rated their health as poor), who were active and maintaining their own residence in the community. The locus of control construct may have a different meaning in institutional settings. Institutions may represent situations where a degree of externality could be viewed as a positive or adaptive characteristic. Perhaps, institutionalized individuals who perceive themselves as having less control over their environment (externals) are more realistic and, therefore, better adjusted with greater life satisfaction than institutionalized internals.

Locus of Control and Depression

Depression, frequently observed in the aged (Botwinick, 1970, 1973), appears logically related to locus of control. However, research correlating measures of depression with locus of control has yielded conflicting results (Miller, 1971; Ambramowitz, 1969; Miller & Seligman, 1973).

Depression was measured by the Beck Depression Scale (Beck et al., 1961). Depression scores for the geriatric group ranged from 0–26, with a mean score of 7.64 (SD = 5.81). The following hypothesis was tested:

Hypothesis III - Depression, as measured by the Beck Depression Inventory, will be significantly and negatively correlated with an internal locus of control.

In support of Hypothesis III, a significant, negative relationship (r = -.77, p < .01; r = -.79, p < .01) between
locus of control and depression was found. For this elderly group, the data indicate that as the degree of internality increased, the degree of depression tended to decrease.

The correlation between depression and locus of control would appear to be relevant to the theory of learned helplessness. Seligman (1973, 1975) has suggested that learned helplessness and depression are similar. Moreover, evidence for the similarity between learned helplessness and external locus of control has been presented (Hiroto, 1974; Kennelly & Kinley, 1975; Yates et al., 1975). Perhaps, experiences with noncontingent reinforcement influence the development of a perceptual belief that events are uncontrollable; and once formed, the perceptual set may become an antecedent condition for the development of depression. It does appear that there are similarities between learned helplessness, external locus of control, and depression. Additional research may elucidate the phenomena or define the areas of similarity.

Previously, the reported correlations between depression and locus of control have been disappointingly low. Miller (1971) found a small correlation ($r = .24, p < .001$) between scores on the Rotter Internal-External Locus of Control Scale (Rotter, 1966) and scores on the Beck Depression Inventory (Beck et al., 1961). Likewise, Abramowitz (1969) found a significant correlation ($r = .28, p < .05$) between scores on
the internal-external scale and depression. Both Miller (1971) and Ambramowitz (1969) utilized college students in their research.

Differences in subject populations may account for the stronger relationship between depression and locus of control in the elderly group. The elderly population may have a greater degree of depression and/or more variability on depression scales than college students. However, elderly individuals in this study did not appear to be more depressed or variable (M = 7.64, SD = 5.81) on the Beck Depression scores than a group of college students (M = 7.69, SD = 5.19) studied by Miller and Seligman (1973). Other differences between populations could be important. Rotter (1966) has suggested that there may be a narrow range of locus of control attitudes among college students. Levenson Locus of Control scores for the elderly group appeared to have a greater range and somewhat more variability than scores from a recent study of college students (Benson, Kennelly, & Foelker, 1976).

As shown in Table 3, all measures of morale correlated with both locus of control scales in the predicted direction. Elderly individuals with an internal locus of control tended to report greater morale and life satisfaction and less depression than individuals with an external locus of control.

Locus of Control and Activity

The role of activity versus social withdrawal
(disengagement) has occupied a prominent place in theories of successful aging (Cumming & Henry, 1961; Neugarten & Tobin, 1965). Activity, although frequently studied in the aged, has rarely been related to locus of control.

Activity was measured by a new scale, the Geriatric Activity Scale. All activity scale scores were summed to yield a total hours-per-week-activity score for each individual. Total weekly activity scores ranged from 30 to 172 hours, with a mean of 83.36 hours (SD = 24.23). The total weekly activity scores were correlated with locus of control scores and the following hypothesis was tested:

Hypothesis IV - Activity, as measured by the Geriatric Activity Scale will be significantly and positively correlated with an internal locus of control.

Results of the correlational analysis confirm Hypothesis IV, indicating a significant, positive relationship between locus of control and activity scores ($r = .55$, $p < .01$; $r = .55$, $p < .01$). In general, as scores on the activity scale tended to increase, the degree of internality also tended to increase.

Results of the present research support the earlier studies of Palmore and Luikart (1972) and Lao (1974). Palmore and Luikart (1972) found significant correlations between activity and locus of control in an elderly sample. Lao (1974) found that the nonretired aged were significantly more internal than retired elderly.
The present study appears to have relevance for the theories of successful aging. Cumming and Henry (1961) formulated a theory of disengagement, which suggests that the elderly person who curtails his activities is more likely to be happy and well-adjusted. In contrast, the activity theory postulates that the happy, well-adjusted elderly person would remain moderately active and would resist the narrowing of his social world.

Duke et al. (1974) note that the activity theory of aging suggests that the locus of control of an aging population would be about the same as that of younger adults. In accordance with the activity theory, the well-adjusted elderly person would perceive himself as having the ability to control reinforcers and would remain active. On the other hand, the disengagement theory of aging would be congruent with the hypothesis of increasing externality among the aged. The disengaged elderly individual would perceive himself as having a decline in his ability to control reinforcers and would tend to curtail his activities. Data from the present sample appear to offer support for the activity theory of aging, since participants were about as internal as groups of younger adults from previous studies. Moreover, as shown in Table 3, activity correlated significantly and positively with high levels of morale and negatively with high rates of depression. These results offer support for the activity theory of aging.
Study Number 2 - Locus of Control
and Learned Helplessness in the Elderly

Hiroto (1974) has suggested that a single process
may be central to Seligman's (1975) concept of learned
helplessness and Rotter's (1966) external locus of control
construct—the expectancy that responding and reinforcement
are independent. In Rotter's (1966) construct, individuals
with an external locus of control tend to perceive rein-
forcement as independent of their behavior, while internal
individuals perceive reinforcements as being contingent
upon their behavior. Recently, evidence has been documented
which suggests that an external orientation may have nega-

Learned helplessness has also been described as a
negative phenomenon which decreases the motivation to respond
and interferes with subsequent learning (Hiroto & Seligman,
1975; Schulz, 1976; Seligman, 1975). Seligman (1975) has
proposed that learned helplessness occurs when an organism
is exposed to inescapable aversive stimulation and, thereby,
develops an expectation that responding and reinforcement
are independent. The expectation that reinforcement is
uncontrollable generalizes across tasks or situations
and interferes with future learning (Hiroto & Seligman, 1975).
Learned helplessness appears to be a powerful phenomenon which has been experimentally demonstrated in a wide variety of species, including dogs, rats, cats, monkeys, and humans (Seligman, 1975).

Experimental research has provided support for the similarity between learned helplessness and external locus of control (Hiroto, 1974; Kennelly & Kinley, 1975; Yates et al., 1975). In Hiroto's (1974) study, both externals and individuals subjected to a series of inescapable aversive tones had greater difficulty in learning an escape/avoidance response than did internals and individuals subjected to a series of escapable aversive tones. Hiroto (1974) found that locus of control and helplessness treatment had additive, rather than multiplicative (interactive) effects on the escape/avoidance task. However, more recent research indicates that exposure to uncontrollable aversive events may have differential (interactive) effects upon internals and externals (Benson, Kennelly, & Foelker, 1976; Foelker, 1975). Benson et al. (1976) found that the performance of internals was impaired by pretreatment with insoluble problems, but unaffected by pretreatment with soluble problems, while the performance of externals was unaffected by pretreatment with insoluble problems, but was facilitated by pretreatment with soluble problems.
Seligman (1975) has drawn parallels between learned helplessness and depression and suggested that they are similar in terms of (a) behavioral symptoms, (b) cure, (c) etiology, and (d) prevention. Research evidence appears to support the relationship of learned helplessness to depression (Klein, Fencil-Morse, & Seligman, 1976; Miller & Seligman, 1973, 1975; Miller, Seligman, & Kurlander, 1976).

While previous studies have considered the relationship between locus of control, learned helplessness, and depression (Benson et al., 1976; Hiroto, 1974; Miller & Seligman, 1975), none have utilized an elderly sample. Seligman (1975) has suggested that learned helplessness is widespread among the elderly and Botwinick (1970, 1973) has proposed that depression occurs frequently in the elderly. The results of Study Number 1 of the present research indicate a strong relationship between depression and an external locus of control in an elderly sample.

Recent studies have suggested that not only can uncontrollable aversive events produce learned helplessness, but controllable aversive events can break-up helplessness or induce competence (Benson et al., 1976; Klein et al., 1976; Miller & Seligman, 1975). The above cited studies also suggest that controllable aversive events are most likely to induce competence and/or break-up helplessness in
externally oriented and/or depressed individuals. Schultz (1976) found that allowing elderly individuals to experience an increase in control and predictability of events had a positive impact on the physical and psychological well-being of a group of institutionalized aged. Procedures which would break up or alleviate an external orientation and/or depression and/or learned helplessness in the elderly should be of considerable therapeutic value.

Study Number 2 was designed to extend the earlier research on learned helplessness to an elderly population and to investigate the phenomenon in internal versus external individuals. Prior to the experimental treatment, elderly volunteers were administered the Levenson Locus of Control Scale and divided into internal and external groups. Internals and externals were then randomly assigned to one of three treatment conditions (insoluble discrimination problems, soluble discrimination problems, or no treatment control). Following treatment, the volunteers were tested on a sequenced anagram task. Performance on the anagram task was measured using three dependent variables: (a) number of failures to solve; (b) mean response latency; and (c) number of trials to reach criterion. (See page 62 for a discussion of the dependent measures.) It was predicted that performance on the anagram task would be contingent on (a) the
type of pretreatment received (soluble, insoluble, or control) and (b) the locus of control orientation.

Hypotheses:

The following hypotheses were tested:

Hypothesis I - The group pretreated with insoluble discrimination problems will require significantly more trials to reach criterion on the sequenced anagram task than the control and soluble pretreated groups.

Hypothesis II - The group with external loci of control will require significantly more trials to reach criterion on the sequenced anagram task than the group with internal loci of control.

Hypothesis III - The group pretreated with insoluble discrimination problems will have significantly more failures on the sequenced anagram task than the control and soluble pretreated groups.

Hypothesis IV - The group with external loci of control will have significantly more failures on the sequenced anagram task than the group with internal loci of control.

Hypothesis V - The group pretreated with insoluble discrimination problems will have a significantly greater mean response latency on the sequenced anagram task than the control and soluble pretreated groups.

Hypothesis VI - The group with external loci of control will have a significantly greater mean response latency on the sequenced anagram task than the group with internal loci of control.
Method

Subjects

Study Number 2 included 60 individuals from Study Number 1 whose scores on the Levenson Locus of Control Scale deviated at least .5 Standard deviation above and .5 standard deviation below the mean. The internal group included 22 female and 8 male volunteers and the external group included 24 female and 6 male volunteers. Participants were aged 65 years or older and all were maintaining community residence in their own living quarters. All individuals were ambulatory, verbal, coherent, and literate. The group appeared well-educated with a mean of 9.97 and a median of 10.4 years of schooling. Additional background data is presented in Table 7 of Appendix A.

Apparatus and Materials

Non-Sequenced Anagram Test. A series of 5 four-letter and 5 five-letter anagrams was used as a measure of anagram-solving ability (see Figure 5 of Appendix E). The sequence of the letters in each anagram was different, so that there was no pattern or principle by which to solve all the anagrams. This test was employed for use as a possible covariate in order to control for variability in anagram solving ability among the experimental groups, since an anagram test task was utilized to measure any induced helplessness or competence.
Discrimination Problems. The pretreatment consisted of a series of five discrimination problems of the sort described by Levine (1966, 1971). The problems were placed on 5 x 8 inch (12.7 x 20.3 cm) white index cards and each card had two stimuli. The first two problems each consisted of eight cards and the last three problems each had ten cards. The first two problems had three dimensions: (a) letter (A or E); (b) color (red or black); and (c) letter size (large or small). Each stimulus card had both letters, one large and one small, one red and one black. The color, size, and location (right or left side) of each letter varied from card to card. For example, one card had a small red A and a big black E, another card a big black A and a small red E. The capital Gothic letters were enclosed by circles 1 1/4 inch (3.2 cm) in diameter. The circles were placed 1 inch (2.5 cm) apart on the 5 x 8 inch (12.7 x 20.3 cm) white index cards. The large letters were 3/4 inch (1.91 cm) in height; the small letters 1/2 inch (1.27 cm). The first two problems each utilized eight stimulus cards, but the other three problems each had ten stimulus cards. The stimulus cards for the third, fourth, and fifth problems were the same as those for the first two problems, except that one of the letters was surrounded by the circle and the other by a 1 1/4 inch (3.2 cm) square. Thus the third, fourth, and fifth problems had four dimensions: (a) letter (A or E); (b) color
(red or black); (c) letter size (large or small); and (d) letter border (circle or square). In the soluble condition, one value of one of the dimensions, for example, red color was always correct. In the insoluble condition, no value was consistently correct.

Sequenced Anagram Test Task. A series of 20 five-letter anagrams (Benson & Kennelly, 1976) was used as an experimental test task (see Figure 6 of Appendix E). The anagrams were placed individually on 5 x 8 inch (12.7 x 20.3 cm) white index cards and composed of 1/2 inch (1.3 cm) Gothic letters spaced 1/2 inch (1.3 cm) apart. Each anagram had the same letter order: 3-4-2-5-1. Examples of the anagrams are (a) D G U E J, (b) N S E E D, (c) B L O E N, and (d) B I A T H. All 20 anagrams were soluble with the same letter sequence. Although the anagrams could be solved individually, the fixed-letter sequence allowed the participant to discover the pattern and solve the remaining anagrams quickly. Response time for anagram solution was measured by a 1/100-minute stop-watch.

Procedure

Sixty elderly individuals who scored at least .5 standard deviation above and below the mean on the Levenson Locus of Control Scale were contacted by telephone and appointments arranged for the experimental session. Thirty
internals and thirty externals were randomly assigned to one of three treatment groups (control, soluble, or insoluble pretreatment). The experimental design is presented in Figure 1.

![Figure 1—Experimental Design](image)

The learned helplessness experiment was conducted in each individual's home unless otherwise requested by the participant. The experimental session was scheduled at the convenience of each participant, but at least two weeks after the testing session. The general procedural sequence is diagrammed in Figure 2 (see page 56).
Figure 2—Procedural Sequence - Study Number 2
All participants were first administered a non-sequence anagram test consisting of a series of 5 four-letter and 5 five-letter anagrams. The sequence of letters was different from anagram to anagram, so that there was no pattern or principle by which to solve all the anagrams. This test was administered for use as a possible covariate in order to control for possible group differences in anagram solving ability. The experimenter presented the anagram test and gave the following instructions:

You are going to be presented with some anagrams. Anagrams are words with the letters scrambled. The problem is for you to unscramble the letters so that they form a word. Look at each anagram and rearrange the letters so that they will form a word.

Each participant was given 10 minutes to complete the test.

Following the non-sequence anagram test, individuals in the soluble pretreatment group were presented with five soluble discrimination problems of the type described by Levine (1966, 1971). The experimenter first presented a sample stimulus card to the participant and gave the following instructions:

In this experiment you will be presented with five problems. Each problem consists of a series of cards like this one. Each card will always have two letters and the letters will be of two colors. You will also notice that one of the letters is small and one is large. Each card has six possible values: A, E, red, black, small, and large. For each problem, one value has been chosen as correct and marked correct here on my sheet. The correct value may be red or black, A or E, small or large, but only one
value is correct for each problem. Each of the
values is written on this card. (The experimenter
handed a card to the subject which had the following
values printed on it: red, black, A, E, small, large.)
For each card, you will choose either the figure on
the left or the one on the right, whichever you think
has the correct value, and I'll tell you if you're
right or wrong. Then I will show you another card,
you will again make a choice, and again I'll tell you
if you're right or wrong. You watch carefully and try
to figure out which value has been chosen as correct.
Remember, the correct value may be red or black, A or
E, large or small. The goal of this task is for you
to figure out which value has been chosen as correct
as quickly as possible so that you can choose correctly.

In order to clarify the task of finding the correct
value, each participant was presented with five sample
trials of a three dimensional problem. All participants
were asked if there were any questions, and additional expla-
nation was given if necessary.

Following the second problem, the experimenter pre-
(84x91) sented a four dimensional problem and said

Here is a problem that is just a bit more diffic-
ult. You will notice that this card is the same as
the previous cards, except that one of the letters
is surrounded by a circle and the other letter is
surrounded by a square. Again, only one of the values
has been chosen as correct, but this time the correct
value may be a circle or square, red or black, A or E,
large or small. Each of the values is written on this
card. (The experimenter handed a card to the subject
which had the following values printed on it: circle,
square, red, black, A, E, large and small.) Only one
of these values has been chosen as correct for each
problem. Watch carefully and try to figure out which
value has been chosen as correct.

The cards for each problem were arranged in a randomly,
predetermined order and presented in the same order to each
individual. The experimenter presented each card and allowed the participant to choose one stimulus. The experimenter then responded "that's right" or "that's wrong". Each individual received one trial with each stimulus card. Problems one and two each consisted of eight stimulus cards, but problems three, four, and five each had ten stimulus cards. After the last trial of each problem, the experimenter asked the participant to name the correct stimulus value. If the participant replied "don't know", the experimenter encouraged her/him to name one of the values or guess. The criterion for successful solution of the problem was the selection of the correct stimulus value. The value red was correct for problem number one, small for problem two, E for problem three, square for problem four, and A for problem five. After the participant selected one value, the experimenter informed him/her whether his/her choice was correct or incorrect. The experimenter recorded each individual's answer for every trial and the stimulus value chosen for each problem on an 8 1/2 x 11 inch (21.6 x 27.9 cm) recording sheet.

Participants in the insoluble pretreatment group received the same treatment as the soluble pretreatment group, except that the problems were insoluble. The insoluble group received a predetermined schedule of
"correct" (c) and "incorrect" (i) regardless of the stimulus selected. The schedule for experimenter responses were (a) c-i-i-c-i-i-i for the first problem; (b) i-c-i-c-i-c-i-i for the second problem; (c) i-c-i-c-i-c-i-i-c-i for the third problem; (d) c-i-i-c-i-i-c-i-i-i-c-i-i for the fourth problem; and (e) i-c-i-c-i-c-i-i-i-c-i-i for the fifth problem. In this manner, reinforcements were independent and noncontingent on the response of the individual. Moreover, participants in the insoluble group were told "that's the wrong answer" when they tried to guess the correct stimulus value after each problem.

Following pretreatment, participants in the soluble and insoluble groups were presented with a sequenced anagram task which consisted of a series of 20 five-letter anagrams. The control group did not receive pretreatment with the Levine discrimination problems. Instead, individuals in the control group were administered the experimental sequenced anagram task immediately following the presentation of the non-sequenced anagram test. The experimenter presented the first anagram and gave the following instructions:

Now you're going to be presented with some more anagrams. As you know, anagrams are words with the letters scrambled. The problem is for you to unscramble the letters so that they form a word. These anagrams are different from the anagrams that you were presented earlier, because there is a principle,
a pattern, or a sequence by which all the anagrams can be solved quickly. If you figure out the pattern, then you can solve the remaining anagrams quickly. Look at each anagram and tell me as soon as you've figured out the word.

All anagrams in the experimental task were soluble and had the same letter sequence. This allowed the participant to solve each anagram individually or to discover the pattern and use the fixed-letter sequence to solve the remaining anagrams. Anagrams were placed on 5 x 8 inch (12.7 x 20.3 cm) cards and presented individually to each person. The cards were arranged in a randomly predetermined order and presented in the same order to all participants. The experimenter presented each anagram card to the participant and allowed him/her 100 seconds to give the correct response. If an individual gave a response which was not a word, the experimenter replied, "I'm not familiar with that. See if you can find another word." The experimenter recorded the individual's response and the number of seconds spent on each anagram. When an individual gave a response which was a word, but which did not fit the fixed-letter sequence, the experimenter said, "Yes, that's a word, but I'm looking for another word. See if you can find another word." In the above case, the response was scored as correct, but the individual was encouraged to find the word which was congruent with the fixed-letter sequence. When more than one
response was given for any anagram, the experimenter recorded the responses and the time for each response.

Three dependent variables were recorded and analyzed for the anagram task: (a) the number of failures to solve, with failure defined as the absence of a correct response in less than 100 seconds; (b) mean response latency for all the anagrams; and (c) number of trials to criterion, with criterion defined as the subject solving three consecutive anagrams in less than 25 seconds each, and successfully identifying the remaining anagrams. The most promising of the dependent measures would seem to be the number of trials to criterion. Hiroto and Seligman (1975) note that reaching criterion suggests that the subject recognizes the fixed-letter sequence, thereby, solving the problem. Individuals exposed to insoluble pretreatment discrimination problems were expected to have greater difficulty reaching criterion than individuals exposed to soluble pretreatment discrimination problems.

After the completion of the experimental anagrams, all participants were debriefed and reassured regarding their problem solving ability. In addition, individuals in the insoluble pretreatment group were given an opportunity to solve the Levine discrimination problems.
Results

Study Number 2 has extended the earlier research on learned helplessness to an elderly population and investigated the phenomenon in individuals with an internal versus external locus of control.

Pre-experimental Anagram Test

A series of 10 nonsequenced anagrams were utilized as a measure of anagram solving ability (see Figure 5 of Appendix E). This test was employed for use as a possible covariate in order to control for differences in anagram solving ability among the experimental groups. Each individual's anagram test was scored in terms of the number of correct responses and a simple, one-way analysis of variance (Winer, 1962) indicated no significant differences among the groups, $F(5,54) = .23, \ p > .05$. (The summary of the analysis of variance is presented in Table 8 of Appendix F.) In as much as the nonsequenced anagram test provided a measure of anagram solving ability, it can be concluded that the groups did not differ significantly in anagram solving ability.

Locus of Control Measure

The learned helplessness experiment included 30 internals and 30 externals who scored at least .5 standard deviation above and below the mean on the
Levenson Locus of Control Scale. Individuals in the internal group were randomly assigned to one of three treatment conditions (soluble, insoluble, or control). Likewise, individuals in the external groups were randomly assigned to one of the three treatment groups. There were 60 participants, 30 internals and 30 externals, in the two (internal vs. external locus of control) by three (soluble vs. insoluble vs. control pretreatment) analysis of variance design.

Table 4 shows the means and standard deviations for the six cells on the locus of control measure. (Means and standard deviations on the locus of control measure are presented according to sex in Table 20 of Appendix K.)

<table>
<thead>
<tr>
<th>Condition</th>
<th>Externals</th>
<th>Internals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Sd</td>
</tr>
<tr>
<td>Control</td>
<td>67.7</td>
<td>10.45</td>
</tr>
<tr>
<td>Soluble</td>
<td>57.3</td>
<td>9.12</td>
</tr>
<tr>
<td>Insoluble</td>
<td>70.3</td>
<td>11.62</td>
</tr>
</tbody>
</table>

Inspection of Table 4 suggests that the random assignment of the externals to treatment conditions resulted in external groups which differed on the locus of control measure.
Analysis of variance of the three external groups indicated that they differed significantly, $F(2,27) = 4.34, p < .05,$ in their degree of externality. (The summary of the analysis of variance is presented in Table 9 of Appendix F.) Individual comparisons of pairs of means by the Newman-Keuls method (Kirk, 1968) indicated that the soluble external treatment group was significantly more external than either the control external or insoluble external treatment groups, both $p < .05$. However, the control and insoluble treatment groups did not differ significantly on the variable of externality, $p > .05$.

Analysis of variance of the three internal groups on the locus of control measure was nonsignificant, $F(2,27) = .26, p > .05$. (The summary of the analysis of variance is presented in Table 10 of Appendix F.) For the internals, the random assignment of subjects resulted in treatment groups which did not differ significantly on the locus of control measure.

Experimental Analyses

Since the random assignment did not produce equivalent external groups, two different procedures for the analyses of experimental effects have been presented in the sections that follow. First, the planned two-factor analysis of variance has been presented for each of the dependent measures (trials to criterion, failures to solve, and mean
response latency). Second, the treatment effects have been examined separately for the internal groups and for the external groups. Treatment effects for the internal groups were analyzed by means of a simple, one-way analysis of variance (Winer, 1962) for each of the dependent measures (trials to criterion, failure to solve, and mean response latency). Treatment effects for the externals were analyzed by a one-way analysis of covariance (Kirk, 1968) for each of the dependent measures (trials to criterion, number of failures, and mean response latency), with locus of control as the covariate. The analysis of covariance procedure provides a method of statistical control which may remove a possible source of bias in the experiment (see Winer's discussion of statistical control, 1962, p. 752).

Three dependent measures were used to assess anagram performance: (a) mean trials to criterion, with criterion defined as the trial in which the subject has solved three consecutive anagrams in less than 25 seconds each, after which no failures to solve occurred; (b) mean response latency for the twenty anagrams; and (c) mean number of failures to solve, with failure to solve being defined as the absence of a correct response in less than 100 seconds. These are similar to the dependent measures used by Hiroto
and Seligman (1975) except that the time limit to reach
criterion has been increased to allow for the slower
reactions of elderly individuals, and an additional re-
quirement of no succeeding failures to solve has been
imposed. The means and standard deviations for each of
the dependent measures are presented in Table 5.

**TABLE 5**

Means and Standard Deviations for the Six
Cells on Each of the Dependent Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Condition</th>
<th>Internal Mean</th>
<th>SD</th>
<th>External Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trials to Criterion</td>
<td>Control</td>
<td>13.20</td>
<td>3.82</td>
<td>16.60</td>
<td>2.50</td>
</tr>
<tr>
<td></td>
<td>Soluble</td>
<td>10.70</td>
<td>4.30</td>
<td>13.40</td>
<td>3.53</td>
</tr>
<tr>
<td></td>
<td>Insoluble</td>
<td>17.00</td>
<td>2.75</td>
<td>18.40</td>
<td>2.95</td>
</tr>
<tr>
<td>Failures to Solve</td>
<td>Control</td>
<td>1.10</td>
<td>.99</td>
<td>2.40</td>
<td>1.41</td>
</tr>
<tr>
<td></td>
<td>Soluble</td>
<td>.40</td>
<td>.49</td>
<td>1.40</td>
<td>.84</td>
</tr>
<tr>
<td></td>
<td>Insoluble</td>
<td>1.50</td>
<td>.85</td>
<td>3.90</td>
<td>3.78</td>
</tr>
<tr>
<td>Latency in Seconds</td>
<td>Control</td>
<td>38.62</td>
<td>8.52</td>
<td>42.59</td>
<td>7.61</td>
</tr>
<tr>
<td></td>
<td>Soluble</td>
<td>33.80</td>
<td>11.47</td>
<td>43.55</td>
<td>10.97</td>
</tr>
<tr>
<td></td>
<td>Insoluble</td>
<td>41.21</td>
<td>10.88</td>
<td>42.47</td>
<td>14.07</td>
</tr>
</tbody>
</table>

Mean Number of Trials to Criterion. The mean number
of trials to reach criterion was computed for each group
and appear in Table 5. The following hypotheses were
tested:
Hypothesis I - The group pretreated with insoluble discrimination problems will require significantly more trials to reach criterion on the sequenced anagram task than the control and soluble pretreated groups.

Hypothesis II - The group with external loci of control will require significantly more trials to reach criterion on the sequenced anagram task than the group with internal loci of control.

Analysis of variance of the trials to criterion measure produced a significant main effect due to experimental treatments, $F(2,54) = 14.06$, $p < .001$, a significant main effect due to locus of control, $F(1,54) = 8.26$, $p < .001$, and a nonsignificant interaction between locus of control and experimental treatments, $F(2,54) = .45$, $p > .05$. (The summary of the analysis of variance for the mean trials to criterion data appears in Table II of Appendix G.)

Differences between treatment means were examined by the Newman-Keuls method (Kirk, 1968). All comparisons between means were significant, $p < .05$. In support of Hypothesis I, the insoluble group required significantly more trials to reach criterion than either the control or the soluble pretreated groups. Moreover, the soluble pretreated group required significantly fewer trials to reach criterion than the control group. Results suggest that exposure to insoluble cognitive problems interferes
with subsequent behavior or produces "helplessness", while exposure to soluble cognitive problems facilitates subsequent behavior, or produces "competence".

Results of the analysis of variance also confirm Hypothesis II, indicating a significant difference between the internal and external groups, $F(1,54) = 8.26, p < .001$. The group with external loci of control required significantly more trials to reach criterion than the group with internal loci of control regardless of their pretreatment. Externality appeared to impair performance on the anagram task as did exposure to insoluble cognitive problems.

The interaction between locus of control and treatment effects was found to be nonsignificant, $F(2,54) = .45, p > .05$. Thus, the effects of treatment on performance did not appear to depend on the level of locus of control. For both the internal and external groups, treatment with insoluble cognitive problems impaired performance on the sequenced anagram task. In addition, performance for both internals and externals was facilitated by exposure to soluble cognitive problems.

**Number of Failures to Solve.** The mean number of failures was computed for each group and is presented in Table 5. The following hypotheses were tested:

**Hypothesis III** - The group pretreated with insoluble discrimination problems will have significantly more failures on the sequenced anagram task than the control and soluble pretreated groups.
Hypothesis IV - The group with external loci of control will have significantly more failures on the sequenced anagram task than the group with internal loci of control.

Analysis of variance of the mean number of failures data indicated a significant main effect due to experimental treatments, $F(2,54) = 5.18, p < .005$, a significant main effect due to locus of control, $F(1,54) = 9.61, p < .001$, and a nonsignificant interaction between experimental treatments and locus of control, $F(2,54) = 1.10, p > .05$. (The summary of the analysis of variance for the number of failures measure is presented in Table 12 of Appendix.)

Differences between treatment means were examined by the Newman-Keuls method (Kirk, 1968). In support of Hypothesis III, the analyses indicate that the insoluble treatment group had significantly more failures on the sequenced anagram task than either the control or soluble treatment groups, both $p < .05$. However, the control and soluble treatment groups did not differ significantly, $p > .05$, perhaps due to a "ceiling" effect in the soluble treatment condition. The control condition failed only 1.75 out of 20 anagrams on the average, leaving the soluble condition little room for improvement on this measure.

Congruent with the analysis of the trials to criterion data, exposure to insoluble cognitive problems appeared to interfere with subsequent behavior or produce "helplessness." However, the analysis of the number of failures data did
not indicate that exposure to soluble cognitive problems facilitated subsequent behavior or produced "competence," as was indicated by the analysis of the trials to criterion data.

Results of the analysis of variance also support Hypothesis IV, indicating a significant difference between the internal and external groups, $F(1,54) = 9.61, p < .001$. The group with external loci of control had significantly more failures on the anagram task than the group with internal loci of control regardless of their pretreatment.

The interaction between treatment effects and locus of control was found to be nonsignificant, $F(2,54) = 1.10, p > .05$. Consistent with the analysis of the trials to criterion data, the effects of treatment on performance did not appear to depend on the level of locus of control. For both internal and external groups, treatment with insoluble cognitive problems produced significantly more failures than treatment with soluble cognitive problems.

Mean Response Latency. Each individual's mean response latency was computed for the twenty anagrams. The mean response latency was computed for each group and appears in Table 5. The following hypotheses were tested:

Hypothesis V - The group pretreated with insoluble discrimination problems will have a significantly greater mean response latency on the sequenced anagram task than the control and soluble pretreated groups.
Hypothesis VI - The group with external loci of control will have a significantly greater mean response latency on the sequenced anagram task than the group with internal loci of control.

Analysis of variance of the mean response latency data indicates no significant differences among the three treatment conditions, $F(2,54) = .43, p > .05$. Treatment with insoluble cognitive problems did not evoke significantly greater response latencies than treatment with soluble cognitive problems. In addition, the internal and external locus of control groups did not differ significantly, $F(1,54) = 3.21, p > .05$. The interaction effect was also nonsignificant, $F(2,54) = .81, p > .05$. (The summary of the analysis of variance is presented in Table 13 of Appendix H.) Neither Hypothesis V nor Hypothesis VI were supported by the analysis of the mean latency data.

Separate Analyses of Internal Treatment Groups

Since the random assignment of external individuals failed to produce treatment groups equivalent on externality, separate analyses have been computed for the external and internal groups.

Trials to Criterion. Analysis of variance of the trials to criterion measure produced a significant effect due to experimental treatments, $F(2,27) = 7.43, p < .01$. (The summary of the analysis of variance is presented in Table 14 of Appendix H.) Individual comparisons of pairs
of means were analyzed by the Newman-Keuls method (Kirk, 1968). For the internals, the insoluble group took significantly more trials to reach criterion than did both the soluble and control groups, both \( p < .05 \), but the soluble and control groups did not differ significantly, \( p > .05 \). The performance of internals was impaired by pretreatment with insoluble problems, but unaffected by pretreatment with soluble problems.

**Number of Failures.** Analysis of variance of the number of failures measure produced a significant effect due to experimental treatments, \( F(2,26) = 4.25, p < .05 \). (The summary of the analysis of variance is presented in Table 15 of Appendix I.) The Newman-Keuls method of comparison of means indicated that only the soluble and insoluble treatment groups differed significantly, \( p < .05 \).

**Mean Response Latency.** Analysis of variance of the mean response latency measure indicated no significant differences among the three treatment conditions, \( F(2,27) = 1.32, p > .05 \). (The summary of the analysis of variance is presented in Table 16 of Appendix I.)

**Separate Analyses of External Treatment Groups**

As stated earlier, the random assignment of external individuals produced treatment groups which were significantly different on the variable of locus of control or
externality. Since locus of control has been found to affect results in helplessness experiments (Benson et al., 1976; Hiroto, 1974) treatment effects for the externals were analyzed by a one-way analysis of covariance (Kirk, 1968), with locus of control as the covariate. This procedure provides a method of statistical control which may remove a possible source of bias in the experiment, i.e., the inequality of the three external groups with regard to locus of control or externality (see Winer's discussion of statistical control, 1962, p. 752). The adjusted means for each of the dependent measures are presented in Table 6.

Table 6
Adjusted Means for the External Groups

<table>
<thead>
<tr>
<th>Measure</th>
<th>Treatment Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control</td>
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<tr>
<td>Trials to Criterion</td>
<td>16.44</td>
</tr>
<tr>
<td>Number of Failures</td>
<td>2.12</td>
</tr>
<tr>
<td>Latency in Seconds</td>
<td>41.29</td>
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</table>
Trials to Criterion. Analysis of covariance for the trials to criterion measure indicated a significant difference among the treatment groups, $F(2,26) = 3.79, p < .05$. (The summary of the analysis of covariance is presented in Table 17 of Appendix J.) Differences between treatment means were examined using Tukey's test (see Kirk, 1968, p. 472 for a discussion of Tukey's procedure for analysis of covariance). For the externals, the soluble group took significantly fewer trials to reach criterion than both the control and insoluble groups, both $p < .05$, but the control and insoluble groups did not differ significantly, $p > .05$. Results indicate that the performance of externals was facilitated by pretreatment with soluble cognitive problems, but unaffected by pretreatment with insoluble problems.

Number of Failures. Analysis of covariance for the number of failures measure indicated a significant difference among the treatment groups, $F(2,26) = 3.52, p < .05$. (The summary of the analysis of covariance is presented in Table 18 of Appendix J.) Differences between means were examined using Tukey's test (Kirk, 1968). The insoluble group had significantly more failures on the anagram task than both the soluble, $p < .01$, and control, $p < .05$ groups, but the soluble and control groups did not differ significantly, $p > .05$. 
For the external groups, the results of the analyses of the number of failures measure are inconsistent with the results of the analyses of the trials to criterion measure. The analyses of the number of failures data indicate that the performance of externals was impaired by pretreatment with insoluble cognitive problems, but unaffected by pretreatment with soluble problems. As with the original analysis of variance results with the failures to solve measure, a "ceiling" effect may have operated for the external soluble condition since the external controls were solving approximately eighteen out of twenty anagrams, leaving little room for improvement for the soluble externals on this measure. In contrast, the analyses of the trials to criterion data clearly indicate that the performance of externals was facilitated by pretreatment with soluble cognitive problems, but unaffected by pretreatment with insoluble problems.

Mean Response Latency. Analysis of covariance for the mean response latency measure yielded nonsignificant results, $F(2,26) = .60, p > .05$. (The summary of the analysis of covariance is presented in Table 19 of Appendix J.)

Discussion

Results have demonstrated learned helplessness and learned competence in an elderly sample. Exposure to
insoluble cognitive problems appeared to interfere with subsequent behavior or produce "helplessness," while exposure to soluble cognitive problems appeared to facilitate subsequent behavior or produce "competence." These findings are consistent with earlier research on learned helplessness and learned competence (Benson & Kennelly, 1976; Hiroto & Seligman, 1975).

The learned helplessness and learned competence phenomena were most consistently demonstrated by the analyses of the trials to criterion measure of anagram solution. The analyses of data for the mean number of anagram failures tended to suggest that exposure to insolubility produced "helplessness," but did not support the contention that exposure to solubility produced "competence," probably due to a "ceiling" effect operating in the soluble condition. Since the control subjects were failing less than two out of twenty anagrams on the average, there was little room for improvement relative to this level of performance for the soluble condition subjects on this measure, mean number of anagram failures. In contrast, the "ceiling" on the trials to criterion measure did not seem to be approached in the control condition.

Analyses of the mean response latency data yielded nonsignificant results, and are consistent with Hiroto and
Seligman's (1975) as well as Benson and Kennelly's (1976) study which also found no significant effects of solubility/insolubility treatments on the measure mean response latency. For elderly individuals, there is frequently a decline in response or reaction time and the variability in response time may be greater among the elderly than among other age groups (Botwinick, 1970, 1973). The present study suggests that the trials to criterion and number of failures measures may be more sensitive than response latency to the effects of solubility/insolubility treatments, at least in an elderly sample.

Results of the factorial analyses of variance offered support for earlier studies which have suggested a similarity between external locus of control and learned helplessness (Hiroto, 1974; Kennelly & Kinley, 1975; Yates et al., 1975). Individuals with internal loci of control tended to perform better, as indicated by the trials to criterion and number of failures measures, on the sequenced anagram task than individuals with external loci of control regardless of their pretreatment. Moreover, the factorial analyses of variance indicated nonsignificant interaction effects between locus of control and solubility/insolubility treatments and are similar to Hiroto's (1974) findings, but differ from the recent results of Benson et al. (1976).
Hiroto (1974) found that individuals with an external locus of control had greater difficulty with an escape/avoidance task than internals regardless of their pre-treatments. Thus, externals appeared "helpless," behaving like individuals who had been exposed to uncontrollable aversive stimulation. Hiroto's (1974) study suggests that locus of control and helplessness treatment have additive, rather than multiplicative (interactive) effects.

In contrast, Benson et al. (1976) found a significant interaction between treatment effects and locus of control. In their study, treatment with insoluble cognitive problems impaired the performance of internals, but did not affect the performance of externals. Moreover, exposure to soluble cognitive problems facilitated the performance of externals, but did not affect the performance of internals.

While Benson et al.'s (1976) and Poelker's (1975) studies suggest that locus of control and helplessness treatment relate multiplicatively (interact), Hiroto's (1974) study suggests that locus of control and helplessness treatment have additive effects. The factorial analyses of the present experiment support Hiroto's (1974) study, but contain a possible source of bias. The random assignment of external individuals did not yield external
treatment groups which were equivalent in locus of control or externality. The external soluble treatment group was significantly more external than either the external control or the external insoluble treatment groups.

Since the random assignment of external individuals failed to produce treatment groups equivalent on external locus of control, separate analyses were computed for the internal and external groups and a statistical procedure was used to control for differences in externality among the external treatment groups. The analysis of variance for the internal treatment groups on the trials to criterion measure and the analysis of covariance for the external groups on the trials to criterion measure indicated the following results. The performance of internals was impaired by pretreatment with insoluble cognitive problems, but unaffected by pretreatment with soluble problems. In contrast, the performance of externals was facilitated by pretreatment with soluble problems, but unaffected by pretreatment with insoluble problems. These results are consistent with those of Benson et al. (1976) and suggest that locus of control and helplessness treatments relate multiplicatively, i.e., the effects of solubility/insolubility treatment depended on the locus of control orientation.
Results of the separate analyses of internal and external groups on the trials to criterion measure and the study of Benson et al. (1976) appear consistent with the research of Miller and Seligman (1975). Seligman (1975) has suggested that depressives are like externals in their belief that their own responses will not control reinforcements. Study Number 1 of the present research has suggested a strong relationship between external locus of control and depression. Miller and Seligman (1975) observed an interaction between depression/nondepression and escapable/inescapable noise similar to the interaction between locus of control and soluble/insoluble problems observed in the study of Benson et al. (1976). Miller and Seligman (1975) found that depressed individuals exposed to an escapable aversive noise performed better than depressed controls on a cognitive task, while depressed individuals exposed to inescapable aversive noise were not significantly different from depressed controls on the cognitive task. The authors also found that nondepressed individuals treated with inescapable aversive noise performed worse on the cognitive task than nondepressed controls, while nondepressed individuals treated with escapable aversive noise were not significantly different from nondepressed controls on the cognitive task.
Benson et al. (1976) propose that their results and those of Miller and Seligman (1975) suggest that experiences which are congruent with one's expectations do not affect subsequent behavior, while those experiences which are incongruent with an individual's expectations affect subsequent behavior.

Results of the separate analyses for internal and external groups for the number of failures measure are not entirely inconsistent with those for the trials to criterion measure. The separate analyses for the number of failures measure suggest that the externals became more "helpless" when treated with insoluble cognitive problems, but did not become more "competent" when treated with soluble cognitive problems. The failure to obtain "competence" induction may, as noted above, have been due to the operation of a "ceiling" effect. The separate analyses for the trials to criterion measure suggest that externals did not become more "helpless" when treated with insoluble cognitive cognitive problems, but became more "competent" when treated with soluble cognitive problems.

The previously obtained inconsistent findings with regard to the relationship between locus of control and helplessness treatment have not been cleared up in any complete sense by the results of the present study. The factorial analyses of
of variance support the hypothesis that locus of control and learned helplessness are similar phenomena (relate additively). However, these analyses cannot give a straightforward answer since the three external groups were not equally external. The separate analyses of the internal and external groups for the trials to criterion measure support the hypothesis that locus of control and learned helplessness treatment interact (relate multiplicatively). However, the separate analyses of the internal and external groups on the number of failures measure suggest that locus of control and helplessness treatment relate additively. The results of these separate analyses of the number of failures measure cannot be interpreted in a clearcut fashion, because of the probable operation of a "ceiling" effect in this measure.

Inconsistencies, such as those observed between the dependent measures in the present study, as well as inconsistencies between previous experimental studies may be resolved by future research. Differences between subjects or samples might account for some of the apparent inconsistencies. For example, motivation could be an important variable. Seligman (1975) has described learned helplessness as a phenomenon which reduces the motivation to respond. However, individuals bring certain motivational sets to the
research laboratory. Some individuals or groups could be highly motivated to perform well on the experimental task, others might have low motivation toward the experiment or task. While researchers have typically utilized volunteers, some are "free volunteers," some are "paid volunteers," and some are "credit volunteers," i.e. college students who participate in experiments to obtain course credit. Groups and/or individuals might have different types or degrees of motivation toward the experimental task and these motivational variables might interact with locus of control or helplessness induction procedures.

Differences in methodology might account for some of the discrepancy between studies. While Hiroto (1974) employed an instrumental-instrumental methodology, the present research and the study of Benson et al. (1976) used a cognitive-cognitive methodology.

Factors such as the perceived meaningfulness of the task or the perceived difficulty of the task might also affect the induction of learned helplessness. Elderly individuals in the present study appeared to feel that the Levine discrimination problems were less meaningful and more difficult than the anagram task. Benson et al. (1976) suggest that perceptions of the difficulty of different tasks might affect learned helplessness experiments in
complex ways. If a task is perceived as being so difficult that almost everyone fails, then the experience of failure may not serve to induce helplessness (Douglas & Anisman, 1975). Future research may define or clarify the relationships among locus of control, learned helplessness induction procedures, and another variable or variables.

Although none of the previous studies on learned helplessness have utilized elderly individuals, the results of this research appear consistent with studies of college students. The theory of learned helplessness would seem to apply to elderly individuals just as it has been demonstrated in other age groups and other animal species.

Results of the present study would appear to have implications for the therapeutic treatment of the elderly. Perhaps part of the decline, helplessness, and/or depression observed in the elderly is due to easily modifiable motivational deficits. A series of experiences with controllable aversive outcomes might improve the performance of external, depressed, and/or helpless elderly individuals. Schultz (1976) found that an increase in the control of events produced positive physical and psychological changes in a group of institutionalized aged. An increase in the control of reinforcements would appear to give the elderly a sense of competence or control which might have powerful effects on their behavior.
Summary and Conclusions

The present research has focused on an often neglected segment of society—the aged. In recent years, researchers have noted differences in the patterns of aging and have attempted to define the variables and/or processes associated with successful aging (Botwinick, 1970, 1973). Theories of aging have stimulated research, but have not been entirely satisfactory in describing optimal patterns of aging or predicting life satisfaction (Neugarten et al., 1968). The locus of control construct (Rotter, 1966) and the theory of learned helplessness (Seligman, 1975), not only have implications for continuing research, but appear to have immediate relevance for the treatment of aging individuals.

Locus of control refers to the degree to which individuals perceive themselves as having control over their environment, as being able to control their reinforcements. In Study Number 1 of the present research, a feeling of control over the environment (internality) was associated with a set of positive variables. Elderly individuals with more internal loci of control tended to appear "happier", that is, they tended to report greater life satisfaction, higher morale, and less depression and hopelessness than more external individuals. Activity was also related to
locus of control, with more internal individuals reporting greater levels of activity. Perhaps, elderly people with an internal locus of control are those individuals who are actively engaging in behaviors which are likely to increase positive reinforcers and/or decrease negative reinforcers.

Future research might study the relationship between different types of activity and variables such as life satisfaction and depression. Productive activity, social activity, and leisure activity might be related in different or complex ways to "happiness" or a sense of well-being. Moreover, additional research could include indices of objective and subjective physical health and relate these to activity, life satisfaction, and other variables. Palmore and Luikart (1972) found that self-rated health was significantly more related to life satisfaction than objective physical health as assessed by a physician. This line of research merits further study.

Although it has been proposed that elderly individuals tend to be more external than younger adults, the data of this and previous studies do not support this hypothesis. Elderly participants in this study appeared to be no more external than samples of younger adults from previous studies. However, the generalization of these results may be limited. It should be noted that all participants were
volunteers and were active and maintaining their own residence in the community. Different results might be obtained with nonvolunteers or with institutionalized elderly. For example, institutionalized elderly might be more external, or perhaps externality, not internality, would be associated with more positive variables in institutionalized samples. There may be environmental contingencies, such as in prisons or other institutions, where an external locus of control would be, not only realistic, but also very constructive and adaptive. Additional research of this nature with institutionalized elderly would appear to be warranted.

Learned helplessness is a generalized tendency to behave in controllable situations in a helpless manner, as if no response made any difference. Study Number 2 has provided evidence that experience with uncontrollable aversive events can induce helplessness in the elderly, while experience with controllable aversive events can induce competence in the elderly.

Results of Study Number 2 have offered some support for earlier studies which suggest a similarity between external locus of control and learned helplessness (Hiroto, 1974; Kennelly & Kinley, 1975; Yates et al., 1975). However, some analyses of the present study also support
Benson et al. (1976) and the hypothesis that locus of control and learned helplessness are different, but interactive phenomena. Additional research will hopefully clarify the relationship between learned helplessness and locus of control. The relationship between locus of control and learned helplessness may be moderated in some studies by an additional, undefined variable or variables. Future researchers might consider this possibility and include additional variables, such as task meaningfulness or task difficulty in their research.

The present study of learned helplessness and locus of control is unique, not only because it utilized a group of elderly individuals, but also because it represents a systematic attempt to relate several additional variables to locus of control. Although researchers have provided cogent demonstrations of learned helplessness and learned competence and related these phenomena to locus of control, they have rarely studied additional variables concurrently. Future studies might include variables, such as life satisfaction, morale, depression, activity, and self-concept.

Seligman (1975) has suggested that the aged are especially susceptible to learned helplessness. The aged must invariably cope with a number of major uncontrollable losses, such as death of loved ones, loss of income or
meaningful work, decline in physical functioning, and isolation from or rejection by society. Yet, certainly not all the aged become helpless. Elderly individuals who are resistant to motivational helplessness, in spite of exposure to uncontrollability, may have a realistic sense of their own limitations coupled with continuing opportunities to experience their own potency for controlling reinforcers.

If as Seligman (1975) has suggested, the aged are invariably confronted with a number of uncontrollable aversive losses, then procedures could be developed for studying these naturally occurring helplessness induction events. In this way, it might be possible to more clearly differentiate between those individuals who become helpless and/or depressed when confronted with uncontrollable aversive losses versus those people who do not become helpless and/or depressed. This type of research could be beneficial in defining the characteristics of individuals who are resistant to helplessness and/or depression, as well as defining the variables associated with the loss or situation. A parsimonious, field-study method of research might help bridge the gap between the experimental laboratory and effective remediation or therapy techniques.
The contention that learned helplessness and depression are similar appears especially relevant to the aged. If as Botwinick (1973) has suggested, depression is widespread among the elderly, then these results have many important implications. There appear to be similarities between learned helplessness, external locus of control, and depression. Moreover, Seligman (1975) has suggested that exposure to controllable events alleviates helplessness and relieves depression.

Results of the present study indicate a strong, significant relationship between locus of control and depression, with more external individuals reporting more depression. Previous research with college students has yielded rather low correlations between locus of control and depression (Ambramowitz, 1969; Miller, Note 3). Differences in subject populations may account for the stronger relationship between locus of control and depression in the elderly group. Depressive symptoms may be more prevalent among the elderly and/or they may have more variability on depression scales than college students. However, elderly individuals in the present study did not appear to be more depressed or variable on the Beck Depression Scale than a group of college students studied by Miller and Seligman (1973). Other differences between populations could be
important. Rotter (1966) has suggested that there may be a narrow range of locus of control scores among college students. Elderly individuals in the present study appeared no more external on the ANSIE than a previous group of college students (Nowicki & Duke, 1974), although the aged group had scores which were somewhat more variable. Levenson Locus of Control scores for the elderly group appeared to have a greater range and more variability than scores from a recent study of college students (Benson et al., 1976. Prior studies have typically correlated Rotter's (1966) Locus of Control Scale with indices of depression, but the present study used two more recently developed measures of locus of control. The above mentioned differences may account for the stronger relationship between depression and locus of control in the elderly group.

Several implications for the treatment of the elderly can be derived from the results of the present study. Opportunities could be provided for the elderly which would allow them to experience contingent reinforcement on a regular basis. Regular, contingent reinforcement might counteract the effects of the invariable losses which the elderly must face. Perhaps, the treatment for motivational helplessness or depression in the elderly might involve repeated exposure to controllable reinforcing events.
Schulz (1976) found that allowing institutionalized elderly to experience increased control and predictability had a positive impact on their physical and psychological well-being. Seligman (1975) has asserted that the aged, even institutionalized individuals, should be given maximum control over their lives, even if this means such simple choices as what to have for dinner, what clothes to wear, or whether or not to sleep late. In some cases, it might be better to avoid institutionalization and help the elderly remain active and in their own homes as long as possible, with the assistance of programs such as day care centers and Meals On Wheels.

The present study suggests that allowing an external and/or depressed elderly individual to control aversive events would affect subsequent behavior, or produce greater competence. For example, if an individual finds it aversive to be awakened early, he/she might be allowed to decide which days he/she would awake early versus which days he/she would sleep late. The individual who finds retirement aversive might be given an active role in planning his retirement, reducing his workload, or finding alternative work opportunities. The elderly individual who finds it aversive to give up her/his role as a parent might
be assisted in finding opportunities for substitute "parenting".

Psychological education for the elderly might be effective in preventing or alleviating learned helplessness. Many concepts or principles dealt with in this paper could be explained in simple language. Moreover, individuals could be taught action-oriented techniques for dealing with uncontrollable losses or mild depression. Groups of elderly individuals might form a support base for the pursuit of activities likely to elicit positive reinforcement. Civic and social clubs for the elderly have recently become more popular. These organizations may be useful in terms of helping individuals to feel more potent both as part of a viable group of society and as unique individuals. Psychologists could serve as consultants for these groups providing services such as psychological education, referral information, and training for peer counselors.

Cognitive therapies could be beneficial in helping an individual develop a belief in his/her potential for controlling reinforcers. The approach might be oriented toward the development of an internal locus of control, one that would be both rational and realistic. Cognitive
therapies could be combined with active experiences which would affirm or develop a feeling of competence and worth.

Society may need to be re-educated regarding the elderly and the processes of aging. It seems likely that many myths abound regarding the elderly which affect, not only society's attitude toward aging individuals, but also the elderly person's perception of himself. For example, some elderly individuals in this study confided that they felt guilty, because they continued to have sexual desires "at their age." Of course, the elderly can be respected and admired for their wisdom and experience, but too frequently, they are discredited by younger adults simply because they are old. The devaluing of the aged by society may contribute to feelings of inferiority, uselessness, and helplessness. Psychologists could serve as active catalysts, promoting a re-evaluation of society's attitudes toward the elderly.

Procedures which would break up or alleviate an external orientation and/or depression and/or learned helplessness in the elderly should be of considerable therapeutic value. Systematic research which would apply the principles of learned helplessness to the therapeutic treatment of the elderly might incorporate the following steps: (a) identify external, depressed, and/or helpless individuals; (b)
identify some aversive events which are potentially controllable by the group of elderly individuals; (c) present the aversive stimuli and allow the individuals to experience controllability for a number of trials; and (d) measure pre and post changes in psychological and physical variables, such as locus of control, morale, activity, life satisfaction, changes in medication, blood pressure, and visits to the physician.

A final comment with regard to therapeutic programs

It is generally assumed that excessive dependence and helplessness are negative characteristics for adults. Some elderly individuals are, unfortunately but realistically, very helpless and dependent upon others. Therapy for these individuals might be directed toward helping them accept their need for dependence and find pleasure in receptive ways. Sources of pleasure for these elderly individuals might include such things as whirlpool baths, massages, aesthetic pleasures, and ego related happiness, i.e., being valued as persons for their wisdom, age, experience, or simply because they exist.

The results of the present study appear to have practical and clinical implications for the treatment of the elderly. The locus of control construct and theory
of learned helplessness appear highly germane to a study of the aged. Programs of psychological development or therapeutic treatment for learned helplessness have rarely been studied in the elderly. It would appear that this area of research merits further investigation.
## Appendix A

### Table 7

Background Data

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<tr>
<td>Apt.</td>
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<th>Mean</th>
<th>Median</th>
<th>Mode</th>
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<td>68.73</td>
<td>67.31</td>
<td>65</td>
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<tr>
<td>Children</td>
<td>0-11</td>
<td>2.04</td>
<td>1.60</td>
<td>11</td>
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<tr>
<td>Grandchildren</td>
<td>0-47</td>
<td>5.02</td>
<td>2.92</td>
<td>0</td>
</tr>
<tr>
<td>Education (Years)</td>
<td>5-17</td>
<td>9.97</td>
<td>10.40</td>
<td>12</td>
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<td>Income* (Monthly)</td>
<td>$108-2500</td>
<td>$484.</td>
<td>$369</td>
<td>$220</td>
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</table>

*14 Ss not responding
Appendix B

Figure 3

Background Data Questionnaire

Subject Number:___________

Name:__________________________________________

Age:______________________________

I am a: ___Man ___Woman

Marital Status: ___Married ___Widowed ___Divorced ___Single

Number of Children:___________

Number of Grandchildren:________

Where do you live?

___My own home
    ___Apartment dwelling
    ___With my children or relatives
    ___Home for Senior Citizens
    ___Other (Please explain)

What is the last grade of school you finished?___________

What is your occupation now?__________________________________________

If retired, what was your occupation before retirement?

_____________________________________________________________________

If retired, how old were you when you retired?___________

What is your present monthly income(approximate)?___________

Do you receive social security?_________________________________________

Do you feel that your present monthly income is adequate?

_____________________________________________________________________

How is your health at the present time?

___GOOD
    ___FAIR
    ___POOR
    ___VERY POOR
Appendix C

Figure 4

Geriatric Activity Scale

Although the number of senior citizens in the United States is increasing rapidly, we do not know much about what kinds of activities they enjoy, the kind of work they do, or how they spend their time. One good way to obtain information about the activities of older individuals is to ask them. This scale is designed to measure your individual activities. Please read each question and write the number of hours that you spend in the activity in the blank provided. Then check one time period indicating whether you engage in the activity on a daily, weekly, monthly, or yearly basis.

Productive Activity

How many hours do you typically spend:

1. Working at a job for which you receive wages? Hours per Day Week Month Year

2. Doing volunteer work for clubs, organizations, or churches? Hours per Day Week Month Year

3. Helping relatives or friends by babysitting, doing housework, yardwork, or other work? Hours per Day Week Month Year

4. Cleaning, cooking, & doing other housework? Hours per Day Week Month Year

5. Working in the yard or garden? Hours per Day Week Month Year

6. Making home repairs, such as painting, carpentry, or refurnishing? Hours per Day Week Month Year

7. Shopping for groceries, household items, clothes or other necessities? Hours per Day Week Month Year
Appendix C—Continued

Figure 4 Continued

8. Washing, drying, and ironing clothes?

9. Sewing, mending, knitting, or crocheting?

10. Working at other jobs? Please name the jobs.

<table>
<thead>
<tr>
<th>Social Activity</th>
<th>Hours per Day</th>
<th>Week</th>
<th>Month</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attending club meetings, civic, or social organizations?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attending religious services or church meetings?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attending lectures, concerts, or movies?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attending parties or entertaining?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attending sports events such as baseball or football games?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visiting with children or other relatives?</td>
<td></td>
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</table>
Appendix C—Continued

Figure 4 Continued

<p>| | | | | |</p>
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<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Reading?</td>
<td>Hours per Day Week Month Year</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Watching television or listening to the radio?</td>
<td>Hours per Day Week Month Year</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Walking, jogging, or running for exercise?</td>
<td>Hours per Day Week Month Year</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Playing golf, tennis, swimming, bicycle riding, or other active sports?</td>
<td>Hours per Day Week Month Year</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Fishing, hunting, bird watching, or nature study?</td>
<td>Hours per Day Week Month Year</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. In other hobbies or leisure time activities? Please name the activities.</td>
<td>Hours per Day Week Month Year</td>
<td></td>
<td></td>
<td></td>
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</table>
Appendix D  
Recruiting Volunteers —  
A Personal Narrative  

The present research project contained 100 elderly volunteers, which were recruited during the one-year period when I was completing a doctoral internship. Since I was residing in a city and state unfamiliar to me, I felt that the task of obtaining elderly participants would be especially difficult. I began by asking what organizations and services were available for the elderly. I talked with psychologists, counselors, ministers, and other professionals at the university where I worked. Several individuals referred me to churches which had special groups for the elderly. I called the Chamber of Commerce and was referred to the director of the Meals on Wheels program. I then discovered two mental health referral agencies which had lists of a number of services and organizations for the aged. Gradually, I compiled a list of approximately 20 organizations which had substantial numbers of aged members.

Whenever I made contacts or asked for referrals, I attempted to (a) identify myself as being affiliated with the university, which was the hub of a city of approximately 150,000 people; (b) express an interest and concern for the
Appendix D Continued

elderly; and (c) convey an optimistic excitement about my research project. When I was given a referral by a minister, counselor, or other individual, I asked for permission to use his/her name when contacting the agency. In addition, I always asked for the name and position of the president, chairman, or other officer of the elderly organization.

Typically, I telephoned an officer of a civic, social, or religious club for the elderly and told her/him who had referred me. I identified myself as a doctoral student affiliated with the university and stressed that I was very much interested in the elderly and the processes of aging. I noted the paucity of research with the elderly and expressed my hope that future research would improve the quality of life for the aged. I attempted to convey optimism and enthusiasm about my research project, while at the same time avoiding a detailed explanation of the nature or purpose of the study. I asked for permission to attend a regularly scheduled meeting and to recruit volunteers from the membership, stressing that I would need only 5 or 10 minutes to explain the nature of my study and ask for volunteers.

When I was invited to attend a regular meeting in order to recruit volunteers, I would arrive 15 or 20 minutes early and socialize with some of the members, explaining only that
I was a visitor. In addition, I would join in the meal, singing, craft, or other activities. I would introduce my request for volunteers in the following way:

I am a doctoral student in psychology, currently employed at University. I am very much interested in helping elderly individuals to have happier, more meaningful lives. More than 10% of our population is now 65 years of age or older and at the same time fewer children are being born each year. In the United States, we can expect that the percentage of individuals over 65 will continue to increase for the next several years. Most research has been conducted with children or college students and we don't know much about elderly individuals. I would like to know more about you--your activities; your opinions, attitudes, interests; your feelings and moods. While my study will probably not benefit you directly, it is my hope that research of this nature will help your children and grandchildren to be happier in their later years.

Following the above introduction, I would ask if there were any questions. Frequently, I would be asked to explain the nature of my study and the time required. I explained the purpose of my study in very general terms, talking about such things as interests, opinions, and activities. Sometimes it was necessary to reassure members that I was not selling anything and that I wanted only their time, not their money. I always gave my name, professional address, and phone numbers at the university where individuals could call and obtain information about my professional and ethical qualifications. In addition, I explained procedures for maintaining confidentiality and anonymity. While I was frank in stating
that I was asking for a relatively large block of their time, I also emphasized that I would be happy to schedule the testing time at their convenience. Once or twice, an elderly individual spoke to the group on my behalf and I felt that this approach was very helpful. If I were conducting future research of this nature, I would attempt to obtain an elderly research assistant to help recruit volunteers.

After time for questions and discussion, I would ask how many people would be willing to stay after the next regularly scheduled meeting and participate in the first phase of my study. I then obtained the name, address, and phone number of all volunteers and expressed my appreciation for their help.
Appendix E

Figure 5

Nonsequenced Anagram Test

Some anagrams are listed below. Anagrams are words with the letters scrambled. The problem is for you to unscramble the letters so that they form a word. Look at each anagram and rearrange the letters so that they will form a word.

RAYT
TOAB
DRAC
BOKO
STUI
PHMNY
IROFU
OBCAR
SPUEA
IGLEA
Appendix E—Continued

Figure 6

Sequenced Anagram Task¹

BLOEN  ARUDG
ULATF  NCAYF
RNUTB  NSEED
RSUTB  TCAHH
BOARD  AVRYG
DGEJ  VEERF
DENXI  ECLTE
NAALC  NDAYH
EMNYE  ASREE
NDAYD  BIATH

¹Each anagram was placed individually on 5 x 8 inch (.127 x .203 m) white index cards and composed of 1/2 inch (.01 m) Gothic letters spaced 1/2 inch (.01 m) apart.
### Table 8
Analysis of Variance
Pre-experimental Anagram Test

<table>
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<th>Source</th>
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<th>MS</th>
<th>F</th>
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<tbody>
<tr>
<td>Between</td>
<td>5</td>
<td>.187</td>
<td>.234</td>
</tr>
<tr>
<td>Within</td>
<td>54</td>
<td>.796</td>
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### Table 9
Analysis of Variance
Locus of Control—External Groups

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<tr>
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<th>F</th>
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</thead>
<tbody>
<tr>
<td>Between</td>
<td>2</td>
<td>473.20</td>
<td>4.34*</td>
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<tr>
<td>Within</td>
<td>27</td>
<td>109.12</td>
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</table>

*P < .05

### Table 10
Analysis of Variance
Locus of Control—Internal Groups

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<th>F</th>
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<td>Between</td>
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<td>.258</td>
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<td>Within</td>
<td>27</td>
<td>138.54</td>
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Appendix G

Table 11

Analysis of Variance
Mean Trials to Criterion

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<td>A (treatments)</td>
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<td>159.62</td>
<td>14.06*</td>
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<tr>
<td>B (groups)</td>
<td>1</td>
<td>93.75</td>
<td>8.26</td>
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<tr>
<td>AB (interaction)</td>
<td>2</td>
<td>5.15</td>
<td>.45</td>
</tr>
<tr>
<td>Within</td>
<td>54</td>
<td>11.35</td>
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*p < .001

Table 12

Analysis of Variance
Mean Number of Failures

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<td>A (treatments)</td>
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<td>16.62</td>
<td>5.18*</td>
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<tr>
<td>B (groups)</td>
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<td>30.82</td>
<td>9.61**</td>
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<tr>
<td>AB (interaction)</td>
<td>2</td>
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<td>1.10</td>
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<tr>
<td>Within</td>
<td>54</td>
<td>3.21</td>
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*p < .005
**p < .001
### Appendix H

#### Table 13
**Analysis of Variance**
**Mean Response Latency**

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<td>A (treatments)</td>
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<td>50.89</td>
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<td>AB (interaction)</td>
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<td>94.03</td>
<td>.81</td>
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<td>Within</td>
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<td>116.47</td>
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#### Table 14
**Analysis of Variance**
**Trials to Criterion**
**Internal Groups**

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<td>Between</td>
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<td>100.65</td>
<td>7.43*</td>
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<td>Within</td>
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<td>13.54</td>
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*P < .01
### Appendix I

#### Table 15

**Analysis of Variance**  
Number of Failures  
Internal Groups

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<td>4.25*</td>
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<td>Within</td>
<td>27</td>
<td>.73</td>
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*p < .05*

#### Table 16

**Analysis of Variance**  
Mean Response Latency  
Internal Groups

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<td>Within</td>
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Appendix J

Table 17
Analysis of Covariance
Trials to Criterion
External Groups

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<td>Within (adj.)</td>
<td>26</td>
<td>9.08</td>
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*p < .05

Adjusted Means
Trials to Criterion
External Groups

<table>
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<th>Insoluble</th>
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<td>18.08</td>
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Appendix J—Continued

Table 18
Analysis of Covariance
Number of Failures
External Groups

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<td>Between (adj.)</td>
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<td>19.97</td>
<td>3.52*</td>
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<td>Within (adj.)</td>
<td>26</td>
<td>5.67</td>
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*p < .05

Adjusted Means
Number of Failures
External Groups

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<td>1.05</td>
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### Table 19

Analysis of Covariance
Mean Response Latency
External Groups

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### Adjusted Means
Mean Response Latency
External Groups

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Appendix K

Table 20
Means and Standard Deviations by Sex and Treatment Condition for the Locus of Control Measure

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<th>Condition</th>
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<th><strong>Internals</strong></th>
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<tr>
<td></td>
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<td>Sd</td>
<td></td>
<td>Mean</td>
<td>Sd</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Mean</td>
<td>Male</td>
<td>Female</td>
<td>Mean</td>
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<tr>
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<td>64.5</td>
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<td>9.90</td>
<td>116.0</td>
<td>116.0</td>
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<tr>
<td>Soluble</td>
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<td>53.4</td>
<td>11.31</td>
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<td>104.3</td>
<td>117.4</td>
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<tr>
<td>Insoluble</td>
<td>67.0</td>
<td>71.8</td>
<td>12.72</td>
<td>10.23</td>
<td>106.0</td>
<td>114.6</td>
</tr>
</tbody>
</table>

*Each external treatment condition contained 2 males & 8 females.
**Each internal treatment condition contained 3 males & 7 females, except for the insoluble group, which contained 2 males & 8 females.
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