THE RELATIONSHIP OF DAILY ACTIVITY PATTERNS AND RETIREMENT SATISFACTION: A BEHAVIORAL ECOLOGICAL INVESTIGATION

by

Steven B. Lovett

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APPROVED:

R. A. Winett, Chairman

R. Bieszner

H. von Gilmer

T. H. Ollendick

A. H. Schulman

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Blacksburg, Virginia

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INTRODUCTION

Occupational retirement is a major life change experienced by an ever increasing number of Americans. In 1900 only one-third of the men 65 years of age or older were not employed (Back, 1977). By 1974, 63% of all individuals 65 years of age or older classified themselves as retired (Harris, 1975), and it has been projected that this figure will reach 75.9% by 1990 (Clark, 1980). Surprisingly, few psychologists have attempted to study the effects of this major life change on the individual. Researchers in other disciplines have tried to delineate the factors associated with life satisfaction following retirement, but both their empirical findings and theoretical formulations have been extremely broad and nonspecific. There is a great need for theories and research methodologies which can incorporate individual differences into the study of adjustment to retirement.

A major goal of the present study was to propose such a theory and test several hypotheses derived from it. Specifically, a Behavioral Model of Retirement Satisfaction was developed and its predictions about the relationship between activity and retirement satisfaction were tested against predictions drawn from the more traditional Activity Theory of Aging (Lemon, Bengtson, & Petersen, 1972).

A second goal of the present study was to provide preliminary evidence that it is feasible and useful to approach the study of retirement from an ecological perspective. Recently, psychologists have begun to discuss the importance of investigating not only specific behaviors of individuals but the settings in which they occur (Wahler, Berland, Coe, & Leske, 1981) and their interactive effects on other social systems (Bronfenbrenner, 1977). The data collected in the present study were used to provide descriptive information about the settings in which the participants' activities took place. Additionally, the relationship between activities occurring in different settings and ratings of daily mood were examined. The above information was used to suggest hypotheses for future study.

The following literature review is comprised of five sections. The first section describes the ecological systems model used to organize both the information presented in the literature review and the data collected in the present study. The rational for utilizing an ecological approach in the study of retirement is also presented. The second section includes a selective overview of the current retirement literature. The third section is comprised of a specific review of the theories and empirical investigations of the relationship between daily activity patterns and retirement satisfaction. The proposed Behavioral Model of

Retirement Satisfaction is presented in the fourth section. The benefits of studying the relationship between activity and retirement satisfaction from an ecological perspective is also discussed. The final section will present the specific goals of the present study.

REVIEW OF THE LITERATURE

The Ecological Approach to Research and the Study of Retirement

Recently, a number of researchers have argued that an ecological approach to the study of human behavior may be more useful than the traditional, reductionistic experimental approach (Bronfenbrenner, 1977; Wahler, et al., 1981). The ecological approach is based on the assumption that any specific behavior is part of an interrelated system of environmental and intrapersonal factors. The behavior can be understood only within the context of the system in which it naturally occurs. Traditional experimental designs performed under controlled, laboratory conditions provide very limited information about the system in which the behavior under study typically occurs. Consequently, the findings of such experiments may have limited external validity (Campbell & Stanley, 1963).

The utility of adopting an ecological perspective has recently been demonstrated by Wahler and his colleagues (Wahler, 1980; Wahler & Fox, 1980). They evaluated the efficacy of a behaviorally-based program for teaching mothers specific techniques to reduce the frequency of their children's oppositional behavior. As predicted, mothers learned to reduce the frequency of their children's oppositional behavior both during the training sessions and at home. It

was also predicted that the mothers' use of the newly learned techniques would continue to be reinforced by their children's decreased oppositional behavior even when the training period ended. Contrary to predictions, however, many of the mothers had stopped using the techniques at follow-up. Correlational data revealed that failure to use the techniques was associated with high frequencies of aversive interchanges between the mothers and relatives or agents of the community. If the investigators had confined their data collection to variables reflecting only the relationship between the mothers and their children, no explanation for the lack of maintenance at follow-up would have been available. The inclusion of variables relevant to the mothers' social systems generated data leading to the development of the "insular mother hypothesis" which has produced a new line of research (Wahler & Dumas, Note 3).

The ecological approach has recently been proposed as a useful model for developmental psychology (Bronfenbrenner, 1977), public health and criminal behavior (Catalano, 1979), and applied behavior analysis (Wahler et al., 1981; Wilhems, 1974). It also appears to be an excellent approach to the study of retirement for reasons described below.

The retirement literature reflects a great diversity in the way investigators have conceptualized the phenomenon of retirement. The focus of behavioral scientists has been on

retirement as a life change experience and they have attempted to delineate factors predicting successful and unsuccessful adjustment (e.g., Atchley, 1976; Barfield & Morgan, 1972). Other investigators have conceptualized retirement as a social institution and have attempted to delineate its effects on the nation's work force and the economy (e.g., Clark, 1980). An unresolved issue in this line of research is the determination of criteria to identify retirees. Diverse indicants, such as age, hours per week of paid employment, eligibility for drawing pension benefits,and self-report of retirement status have been used (George, 1980).

The multitude of ways in which retirement has been conceptualized and the differences between studies in the criteria for identifying retirees has produced a diverse literature which is difficult to integrate. A comprehensive picture of retirement, however, requires that the multifaceted nature of the phenomenon be addressed. Bronfenbrenner's (1977) ecological systems model provides a conceptual framework for describing retirement that meets this requirement.

Bronfenbrenner's model is comprised of five systems. The systems are arranged hierarchically. Each system is nested within all the other systems which fall above it in the hierarchy. A description of each system is provided

below with an example of the type of retirement research that exemplifies the system.

The ontogenetic system is a complex of relations between intraperson variables such as intelligence, personality variables, and coping styles. A number of researchers have attempted to define personality patterns (Reichard, Livson, & Petersen, 1962) and coping styles (Snow & Havighurst, 1977) that are associated with successful and unsuccessful adjustment to retirement.

A microsystem is a complex of relations between a person and the immediate setting containing the person. A setting is defined as a particular place in which a person engages in particular behaviors with particular people for particular periods of time. Microsystems common to many retirees include their relationship with their spouse, their role as a provider of volunteer services, and their role as a member of a church, to name just a few.

A mesosystem is a complex of relations among the various microsystems in which a person operates. Most studies of retirement satisfaction represent mesosystem investigations. They utilize variables associated with various microsystems (e.g., community activities, organizational activities, social activities) to predict overall life satisfaction.

An exosystem is an extension of the mesosystem. It includes specific social institutions that indirectly affect individuals. For retirees, the exosystem includes such things as the Social Security System, Medicare program and pension funds.

A macrosystem refers to "the institutional patterns of the culture or subculture, such as the economic, social, educational, legal and political systems of which micro-, meso, and exosystems are the concrete manifestations" (Bronfenbrenner, 1977, p. 2). The two characteristics of the macrosystem which have received the most attention in the retirement literature are the negative attitudes towards aging and the aged in the U.S. (Butler, 1969) and the economic implications of the country's growing population of retirees (Clark, 1980).

The following section provides a selective overview of the retirement literature. It is organized around the five systems described above. The use of the ecological framework will help create a cohesive picture of the phenomenon from the seeming disorder of the existing literature.

Overview of the Retirement Literature

The Ontogenetic System and Retirement Adjustment

The ontogenic system is comprised of relationships between intraperson variables typically thought to reflect an individual's personality and coping style. It seems

reasonable to assume that each person brings to retirement a particular set of needs to be met and characteristic styles of behavior for meeting those needs. Different personality types and coping styles may be associated with different levels of adjustment to retirement. Few empirical investigations of this hypothesis have been conducted, possibly because of the large expenditure in time and effort required of both the investigator and participants to collect personality data. The studies which have been reported are summarized below.

Gutmann (1972) proposed an ego-analytic typology of retirees based on the content analyses of responses to the Thematic Apperception Test of 145 males, aged 40-70 years, living in the Kansas City area. His typology included three major categories of coping responses which he labelled active mastery, passive mastery, and magical mastery.

Individuals demonstrating active mastery tended to be competitive, goal oriented, and self-reliant. Their work provided the major opportunity to satisfy their need for achievement. Retirement was expected to be dissatisfying since it would probably not provide similar opportunities.

Persons classified as demonstrating passive mastery also had a strong need to be in control of their environment. They differed from active mastery individuals in that they doubted their ability to achieve any but the most

limited personal goals. Consequently, they rigidly restricted their activities to specific areas in which they felt competent. Work was usually perceived as aversive because of its potential for highlighting one's inadequacies. Retirement, therefore, was expected to be a positive experience for these individuals.

Magical mastery was a term used to describe those individuals who demonstrated little ability to delay gratification of their needs and evidenced little skill in actually satisfying those needs. These individuals tended to behave as if their needs would be met without the expenditure of any effort on their part. Magical mastery individuals tended to report that their entire life had been dissatisfying and it was expected that retirement would be the same. No other researchers have attempted to use Gutmann's typology. Its validity and utility remain uninvestigated.

Reichard, Livson, and Petersen (1962) identified three personality types among well adjusted retirees and two personality types among poorly adjusted retirees. The personality types were derived from cluster analyses of interview and psychological test data obtained from 70 white males, aged 55 to 84, living in the San Francisco area. The three personality types identified among retirees rated as well adjusted were labeled the mature type, the rocking chair type, and the armored type.

The mature men were described as relatively free of psychological conflicts, satisfied with their past life and current activities and accepting of old age. The rocking chair men were less active than the mature men but enjoyed the freedom from responsibility and obligations provided by retirement. The armored men were the most active. They appeared to use activity as a way of defending against their dread of old age and its associated physical decline.

The two personality types associated with ratings of poor adjustment to retirement were labeled the angry type and the self-haters type. The angry men were dissatisfied with their past lives and tended to blame other people for their problems. They were not able to reconcile the approach of old age. The self-haters differed from the angry men primarily in their tendency to blame themselves for past failures. Self-haters frequently became depressed as they grew older.

The personality types identified by Reichard et al. (1962) have not been validated by other researchers. Their validity remains unverified although their intuitive appeal has made them useful conceptual aids for authors of popular books about retirement (e.g., Uris, 1979) as well as other researchers (Kimmel, Price, & Walker, 1980).

Descriptive categories of retirees have also been based on types of activities in which subjects were engaged.

Kimmel et al. (1980) used questionnaire data from 1511 retirees to define four retirement "life styles". "Reorganizers" reported that they were keeping busy by substituting volunteer activities for paid employment. "Maintainers" continued to work for pay in some capacity and felt sufficiently busy without doing volunteer work. "Rocking chair" persons reported that they "kept busy" but neither worked for pay or volunteered. "Dissatisfied" persons reported that their time was not sufficiently occupied. They reported no paid employment or volunteer service. Multiple regression analysis revealed that life style was a significant predictor of overall retirement satisfaction even when health status, income, occupation, educational level and preretirement attitude towards retirement were included in the analysis.

Snow and Havighurst (1977) identified two approaches to retirement among a group of 110 retired university administrators. The "transformers" replaced professional activities with nonprofessional pursuits such as hobbies and travel. The "Maintainers" continued to spend most of their time in professional activities. Both groups reported high levels of retirement satisfaction.

Two studies have included measures of personality function along with demographic and activity variables as predictors of adjustment to retirement. George (1978)

presented panel data collected from 380 males and females on four occasions over an 8 year period. There were no group differences over time on a measure of well-being or an activity index. A multiple regression analysis revealed that, at the time of the last data collection, well-being was related to good personal adjustment as measured by the 16 PF test but not to level of activity.

Leon, Kamp, Gillum, & Gillum (1981) found that MMPI scores obtained 30 years earlier were better predictors of current MMPI profiles of 96 subjects than were the number of recent stressful life events experienced or the interaction between previous MMPI scores and stressful events.

In summary, few studies have been reported which focus on the effects of ontogenic system variables such as personality and coping style on adjustment to retirement. The findings from the available studies suggest that such a focus can yield useful information about individuals' adjustment to retirement. The findings must be regarded as tentative, however, since the identification of specific personality styles from a set of data is highly inferential, even with the aid of multivariate statistical techniques such as cluster analysis. The available data provide at least one useful and reliable piece of information. Retirees are not all alike; individuals can achieve

equivalent levels of retirement satisfaction through dramatically different patterns of behaviors.

Microsystems Affected by Retirement

A microsystem is a complex of relations between a person and the environment in an immediate setting containing that person. There are a number of microsystems which might be affected by retirement. The relationship between the retiree and his or her spouse might be enhanced or disrupted by the additional time the couple can spend together. Some retirees become actively involved in volunteer work, thus creating a new microsystem (Harris, 1975). Part-time employment is becoming more frequent among retired individuals. The microsystem of work is modified, rather than eliminated, for such individuals (Quinn, 1981). Unfortunately, there have been almost no published investigations which focus exclusively on specific microsystems such as the ones described above. Typically, such microsystems are represented by only one variable (e.g., marital status, hours of volunteer service per week) in studies investigating factors related to retirement satisfaction. There is a great need for studies investigating the effects of retirement on various microsystems.

Mesosystem Influences on
Retirement Satisfaction

A mesosystem is a complex of relations between an

individual's microsystems. The vast majority of studies concerned with the effects of retirement on the individual can be described as investigations of the mesosystem common to retirees. These studies have attempted to identify relationships between measures of retirement satisfaction and a variety of demographic variables, attitudinal data, employment information and daily activity data. Typically, questionnaires or interviews have been used to collect the needed data and some form of correlational analysis employed to test the hypothesized relationships among the variables. More recent studies have used multivariate techniques to control for intercorrelations among sets of variables. Rather than reviewing each study individually, a summary of the findings for the major variables investigated is presented below. The term retirement satisfaction will be used to refer to postretirement morale, well-being and life satisfaction. Although the three constructs do have theoretical differences, the actual measures are interecorrelated (Lohmann, 1977) and seem to reflect a sense of subjective well-being (Larson, 1978). The relationship between postretirement activity and retirement satisfaction is excluded from the following review. It is reviewed in detail in a subsequent section of the present paper.

Age, retirement and retirement satisfaction. It has been well established that retirement per se does not

result in a significant decrease in life satisfaction for most people. Chatfield (1977) reported that mean scores on the Life Satisfaction Index-Z were equivalent for 102 employed and 463 retired individuals. There were no significant differences in mean well-being scores of a group of 380 male and female subjects tested every 2 years over an 8 year period (George, 1978; Maddox, 1963). Two reviews of studies investigating life satisfaction in the elderly concluded that there was no evidence of a relationship between age and life satisfaction that could not be accounted for by other factors (Herzog & Rodger, 1981; Larson, 1978).

Health, income and retirement satisfaction. The most consistent predictors of retirement satisfaction reported in the literature are high levels of self-reported health and yearly income. Only a few studies have failed to demonstrate these relationships. Two path analytic studies testing causal models of life satisfaction among the elderly have provided evidence that the relationship between income and life satisfaction is the result of decreases in activity caused by income limitations (Markides & Martin, 1979; Medley, 1976). The finding is an important one which deserves further investigation.

Although the positive relationship between life satisfaction and health has been well substantiated, early claims that retirement per se was related to an increase in

mortality rates (Myers, 1954) have not. Streib and Schneider (1971) followed 4032 individuals into retirement and found higher than average mortality rates only among those who retired because of poor health. Haynes, McMichael and Tyroler (1978) reported the same finding for a group of 3971 retired rubber workers followed from 1964 to 1973.

Preretirement attitude toward retirement. There are a number of studies which have investigated factors affecting individuals' preretirement attitude towards retirement (e.g., Fillenbaum, 1971; Glamser, 1976; Goudy, Powers, & Keith, 1975). Few studies, however, have investigated the relationship between preretirement attitude and retirement satisfaction. Heidbreder (1972) reported that the majority of a group of early retirees who expressed positive preretirement attitudes were also among the group rated as the best adjusted. Similarly, Thompson, Streib, and Kosa (1960) found that a positive preretirement attitude was associated with later ratings of retirement satisfaction. No studies have controlled for the possible relationship between preretirement attitude and retirement income and health status. It may be that an unfavorable attitude simply reflects a realistic appraisal of the difficulties to be encountered following retirement.

Occupational prestige. Occupational prestige refers to the relative status accorded to individuals who are working

at specific jobs. Two studies have found higher levels of life satisfaction among individuals in higher status professions (George & Maddox, 1977; Simpson, Back, & McKinney, 1966). George and Maddox (1977) found that morale scores increased the longer a high prestige individual had been retired and decreased over time for low prestige individuals. Neither of these studies controlled for the effect of post-retirement income, a variable highly related to occupational prestige.

Marital status. Being married has frequently been found to be positively associated with life satisfaction in the elderly (Larson, 1978). Only one study has clearly demonstrated the same finding for retirees (George & Maddox, 1977). Frequently, only a small percentage of the sample in retirement studies are not married making it difficult to detect any unique effect of marital status on life satisfaction. It should be noted that a survey of a nationally representative sample of 1000 70-year olds suggested that the presence of a spouse may help buffer the effects of poor health and low income (Flanagan, 1982). Such interactive effects between marital status, health, and income have not been statistically investigated in previously reported studies.

Voluntary and involuntary retirement and job deprivation. There has been no convincing evidence that higher

levels of postretirement life satisfaction are associated with voluntary versus forced retirement (George, 1980). Several studies have found that retirees who feel most deprived of their job provide the lowest ratings of retirement satisfaction (Hoyt, 1975; Streib & Schneider, 1971), but only one study has controlled for the effects of income and health (George & Maddox, 1977). In general, however, relatively few individuals report high levels of job deprivation following retirement even if they were satisfied with their work (Goudy, Powers, & Keith, 1975).

Education. Years of formal education have been found to be positively related to postretirement life satisfaction (Barfield & Morgan, 1974; Harris, 1975) even when income level is controlled (Fox, 1977). Other studies have found no effect for years of education when the effects of income on postretirement life satisfaction are controlled (Heidbreder, 1972; Palmore, Cleveland, Nowlin, Ramm, & Siegler, 1979). At present, it is unclear if educational experience has a unique effect on retirement satisfaction.

Place of residence. Two studies have provided descriptive data suggesting that postretirement life satisfaction is greater for individuals living in retirement communities (Bultena & Wood, 1969) or in households containing only two members (Sheldon, 1975). Chatfield (1977), however, found no relationship between postretirement life satisfaction

and the number of people in the household when the effects of income were controlled.

Summary and conclusions. The studies reviewed above provide a picture of the mesosystemic factors influencing retirement satisfaction. The only consistent and well substantiated findings were the positive relationships between measures of retirement satisfaction and self-reported health status and income. Other relationships between retirement satisfaction and years of education, place of residence, job deprivation, occupational prestige and preretirement attitude towards retirement were reported in some studies but have not been verified by other researchers.

The studies reviewed above suffer from a number of methodological limitations. Typically, only the measures used to assess retirement satisfaction (i.e., morale, well-being and life satisfaction scales) have been demonstrated to have adequate reliability. Most investigators who employed attitudinal measures developed their own and did not attempt to establish their psychometric properties. Additionally, the use of large groups precluded the gathering of detailed information about the factors assessed. The potential for misinterpreting observed relationships due to inadequate information is exemplified by the finding that the relationship between income and retirement satisfaction may be a function of the decline in activities which results

from financial limitations. As mentioned above, the relationship between retirement satisfaction and activity will be reviewed in a subsequent section.

Macro- and Exosystem Facets of Retirement

The macrosystem facets of retirement include a variety of legal/political, social and economic forces of society. Retirement, for many people, is not a voluntary withdrawal from the work force. It is a legally mandated event. Mandatory retirement exists, in part, because of prevailing negative stereotypes about older people. These stereotypes depict older persons as less efficient workers than younger individuals. Consequently, the profit oriented business world has perceived mandatory retirement as a means of ridding the workforce of inefficient labor that reduces overall profit (Graebner, 1980). Retirement serves several other economic functions. In insures a steady turnover of personnel in high status jobs thus providing additional incentive for younger workers to maintain high levels of productivity (Clark, 1980). Additionally, the monies contributed to pension plans and other retirement funds provide large pools of cash for capital investment in business. Of course, providing for the needs of retirees is an economic cost, one that has been increasing rapidly over the last several decades.

The macrosystem facets of retirement mentioned above have produced an exosystem composed of numerous social institutions which directly or indirectly affect the lives of all retirees. Large government agencies such as the Social Security Administration, Medicare program, and the many services provided through the Office of the Aging were formed to insure that the needs of the nonworking elderly were met. Private business and industry has created a market for special goods and services among the elderly (Estes, 1979). The specialized goods include everything from books on retirement (e.g., Uris, 1979) to planned communities for retirees (e.g., Sun City, Arizona). Social forces have created a number of national organizations devoted to the support and promotion of the retirement lifestyle (e.g., American Association of Retired Persons, Retired Teachers of America). More recently, organizations such as the Gray Panthers have formed to insure that older Americans are not excluded from the political power structure.

It has been suggested that the macro- and exosystemic effects of retirement are the forces primarily responsible for the original development and continued existence of retirement in our society (Estes, 1979; Graebner, 1980). A brief review of the history of retirement will best illustrate the impact of these forces on retirement.

History of retirement. Retirement is a relatively recent development in America. At the turn of the century, few people stopped working simply because they reached the age of 65. In 1890, approximately 73% of males over the age of 65 were employed (Achenbaum, 1974). As recently as 1940, it was common for men 65 or older to still be members of the workforce. Approximately 45% of all males of that age were working (Lewis, 1980). During the last several decades, however, the number of retirees has risen dramatically. In 1977, only 20% of those 65 or older were in the work force (Lewis, 1980).

The early development of retirement seems to have been a function of two factors: increasingly negative social attitudes toward the aged and the advent of industrialization (Graebner, 1980). The rapid growth of retirement in the United States following World War II appears to be the result of the development of acceptable methods of insuring that the basic needs of retirees will be met. These methods included the rapidly growing Social Security system and company-based retirement plans (Graebner, 1980). The effect of each of the above factors on the development and spread of retirement is discussed below.

Changing attitudes toward the aged. Achenbaum (1974) has presented an analysis of changing societal attitudes toward the aged during the period of 1865 to 1914. His

analysis is based on the changing picture of the elderly presented in historical writings from that period. Immediately following the Civil War, writers tended to present a romanticized view of older persons. They were typically described as venerable in appearance and sober of manner. They were praised for their wisdom, benevolence and stable character. Older people were seen as having an important role in the family in providing care for the youngsters and counsel for the parents. The mere fact that a person had survived long enough to become "old" was perceived to be an indication of his or her special strength.

Writers of the 1880's began to depict a less positive, if more realistic, picture of aging. The problems of declining mental ability and disease were discussed. The elderly were noted to demonstrate eccentric behaviors. By 1914, printed descriptions of the elderly tended to be as negative as the post Civil War depictions were positive. Older people were described as ugly and sickly, forgetful, opinionated, anxious, morose, ill-mannered, and alienated from society.

Achenbaum proposes several explanations for the dramatic increase in negative attitudes toward the aged. First, the proportion of aged in the general population had grown from 2.9% in 1865 to 4.67% in 1914. The problems of aging became more visible. In addition, medical researchers had

begun to study the aging process and publish their findings concerning the physiological declines associated with aging. Most importantly, society was becoming infatuated with the potential of the nation's youth. A youth culture was forming and it allowed no positive attributes to be associated with aging. These negative societal attitudes toward aging had a strong impact on businessmen. They were experiencing labor problems as a result of increasing industrialization, and it appeared to them that the older worker was at the center of the problem (Graebner, 1980).

Industrialization. Graebner (1980) has described in detail the effects of industrialization on the development of mandatory retirement in the United States. During the last half of the nineteenth century, the United States transformed itself from an agrarian society whose material needs were provided by craftsmen to an industrialized nation whose needs were increasingly met by factory workers. New technology was making many industries more productive and, therefore, potentially much more profitable. The new technology, however, required a new type of worker, a machine operator rather than a craftsman. Managers found that many older craftsmen did not want to learn the skills needed to operate the new machines. They also observed that older workers found it difficult to work for prolonged periods at the fast rate set by the machines. Overall, it seemed that

employing and training younger workers resulted in greater productivity at a lower cost than trying to retrain older workers. The view that older workers were generally less productive than younger workers was consistent with society's positive attitude toward youth and negative attitudes toward the aged. The impersonal relationship between workers and managers in large companies coupled with the increasing emphasis on management strategies designed to maximize profit encouraged businessmen to search for ways of removing older workers from the labor force. The major obstacle preventing the business community from establishing procedures to remove large numbers of older workers from the labor force was the lack of an effective method of insuring that their basic survival needs would be met. Failing to do so would dishearten the younger workers and result in decreases in productivity. The obstacle was gradually surmounted by the development of public and private pension systems.

Financial support of the retired (Graebner, 1980). Today the most common sources of financial support for retired persons and their dependents are a combination of public funds (i.e., Social Security, Medicare) and private pension plans. The growth of these sources of support has paralleled the exponential increase in the number of retirees during the current century.

The first public pension system was instituted in Germany under Bismark in 1889. Bismark was apparently the first person to use the age of 65 as a criteria for retirement. He is said to have picked that age because it corresponded with the proportion of Germany's population which he felt the country's economy could afford to support. The first public pension plan in the United States was established in Arizona in 1914. It was soon struck down as unconstitutional. Although other states attempted to establish public pensions, it was not until the passage of the Social Security Act in 1935 that a significant number of Americans began to receive public support following retirement. Many leaders were distressed by the socialistic implications of the Social Security Act, but the depression had convinced a majority of the people that only the government could effectively buffer individuals from the vagaries of the country's economic forces. Since the advent of Social Security, numerous other federal programs designed to provide for the needs of older Americans have arisen.

The first private pension plan instituted in the United States was established in 1875 by the American Express Company. Private plans developed slowly until 1910. Between 1910 and 1920, pension plans appeared at the rate of 20 per year. The growth rate spurted to 45 per year during the period from 1920 to 1935. Many of the new plans were not

financially sound or paid only meager benefits. It has been estimated that only 5% of the population needing pension benefits were actually receiving them. The number of pension plans began to increase dramatically following World War II. By the mid 1950's, these plans were becoming a major source of capital investment funds for private industry as well as local and natioal government. In 1974 the Employee Retirement Income Security Act was passed to regulate private pension funds. Unsound management of pension funds had previously denied many workers of their benefits. ERISA established strict regulations which have helped to insure that more recently established funds remain solvent.

Current and Future Status of Retirement

Many of the macro- and exosystemic facets of retirement which originally stimulated its development are still active today. Retirement continues to provide economic benefits to society. Older, more expensive workers can be regularly replaced with younger workers just entering the labor force. High level management positions are regularly vacated providing incentives for younger personnel. In certain companies, such as those specializing in new technology, a steady incoming flow of recently trained specialists allows the company to remain competitive. More than ever, retirees constitute an important portion of the retail market. Lastly, pension funds have become a major source of capital

investment. By 1978, pension funds held over $500 billion in assets and some 20% of the nation's financial securities (Graebner, 1980).

Although society's attitudes toward the aged have become less negative over the years, there still exists a feeling that older people in general should not be trusted with positions of responsibility and power. Additionally, the value placed on leisure time has continued to increase as the potential effects of work related stress on physical and psychological health are publicized.

The host of agencies, organizations, and institutions that have developed to serve and study the retiree also fight to insure the continued existence of retirement. These exosystemic facets have, in fact, been criticized for hindering policy changes which might benefit the retiree. Estes (1979) has argued that these institutions are more interested in preserving their own existence than serving older Americans.

Not all of the broad social forces which affect retirement are simply maintaining the status quo. The potential for dramatic change in the nature of retirement early in the next century clearly exists (Best, 1980). The economic cost of providing for retirees is quickly becoming unacceptably large. The percentage of the population that is 65 years of age or older has been steadily increasing. In 1976

approximately 10.7% of the nation's population was 65 or older. That figure is projected to increase to 17.6% by 2050 (Clark, 1980). Increasing costs combined with a declining work force will require working individuals to continually increase the percentage of their paycheck given over to social security tax and contributions to retirement funds (Clark,1980). As the individuals born during the baby boom following World War II approach retirement age, there may be an acutal shortage of labor in some fields. The above economic factors suggest that some changes in the nature of retirement will be forthcoming.

Increasingly positive societal attitudes toward the aged may also contribute to changes in the nature of retirement. Research has provided a much clearer picture of the strengths and limitations of the older worker. Employers are more willing to consider older individuals for positions that do not require above average physical strength or speed. Recent laws against age discrimination in employment and increases in mandatory retirement ages in both government and business are, perhaps, the best indicators of society's changing attitudes toward the older worker.

Perhaps the most important macrosystemic force encouraging changes in the nature of retirement is the increasing political power of retirees. The increasing number of retired individuals who are financially secure, well educated,

and politically informed is quickly making them a powerful special interest group. Organizations such as the Gray Panthers highlight the older Americans' desires to be part of the nation's policy making process. Legislators such as Claude Pepper of Florida already challenge legislation that might benefit one special interest group at the expense of older citizens' quality of life.

All of the factors discussed above suggest that the nature of retirement will change as we proceed into the twenty-first century. Best (1980) has argued that the changes will encompass all three aspects of adult life: education, work, and retirement. He predicts that people will stop progressing from one stage to another in an inexorable passage to death. Instead, individuals will change from one aspect to another several times during their adult lives. Relatively long periods of nonwork will be common among all age groups, not just those 65 or older. Retirement, as it is practiced today, will cease to exist.

The present section has provided a selective review of information which describes the macro- and exosystemic facets of retirement. The present study will not attempt to gather information which might more fully describe these systems. The focus of the study will be on the direct effects of retirement on the individual. It is important, however, to understand the broader social context which

indirectly affects the retiree. A singular focus on factors which directly affect individual's retirement staisfaction can too easily result in an unwarranted assumption that all responsibility for retirement satisfaction rests with the individual. In fact, the larger social forces which define the nature of retirement in the United States have an impact on individuals' retirement satisfaction over which they have little or no control.

Summary and Conclusions

The overview of the retirement literature provided above highlights the gaps in our current understanding of the phenomenon. The review of macro- and exosystem variables affecting retirement demonstrated that the social context and political/economic environment in which retirees live and attempt to meet their needs is itself subject to change. This is too easily forgotten by researchers whose primary interest is in the effects of retirement at the level of the individual.

Attempts to determine what factors affect individuals' satisfaction with retirement have utilized single item measures of a large number of micro- (marital status, income, activity level) and ontogenic system variables (e.g., personality traits, health status, attitudes) to define the mesosystem common to all retirees. The result has been a dearth of research designed to actually describe ontogenic

and microsystem factors affected by retirement. The large number of mesosystem studies have only revealed that retirement satisfaction is positively correlated with income and perceived health status. These disappointing results may be a function of researchers' failure to consider the potential influence of intraperson and microsystem variables that differ among retirees. Just such a failure to consider individual differences may be the reason that activity patterns have not consistently been found to be related to retirement satisfaction. A review of the studies investigating one relationship not discussed above, activity-retirement satisfaction, is presented below.

Review of the Activity-Retirement Satisfaction Relationship

Information about individuals' activities have been used as predictors of retirement satisfaction in many studies. At least two reasons for this are evident. First, nearly every individual experiences some change in his or her pattern of daily activities following retirement. It is intuitively appealing to assume that these changes will influence retirement satisfaction. Secondly, several influential theories on adjustment to aging emphasize the potential contribution of particular types of activities on adjustment. The majority of published studies were not, however, specifically designed to test a theory. Consequently, the

theories and their supporting evidence will be discussed after the findings of the atheoretical studies have been reviewed.

Descriptions of the Activities of Older Persons

Few investigators have attempted to collect detailed information about the types of activities engaged in by retirees. The most extensive descriptive studies published have focussed on the general population of older individuals. Leon, Kamp, Gillum,and Gillum (1981) gave a yearly activity questionnaire to 96 subjects whose mean age was 77. The most frequently reported activities included engaging in a hobby (75%), social activities (60%), taking walks (53%), going to restaurants (47%), attending religious services (45%), and visiting friends and relatives (44%).

Moss and Lawton (1982) interviewed 235 elderly individuals in Philadelphia about the activities in which they had engaged on the previous day. Subjects were asked to name each activity, where it was done, who it was done with, and how much they liked the activity. The amount of time spent in different types of activities varied somewhat depending on the subjects' current living situation. Community residents living in their own home reported spending an average of 6 hours a day in obligatory activities (e.g., housework, shopping, personal care) and 7 hours per day in

passive discretionary activities (e.g., watching TV, reading, etc.). Individuals living in publicly subsidized apartments had a similar pattern of daily activities but spent less time doing housework and more time interacting with non-family members. Persons living in their own dwelling but receiving in-home services or waiting for admission to a health care facility spent more time resting than either of the community groups and tended to provide lower "liking" ratings for many of the activities in which they did engage.

It is interesting to compare the above findings with those reported by Robinson (1977) for 2000 American workers who completed one day, time diaries. The subjects in Robinson's study were aged 18 to 65, employed and living in urban area. They spent approximately 12 hours per day in obligatory activities. The difference between this figure and that reported by Moss and Lawton is probably the result of the hours spent at work by Robinson's subjects. Similarly, subjects in Moss and Lawton's study averaged approximately 7 hours per day in passive discretionary activity, while Robinson's subjects reported only 4.7 hours.

No longitudinal studies have been done to provide detailed information about changes in time spent in various activities as a result of retirement or aging. Several investigators have, however, found no changes over time in

more global measures of activity (Cutler, 1977; George, 1978; Maddox, 1968; Palmore, 1968). Older individuals have reported that lack of sufficient activities can be a problem. Sheldon (1975) found that "keeping busy" was the main concern of 36% of his sample of 500 recently retired Bostonians. Hoyt (1975) reported that approximately 9% of the 200 elderly residents of a trailer park were having difficulty adjusting to retirement primarily because they were unable to keep themselves occupied. A national survey of over 750 older individuals revealed that 6% of the respondents were finding it harder to keep busy than they had expected it would be (Harris, 1975).

The majority of studies which include measures of activity have focussed on defining the relationship between activity and life satisfaction. Some studies include only a general measure of overall activity level. Others have looked at specific social and/or non-social activities. Each group of studies is reviewed below.

Relationship Between Global Activity Measures and Retirement Satisfaction

Havighurst (1969) and Sheldon (1975) found that a significantly greater number of retired subjects demonstrating high levels of life satisfaction were among the group of "very active" rather than "inactive" subjects. Peppers (1976) found that high scores on a life satisfaction measure

were positively associated with the number of different types of activities in which retirees reported engaging. The discrepancy between the desired and actual amounts of time subjects reported spending in various activities was found to have a strong negative relationship with life satisfaction when the effects of income, current health, and attitude towards retirement were controlled (Carlisle, 1980). Snow and Havighurst (1977) separated their sample of 110 retired university administrators and deans into two groups based on their activity preferences. The Transformers had greatly reduced the amount of time they spent in professional activities when they retired and were using the extra hours to engage in hobbies and travel. The Maintainers had continued to spend the majority of their time in professional activities following retirement. Both groups demonstrated high levels of life satisfaction indicating that the life satisfaction-activity relationship is subject to individual differences. Not all studies have reported the existence of a relationship between retirement satisfaction and activity. Bell (1978) and Kimmel, Price, and Walker (1978) found no correlations between activity and life satisfaction measures obtained from their samples of retired males.

A number of studies have investigated the relationship between life satisfaction of the aged and level of activity.

Those studies utilizing chi square or simple correlations to identify activity-life satisfaction relationships have generally found the two variables to be positively related (DeCarlo, 1974; Jeffers & Nichols, 1961; Maddox, 1963; Maddox & Eisdorfer, 1962; Palmore, 1968). Partialing out variance in life satisfaction measures that can be accounted for by income level and current health status has weakened (George, 1978) or eliminated the relationship (Ward, 1979) in some recent studies. Conceptually, it is unclear whether variance in life satisfaction measures shared by measures of activity, income, and health should be ascribed to the income and health measures. It may be that the negative effects of financial and physical limitations on retirement satisfaction are the result of the constraints they place on individuals' activities. Support for such a hypothesis has been provided by a path analytic study of life satisfaction in the elderly conducted by Markides and Martin (1979).

In summary, studies investigating the relationship between life satisfaction and global measures of activity have tended to demonstrate a positive relationship between the two variables. The relationship disappears, however, when all variance in the life satisfaction measure that can be accounted for by measures of income and current health status are removed before the effects of an activity measure

is assessed. Such analyses may be masking a two-step relationship in which financial and health limitations constrict retirees' level of activity thereby reducing their life satisfaction.

Relationship Between Social Activities and Retirement Satisfaction

Retirement has the potential for reducing the number of individuals with whom a person comes into contact (Simpson, Back, & McKinney, 1966). This has led researchers to include measures of social activity in studies investigating factors which affect retirement satisfaction. Peppers (1976) reported that a global measure of social activity was positively related to life satisfaction scores after the effects of income, health status, and type of residence were removed. The number of friends retirees reported was found to be a positive predictor of life satisfaction by Bultena and Wood (1969) and Fox (1977). Fox also found that total number of reported social contacts and number of contacts with neighbors were positively related to the life satisfaction scores of 56 retired women.

The only significant relationship between activity and life satisfaction identified in a study conducted by Bell (1978) was a decline in satisfaction following unexpected decreases in interactions with family members. The decrease in frequency of interaction was usually the result of the

death of a spouse or an unexpected move by children. Carlisle (Note 1) found that discrepancies between retirees expected and actual frequency of social activities had a stronger inverse relationship with life satisfaction than did discrepancies in solitary activities. Similar to the findings of Markides and Martin (1979), Mutran and Reitzes' (Note 2) path analytic study of data obtained from Harris' (1975) national survey revealed that the effects of income and health on a measure of well-being were mediated by their effect on the social activity of the respondents. Social activity decreased as financial and health limitations increased.

Larson's (1978) review of studies investigating well-being among the aged indicated that social activity had been found to be positively associated with measures of life satisfaction, well-being, and morale. Flanagan (1982) has recently concluded that the potentially negative effects of limited income and health were buffered for many of his 1000 older subjects by their relationship with family and friends. Other studies have not found any relationship between level of social activity and life satisfaction among older persons (Conner, Powers, & Bultena, 1979; Filsinger & Sauer, 1978; Mancini, Quinn, Gavigan, & Franklin, 1980; Palmore & Kivett, 1977).

Studies investigating the relationship between social activity and life satisfaction among retirees have demonstrated a positive relationship. The findings have been inconsistent across studies using a more general sample of older people. Conners, Powers, and Bultena (1979) have suggested that the inconsistencies might be resolved if researchers began to assess the quality as well as the quantity of social interaction. The utility of assessing the quality of social interactions was demonstrated, using a different population, among older persons by Wahler and Fox (1980). As reported above, they found that the nonuse of previously learned and effective child management techniques was related to the number of aversive social contacts reported by their subjects.

A few investigators have looked at the effects of a variety of nonsocial activities on the life satisfaction of older persons. Flanagan (1978) reported that 22% of the subjects in his national survey who rated their overall satisfaction with life as fair or poor felt they lacked adequate opportunities for learning. Lack of adequate active recreational opportunities was cited by approximately 24% of the respondents. Ward (1979) found that activities involving physical and intellectual exertion were rated as most "meaningful" and were positively related to life satisfaction. Time spent in passive activities that "helped pass

the time" was rated as unmeaningful and was negatively correlated with life satisfaction. Both Peppers (1976) and DeCarlo (1974) found the frequency of physical activities to be positively related to life satisfaction.

Summary and Conclusions

There is very little information available about the specific type of activities engaged in by older persons and no detailed longitudinal data on the effects of retirement on activity patterns. The global measures of activity commonly employed have not identified any significant changes in activity over time even though national surveys have found that a small number of individuals (i.e., less than 10%) do find "keeping busy" to be a problem as they grow older. In general, the findings of studies attempting to identify relationships between activity and retirement satisfaction have been inconsistent. When a relationship has been found it has invariably been a positive relationship between the frequency of occurrence of activities and level of life satisfaction. The inconsistency in findings across studies may be the result of several factors. The activity measures employed were usually experimenter-generated questionnaires which asked the subject to estimate from memory the frequency of occurrence or time spent engaged in different categories of activity. The measures provided no detailed information about the activity and their reliability

was questionable. Additionally, qualitative information about the activities was rarely obtained. Simple ratings of liking, "enjoyment" or "satisfaction" might provide information about individual differences among subjects that could clarify the activity-life satisfaction relationship. Finally, the recent tendency to employ measures of income and health status as control variables in multivariate analyses may be masking more complicated interrelationships among these variables and life satisfaction.

The studies reviewed above were predominantly atheoretical investigations. There have been theories of adjustment to later life used to explain adjustment to retirement that have been identified patterns of activity change hypothesized to promote optimal adjustment. The most tested of these theories has been the Activity Theory of Aging (Lemon, Bengtson & Petersen, 1972). The theory and its associated research is presented in the following section.

The Activity Theory of Aging

The central hypothesis of Activity Theory (Activity Hypothesis 1) states that life satisfaction is positively associated with the amount of activity in which one engages during the day (Lemon et al., 1972). The hypothesis is based on the following set of assumptions.

Assumption 1. Individuals have a variety of social roles which they attempt to fulfill (e.g., parent, spouse, worker/provider, friend, etc.).

Assumption 2. Feedback about how well individuals are performing each of their social roles is provided by other people in the environment. Individuals, therefore, develop a personal perception of how adequately they are performing each of their social roles based on the feedback they receive from other people. These sets of perceptions are termed social identities.

Assumption 3. An individual's self concept is the sum of his or her social identities.

Assumption 4. Individuals who have a positive self concept (i.e., perceive themselves to be functioning well in each of their social roles) will experience high levels of life satisfaction.

Assumption 5. Individuals who suffer a major role loss (e.g., retirement—loss of the worker/provider role) will necessarily lose one or more of their self identities and therefore experience a decline in self concept and life satisfaction.

Activity is related to life satisfaction because it provides the opportunity for people to come into contact with one another and provide the social feedback needed to

sustain their self concept and, consequently, their level of life satisfaction.

Several other hypotheses have been drawn from Activity Theory:

Activity Hypothesis 2. The positive relationship between amount of activity and life satisfaction will be strongest for "informal" activities involving family members; less strong for formal activities involving friends and acquaintances (e.g., volunteer activities); and weakest for solitary activities involving no other people (e.g., reading, watching a movie, etc.).

Activity Hypothesis 3. In general, the above relationships will be stronger for employed persons than for retired persons.

In general, studies investigating the above hypotheses have produced inconsistent results. Lemon et al. (1972) asked 411 individuals scheduled to move into a retirement community to estimate the amount of time they typically spent alone and interacting with relatives and with friends. Only the amount of time interacting with friends was positively related to subjects' scores on a standardized life satisfaction measure. There were no significant differences in the strength of the activity-life satisfaction relationships between retirees and employed individuals.

Cutler (1976) investigated the relationship between amount of volunteer activity and life satisfaction of older persons. When the confounding effects of self-reported health and income were removed, only membership in church organizations was positively related to life satisfaction.

Peppers (1976) found that the number of social activities and physically active tasks engaged in by his 206 male subjects was positively related to their life satisfaction scores after the effects of self-reported health, income, and place of residence were removed. Markides and Martin's (1979) path analysis of life satisfaction in the elderly revealed that activity level retained its significant positive relationship with life satisfaction after removing the effects of self-reported health and income.

There are, however, a number of studies which have failed to find a significant positive relationship between activity level and postretirement life satisfaction when the effects of self-reported health and income have been controlled statistically (Bull & Aucoin, 1975; Conner, Powers, & Boltena, 1979; Cutler, 1973; Ward, 1979).

Recently, Longino and Kart (1982) replicated the study by Lemon et al. (1972) described above. Their replication contained several methodological improvements. They utilized three samples of subjects who differed in terms of residence (retirement community, low income high rise

housing, age integrated community) and race (white versus black). Activity measures were derived from subjects' recall of the past day's activities rather than asking them to estimate how much time they "typically" spent interacting with various other people. Lastly, multiple classification analysis was used to determine the relationship between activity level and life satisfaction. The technique allowed the potentially confounding effects of age, gender, and health to be removed from the analysis.

The investigators found that amount of daily activity reported was positively associated with life satisfaction in two of the three samples. The relationship failed to appear in the sample that was most similar to the one used in the original study. Contrary to the predictions of Activity Theory, solitary activity and activities involving acquaintances demonstrated stronger positive correlations with a measure of life satisfaction than did activities involving relatives. The investigators did not include any employed individuals in their samples and, therefore, could not investigate differences in the activity-life satisfaction relationships of retired and employed persons.

In summary, the central hypothesis of Activity Theory has received inconsistent support. Hypotheses predicting specific differences in the strength of positive relationships between life satisfaction and informal, formal, and

solitary activities have not been supported. There has also been no support for the hypothesis that retired individuals will demonstrate weaker activity-life satisfaction relationships than will employed individuals.

It can be argued that Activity Theory has not been adequately tested. The inconsistent results among the published studies may be due, in part, to the use of nonstandardized, global measures of activity. Robinson (1977) has provided evidence that such measures tend to reflect substantial overestimates of time spent in activities in comparison with estimates made from time diary or activity log data. It is also possible that the theory itself is in error. For example, the hypothesized relationships between life satisfaction and the frequency of the three types of activities are all positive. The study by Wahler and Fox (1980) reviewed above indicates that contact with relatives is perceived as aversive by some individuals. Intuitively, one would not expect that an increase in aversive, informal interactions with relatives would increase one's overall satisfaction with life. Activity Theory, however, predicts just such a relationship. The failure of Activity Theory to take into account potential differences between individuals in the quality of the activities and social interactions in which they engage is a major weakness. A new theory of retirement satisfaction which incorporates the concept of

activity quality and can accommodate the existence of individual differences in activity quality is presented below.

Behavioral Model of Retirement Satisfaction

The Behavioral Model of Retirement Satisfaction (BMRS) proposes that daily mood and daily activities are associated via the phenomenon of reinforcement. When daily activities are consistently followed by reinforcing events, daily mood will be reported as positive. When daily activities are not reliably followed by a reinforcing event (or are followed by an aversive or unpleasant event), daily mood will be reported as negative. The BMRS is based on assumptions which were derived from Lewinsohn's Behavioral Theory of Depression (MacPhillany & Lewinsohn, 1974). The BMRS assumptions are presented below.

Assumption 1. A low rate of response contingent positive reinforcement acts as an eliciting stimulus for feelings of dysphoria and fatigue (i.e., negative mood).

Assumption 2. A low rate of response contingent positive reinforcement will result in a low rate of behavior which in turn further reduces the rate of response contingent positive reinforcement.

Assumption 3. The total amount of response contingent positive reinforcement received by an individual is a function of three sets of variables:

1. the number of events which are potentially reinforcing for the individual. The number and type of potentially reinforcing events are assumed to differ between individuals as a result of differences in biological and experiential factors.
2. The availability of the potentially reinforcing events in the environment.
3. The extent to which the individual possesses the skills needed to identify the available, potentially reinforcing events and elicit their occurrence from the environment.

Assumption 4. A high rate of aversive events is associated with low levels of daily mood.

Assumption 5. Level of daily mood is a function of both the rate of response contingent positive reinforcement and number of aversive events experienced during the day.

A number of studies conducted by Lewinsohn and his colleagues have demonstrated that the occurrence of pleasant (i.e., reinforcing) events is positively related to measures of daily mood (Lewinsohn & Libet, 1972) and that the occurrence of unpleasant (i.e., aversive) events is negatively related to daily mood (Grosscup & Lewinsohn, 1980; Lewinsohn & Talkington, 1979). Rehm (1978) has demonstrated that daily mood is independently related to the occurrence of pleasant and unpleasant events. Thus, evidence for

assumptions 1, 4, and 5 above have already been reported. Numerous hypotheses based on the remaining untested assumptions as well as logically derived corollaries of the BMRS can be generated. Only a few of these hypotheses will be investigated in the present study.

BMRS 1. A positive relationship between the amount of time spent in activity and life satisfaction (or its component element, daily mood level) will exist only for activities which are associated with positive reinforcement (i.e., rated as pleasant or enjoyable). Amount of time spent in activities associated with aversive events (i.e., rated as unpleasant or unenjoyable) will be negatively related to life satisfaction (or daily mood level).

BMRS 2. The strength of the positive relationship between life satisfaction/daily mood and the amount of time spent in positively reinforced activities increases as the reinforcement value (i.e., ratings of enjoyability or pleasantness) of the activities increase. Similarly, the strength of the negative relationship between life satisfaction/daily mood and the amount of time spent in activities associated with aversive events increases as the level of aversiveness increases (i.e., ratings of unpleasantness or unenjoyability increase).

The BMRS described above purposely avoids any attempt to specify types of activities which might have different

effects on retirement satisfaction. The model does not, however, preclude the possibility that particular groups of retirees will perceive certain types of activities as especially reinforcing or aversive. Amount of time spent in such activities would have a greater than average impact on life satisfaction. Identifying these types of activities can be very difficult if existing theories or empirical findings do not predict their existence. Investigators promoting the use of an ecological research paradigm have stated that the discovery of unexpected relationships among variables is an advantage of the paradigm (Bronfenbrenner, 1977; Wahler et al., 1981). Although it may be inappropriate to generalize findings of unhypothesized relationships to the entire research population, their existence in the sample of individuals being studied provides the investigator with the opportunity to generate new hypotheses for future study. The field of retirement in general and the investigation of the relationship between retirement satisfaction and daily activity patterns in particular is in great need of new hypotheses.

Goals of the Present Study

The present study had four goals. Each is described below.

Goal 1. Test the three Activity Theory hypotheses described above using detailed, reliable activity data and

compare the findings to those provided by more traditional questionnaire measures of activity.

Goal 2. Test the two hypotheses derived from the Behavioral Model of Retirement Satisfaction described above.

Goal 3. Test the following hypothesis: An index of the net reinforcement value of a day's activities [(reinforcement rating x duration of positive activity) - (aversiveness rating x duration of aversive activity)] will be a more accurate predictor of daily mood than will the amount of time spent in informal, formal, and solitary activities as defined by Activity Theory (Lemon et al., 1972).

Goal 4. Generate hypotheses for future study by searching for relationships between daily mood scores and activity measures that were not hypothesized above.

A methodology different from that usually employed in studies investigating life satisfaction-activity relationships was used. First, the potentially confounding effects of individual differences in work history, retirement experiences, and demographics were controlled by selecting participants who were similar on these variables. Previous studies have used statistical controls. Secondly, a sample of employed individuals, similar to the retirees on most of the above variables was recruited in order to identify changes in life satisfaction-activity relationships associated with retirement. Third, a large amount of

information about the daily activities and daily mood of a relatively small number of participants was collected over a several day period. Efforts were made to insure that the activity data demonstrated adequate reliability.

Following the tests of the experimental hypotheses, the activity data were grouped into microsystems (Bronfenbrenner, 1977). Numerous correlational analyses of the activity and mood data were then conducted to identify characteristics of the participants' mesosystem (Bronfenbrenner, 1977). These exploratory, ecological systems analyses were done solely to provide information from which to generate hypotheses for future research. Wilhems (1974) has argued that such exploratory, ecological analyses are useful in identifying directions for future research.

METHOD

Subjects

Participants in the present study included 16 employed and 16 retired male faculty members of Virginia Polytechnic Institute and State University. All participants resided within the county in which the university is located. The participants were all volunteers who met the selection criteria outlined in Table 1. Extensive descriptive data were collected from the participants and are presented in the Results section.

Materials

The only materials employed in the present study were the questionnaires and forms described below. All the instruments developed by the investigator were initially tested on four retirees who served as pilot subjects. The instruments were revised to eliminate any potential problems identified during pilot testing.

Activity Survey

The instrument (Appendix A) was developed by the investigator and was administered during a personal interview. It contains a list of 22 types of activities. The participant was asked to estimate how many times per day, week, month or year he engaged in each of the activities during the previous 12 months. Participants' responses were transformed to indicate the estimated number of times per year in

Table 1

Selection Criteria for Participants

Variable	Retirees	Employees
Age	55 or older	55 or older
Employment	Currently working 10 hours or less per week for pay. Previously employed by the university in a faculty or administrative position.	Currently working 30 hours per week or more in a faculty or administrative position at the university.
Income	Currently drawing some form of retirement pay (e.g., Social Security, pension). Less than 25% of current income derived from paid employment.	75% of current income derived from paid employment.
Years Retired	Officially retired from university employment no earlier than 1975.	Never officially retired from the university.

which he engaged in the activity. No activity was given a score greater than 365 (i.e., once per day).

Daily Activity Form

The form (Appendix B) was similar to the one employed by Winett and Neale (1981). It required participants to record each major activity in which they engaged during their waking hours. For each major activity they also recorded: the time the activity began and ended, the setting for the activity, persons interacted with during the activity, other secondary activities occurring while engaging in the primary activity, and a rating of enjoyability (very enjoyable, moderately enjoyable, slightly enjoyable, slightly unenjoyable, moderately unenjoyable, very unenjoyable).

Demographic Information Questionnaire

The instrument (Appendix C) was developed by the investigator and was administered as part of a personal interview. Participants were requested to provide their name, age, marital status, number of people living in their household, type of residence, approximate gross yearly income, and the perceived adequacy of their income. A single item measure of perceived health status was also included (Shanas, Townsend, Wedderburn, Henning, Milhoj, & Stehouwer, 1968). The item's convergent validity with respect to physicians' ratings has been established (Maddox, 1962).

Flannagan's Quality of Life Survey

The instrument (Flanagan, 1979) was administered as part of a personal interview. It is a 15-item structured interview developed to measure quality of life (see Appendix D). The items represent 15 components of quality of life derived from an earlier critical incidents study involving nearly 3000 people. Participants were first asked to rate, on a 5 point scale, the current importance of each factor to their quality of life (very important, important, moderately important, only slightly important, not at all important). Participants were then asked to rate the same 15 items to indicate how well their needs in each of the areas were currently being met (very well met, well met, moderately well met, only slightly well met, not at all well met). The obtained ratings were coded to produce a 0 to 4 scale in which 0 represented "not at all" and 4 represented "very well" responses. A total score was then derived by summing the cross products of the two ratings for each item.

Job Information Survey—Forms R and W

The instrument (Appendix E) was developed by the investigator and was administered as part of a personal interview. Form R was administered to the retired participants and Form W to the employed participants. The questions contained in the two forms differ only with respect to their focus on past job experiences (for retirees) or present job

experiences (for workers). The instrument contains both open- and closed-ended questions designed to provide a brief job description and information about job satisfaction.

Life Satisfaction Index-Z

The LSI-Z (Wood, Wylie, & Scheafer, 1969) was administered as part of a personal interview. It is composed of 13 statements "about life in general" (see Appendix F). Participants were asked to indicate whether they agreed, disagreed, or had no opinion about each of the 13 statements. The LSI-Z was scored using the original system proposed by Wood et al. (1969). Their scoring system yields a single score ranging from 0 to 26 with higher numbers indicating a greater satisfaction. Wood et al. (1969) reported a split-half reliability coefficient of .79 on a sample of 100 scores. No test-retest reliabilities have been reported. Wood et al. (1969) also provided evidence of the concurrent validity of the instrument. Using the Life Satisfaction Rating (LSR) measure, Neugarten, Havighurst, and Tobin (1966) obtained interview measures of life satisfaction as well as LSI-A scores for 100 subjects. The LSI-Z is a shortened form of the LSI-A. The correlation between LSI-Z and LSR scores was .57. Lohman (1977) administered eight life satisfaction and morale scales to 259 subjects 60 years of age or older. She reported significant positive correlations

between scores on the LSI-Z and each of the seven other scales.

Nonparticipants' Survey

The instrument (Appendix G) was developed by the investigator and was completed by individuals who met the selection criteria for the present study but did not wish to participate. The instrument contains questions about age, marital status, academic rank, job activities, satisfaction with work and retirement, adequacy of current income and health status.

Profile of Mood States

The instrument (McNair, Lorr, & Droppleman, 1971) contains 65 adjectives (see Appendix H). Participants indicated on a 5-point scale how well each adjective described their mood during the day. The test yields an overall mood score (the higher the score, the more negative the mood) and six factor scores: tension-anxiety, depression-dejection, anger-hostility, vigor-activity, fatigue-inertia, and confusion-bewilderment. Split-half reliability coefficients of .84 and .95 were reported by the authors (McNair et al., 1971). The median test-retest correlation reported in the manual is .69. An indication of the instrument's construct validity was provided by Goldberg, Finnerty, Nathan and Cole (1974). They found a significant decrease in the tension-anxiety factor score following administration of

the tranquilizer Doxepin to psychoneurotic outpatients. Kochansky (1973) reported a significant increase in the depression-dejection scores of suicide attempters following exposure to a film that was designed to heighten depressive mood.

Retirement Information Survey—
Forms R and W

The instrument (Appendix I) was developed by the investigator and administered as part of a personal interview. Form R was administered to the retired participants and Form W to the employed participants. The questions contained in the two forms differ only with respect to their focus on present retirement experiences (for retirees) or anticipated experiences (for workers). The instrument contains both open- and closed-ended questions designed to provide information about retirement satisfaction.

Procedures

Participant Recruitment

Individuals who met the selection criteria were identified from university records. The population included 64 retirees and 82 employed faculty. A letter providing general information about the study was sent to each of the above individuals (see Appendix J). The letter was followed by a telephone call from the investigator during which any questions about the study were answered and the individual's

willingness to participate was assessed. Those persons who expressed interest in participating were visited by the investigator in their homes or offices. Details concerning the specific tasks participants would be asked to perform and the time commitment involved were provided. If a person volunteered to participate, an appointment was made for the initial interview. Recruitment began on March 15, 1982 and continued until June 28, 1982.

Anecdotal information obtained during the recruiting process suggested that the relatively large percentage of refusals (78.1%) was primarily due to individuals' expectations that the Daily Activity Forms would be excessively time consuming and tedious to complete. It was necessary, however, to determine whether individuals who volunteered to participate differed from those who did not in terms of current life satisfaction and general demographic and work history variables. The information needed to make such comparisons was obtained by asking individuals who declined to participate to complete and return the Nonparticipant's Survey.

Initial Interview

The initial interview included the administration of the Job Information Survey, the Retirement Information Survey, Activity Survey, Flannagan's Quality of Life Survey, Life Satisfaction Index-Z, and the Demographic Information

Questionnaire. The instruments were given in the order listed above. The interview required 1 to 2 hours to administer and was conducted by the investigator or one of two research associates. The research associates were both fourth year graduate students in Clinical Psychology. Following the interview, participants were given instruction in the use of the Daily Activity Form. To facilitate training, participants were asked to recall the activities of the previous day and watch as the interviewer recorded the information on a Daily Activity Form. Written instructions on the appropriate use of the form were provided. Instructions for completing the Profile of Mood States (POMS) were also given. A packet of Daily Activity Forms and POMS forms were given to the participant at the end of the training session, and a schedule of days during which the form would be completed was arranged.

Monitoring Phase

The activity monitoring component was a 2 week period during which participants completed a total of six Daily Activity Forms and six POMS forms. Daily activities were recorded each Tuesday, Thursday, and Saturday during the 2 week period. A POMS form was also completed on each of the above evenings. The completed forms were collected by the investigator at the participants' office or home each Monday, Wednesday, and Friday.

The investigator reviewed each completed Daily Activity Form returned. A note was made of any information on the form that was unclear and any inappropriate usage of the form. The note was then given to an undergraduate research assistant who was assigned to follow the participant during the monitoring phase of the study.

Participants received a phone call from the assigned research assistant on each of the monitoring days. The telephone call was used to clarify the information provided on the subject's most recent Daily Activity Form, provide feedback to the participant about the quality of his recordings, and to collect reliability data. The researcher first asked the participant any questions needed to clarify the information contained on his most recent Daily Activity Form. A need for clarification resulted from such things as uninterpretable abbreviations or illegible handwriting. The research assistant also asked the participant to identify his relationship to any person whose initials appeared in the "With Whom" column of the Daily Activity Form. Relationships were identified as one or more of the following: spouse, child, other relative, friend, neighbor, coworker, comember, service provider, student or acquaintance. The research assistant then provided praise and any corrective feedback needed to enhance or maintain the participant's appropriate use of the Daily Activity Form. Most forms were

completed appropriately. The most common problems with completed forms were failure to include sufficient detail and recording two major activities during the same time period. The research assistant concluded the phone call with the collection of the reliability data described below.

When the participant returned his last monitoring forms, he was sent a letter of thanks by the investigator. Data collection began on April 2, 1982 and was completed on July 3, 1982.

Reliability Assessment

Assessing the reliability of self-monitored activity data is difficult. No single method of assessment is likely to provide sufficient data to establish reliability (Winett, Neale, & Williams, 1979). Consequently, three different sources of information were used to corroborate the Daily Activity Form data.

Telephone calls. As described above, calls were made to the participants during their monitoring days. During the call, participants were asked to report their activities during the last 60 minutes noting the setting and other people involved in the activities. All information provided by the participants was recorded on a telephone log form. The information was later compared with that provided on the Daily Activity Form for the same time period. If the participant was not available to receive the call, the above

information was solicited from another individual familiar with the participant's activity schedule. The informant was usually the participant's spouse or secretary.

Informant reports. These reports of participants' activities were obtained from two sources. Each participant's spouse was asked to record her activities during 1 of the 6 days on which her husband was monitoring his activities. The spouse's recordings were done from memory the day after her husband completed his Daily Activity Form. Spouses were not given individual training on the use of the Daily Activity Form, but they were provided with the sheet of written instructions.

The small size of the community in which the study was conducted produced numerous chance encounters between the participants and research staff. The encounters provided an additional source of informant reports. The staff recorded the time and location of such encounters as well as the activity in which the participant was engaged.

Recording of known events. The use of this information on Daily Activity Forms provided another source of reliability data. The Daily Activity Forms of employed faculty were checked against their class schedule and other public schedules of meetings which they were expected to attend. The Daily Activity Forms of retirees who belonged to local organizations such as the Rotary Club, Lions Club, and

various professional organizations were checked against the meeting schedules of the organizations.

RESULTS

Descriptive Data

Several sets of data describing the participants were collected during the initial interview: demographic data, work history information, retirement information, life satisfaction data, and information about daily activities. Summary data from each set of information are described below.

Demographic Information

Demographic information for the retired and employed participants is presented in Table 2. There were significant group differences on only 3 of the 13 demographic variables. The mean age of the retirees was 10 years greater than that of the employees (68.6 years versus 58.6 years; $t(1, 30) = 7.087$, $p < .001$). The mean number of household members was higher for the employees (1.94 persons versus 1.12 persons; $t(1, 30) = -3.081$, $p < .0053$), apparently because of the greater number of employed participants who had children living at home (9 employed faculty versus 2 retirees). The employed group also had higher incomes. There were 10 employed participants and only 4 retirees who reported yearly gross incomes in excess of $40,000 ($X^2 = 4.57$, $df = 1$, $p < .05$).

The retired and employed participants were similar on the remaining demographic variables. Over 87% of the

Table 2

Demographic Information on Retired and Employed Faculty

Demographic Variables	Employment Status Retired		Employment Status Employed	
	Mean	SD	Mean	SD
Age*	68.56	3.54	58.56	4.40
No. of Children	2.50	0.52	2.81	1.94
Rating of Income Adequacy	4.31	0.70	3.94	0.77
Health Rating	3.56	0.51	3.69	0.48
No. of Household Members**	1.12	0.50	1.94	0.93
	Percentage		Percentage	
Income Range				
$20,000-$24,999	6.25		0.00	
$25,000-$29,999	6.25		6.25	
$30,000-$34,999	25.00		18.75	
$35,000-$39,999	18.75		12.50	
$40,000 or over	25.00		62.50	

*$t(1, 30) = 7.087$, $p < .0001$
**$t(1, 30) = -.308$, $p < .004$

participants in both groups were married and 81% had two or more children. The majority of participants (90.6%) lived in houses they owned. Although level of gross yearly income was higher for the employed participants, the mean rating of how well their income met their needs was equivalent for the two groups (i.e., "meets needs well"). Limitations due to income were mentioned by 7 participants (2 retirees and 5 employed faculty). Inability to travel as much as desired was mentioned most frequently, followed by limitations on entertainment and ability to save money. The mean rating of health status for both groups fell between the ratings of "good" and "very good". Only two participants reported any limitations on physical activities due to health problems.

Employment information. Employment history and satisfaction data for the retired and employed participants are presented in Table 3. There were significant differences between the groups on 3 of the 12 employment variables. The retirees had spent more years in full-time employment than the employed participants (41.4 years versus 35.6 years; $t\ (1, 30) = 3.39$, $p < .0024$). A greater percentage of the retirees' responses to the question, "What did you like most about your work?", reflected satisfaction with the amount of contact with people provided by their job (89.5% for the retirees versus 63.6% for employed faculty; $X^2 = 3.69$, df =

Table 3

Summary Statistics on Employment Variables for Retired and Employed Faculty

Employment Variables	Employment Status			
	Retired		Employed	
	Mean	SD	Mean	SD
Total Years in Workforce*	41.37	3.42	35.62	5.86
Years at the University	23.25	10.13	21.50	10.66
Rating of Job Satisfaction	5.56	1.03	5.31	0.95
	Percentage		Percentage	
Academic Rank				
Assistant Professor	6.25		0.00	
Associate Professor	37.50		43.75	
Full Professor	56.25		50.00	
Administrative Title				
Assistant Department Head	18.75		6.25	
Director of Department Subdivision	12.50		18.75	
Associate Dean	6.25		12.50	
Dean	12.50		0.00	
No Title	50.00		62.50	
Met All Professional Goals				
Yes	37.50		43.75	
No	62.50		50.00	
Professional Goals Attained				
Professional Recognition	22.22		42.86	
Specific Job-Related Accomplishments	77.78		57.14	
Professional Goals Not Attained**				
Failed to Advance	7.14		40.00	
Failed to Achieve Specific Job Goals	92.86		60.00	
Job Duties				
Teaching	37.04		37.50	
Research	14.81		21.88	
Extension	18.52		25.00	
Administration	29.63		15.63	
Positive Characteristics of Job***				
Contact with People	89.47		63.64	
Specific Characteristics of Job	10.53		36.36	
Negative Characteristics of Job				
Job Pressures	20.00		25.00	
Personnel Problems	30.00		29.17	
Specific Characteristics of Job	50.00		45.83	

*$t(1, 30 = 3.39, p < .002$

**$\chi^2 = 3.82$, df = 1, $p < .05$

***$\chi^2 = 3.69$, df = 1, $p < .05$

1, $p < .05$). Employed faculty mentioned failure to advance more frequently than did retirees when asked to report career goals that they were unable to attain (40.0% of the employees versus 7.1% of the retirees; $X^2 = 3.82$, df = 1, $p < .05$).

The retired and employed participants were similar on a number of variables. Both groups averaged over 20 years service with the university (retirees = 23.2 years, employees = 21.5 years). The majority of participants (53.2%) had attained the rank of full professor, 40.6% of the participants were associate professors, and one was an assistant professor. Administrative titles were held by 14 of the participants. Of these individuals, 5 were chairmen of department subdivisions, 4 were assistant department heads, 3 were associate deans,and 2 were deans. The participants represented all seven colleges and two of the service divisions (Extension division and Library services) of the university. The job duties reported by the participants fell into four categories: administration, extension/consultation, teaching,and research. The most frequently reported category of activity was teaching (37.3% of all activities mentioned) followed by administration (22.6%), extension/consultation (22.0%), and research (18.6%). Mean job satisfaction ratings fell between "moderately satisfied" and "very satisfied" for both groups. The participants did

report some dissatisfying aspect of their work. The most frequently mentioned sources of dissatisfaction (47.7% of all responses) were specific job characteristics such as too much travel, lack of resources needed to accomplish goals, and too much time spent in routine, administrative tasks. The participants also complained of difficulties in working with specific coworkers, students and/or subordinates (29.5% of all responses) and pressures to produce (22.7% of all responses). The majority of participants (56.2%) had not achieved all of their career goals. The goals which were attained were related to specific research, teaching or administrative accomplishments or professional recognition achieved.

There were five retirees who were currently engaged in paid employment. Three of the retirees were teaching a course at the university and two were doing periodic consulting work. The number of hours of work per week was less than 4 for four of the retirees and between 16 and 20 for one retiree. The jobs accounted for less than 10% of the gross annual income of four of the retirees and 10-25% of the income of one retiree.

Retirement information. The responses of the retired and employed participants to the five questions about retirement are summarized in Table 4. There were significant group differences on two of the variables. The retirees'

Table 4

Summary Statistics for Retirement Variables

for Retired and Employed Faculty

Retirement Variables	Employment Status Retired	Employed
Mean Rating of Retirement Satisfaction*	5.81	5.37
	Percentage	Percentage
Anticipating Retirement?		
Yes	56.25	43.75
No	37.50	25.00
When Retired?**		
Before Mandatory Age	37.50	87.50
At Mandatory Age	37.50	12.50
After Mandatory Age	25.00	0.00
Positive Aspects of Retirement		
Elimination of Job Pressures	25.00	5.90
Freedom to Schedule Own Time	75.00	94.10
Negative Aspects of Retirement		
Negative Changes in Lifestyle	44.40	42.90
Loss of Specific Satisfactions of Job	55.60	57.10

*$t(1, 30) = 2.37$, $p < .02$

**$X^2 = 9.20$, $df = 2$, $p < .01$

mean rating of retirement satisfaction was greater than the mean rating of employed faculty's expected satisfaction with retirement (5.81 versus 5.37; $t = 2.37$, $p < .024$). The percentage of individuals who retired (or expect to retire) at the mandatory retirement age differed between the two groups ($X^2 = 9.20$, $df = 2$, $p < .01$). There were 14 (87.5% employed) faculty who expected to retire before the mandatory age, and only six (37.5%) of the current retirees who had taken early retirement.

The retired and employed participants were similar on several variables. The majority of participants (50.0%) reported looking forward to retirement, 10 reported not looking forward to it, and four felt neutral towards the event. The most frequently mentioned benefit of retirement was the opportunity to control one's schedule of daily activities (mentioned by 87.5% of the respondents). Freedom from pressures of the job was mentioned by six (18.7%) of the participants. The participants did report specific negative aspects of retirement. The majority of the negative features mentioned (56.5%) reflected the loss of job-related satisfactions such as interactions with coworkers and students, the challenges of the job, and the feeling of being a useful and needed part of an organization. Other negative consequences of retirement included such undesirable changes in

lifestyle as a general decline in social activity and an increase in boredom.

Life satisfaction and daily mood scores. Participants were administered two measures reflecting current life satisfaction and completed a measure of mood on 6 different days. The LSI-Z provided a single score of life satisfaction for each subject. Scores ranged from 0 to 26. The mean scores of both groups reflected very high levels of life satisfaction and did not differ significantly from each other (retirees = 23.6; employees = 23.8; $t(1, 30) = .302$, $p < .76$).

The Quality of Life Survey yielded ratings of both the importance and degree to which needs were being met in each of the 15 areas contributing to overall quality of life. The ratings are presented in Table 5. The two groups did not differ significantly when the ratings were combined to yield an overall quality of life score. There were, however, several significant differences between groups on the individual ratings. Retirees rated the availability of opportunities for learning and creative self-expression as less important to their current quality of life than did the employed participants. The retirees' ratings also indicated that their needs for material comforts and close friends with whom to spend time were being better met than those of the employed participants.

Table 5

Mean Importance Ratings and Ratings of How Well Needs Were Being Met on the 15 Factors of Flanagan's Quality of Life Survey

Factor	Importance Rating			Needs Rating		
	Retired	Employed	*t-value	Retired	Employed	*t-value
Material Comforts	2.0	2.1		1.2	1.8	2.84
Health and Safety	1.4	1.3		1.5	1.5	
Relationship with Family of Origin	2.2	2.7		1.8	2.1	
Relationship with Children	1.2	1.3		1.4	1.3	
Relationship with Spouse	1.0	1.1		1.2	1.2	
Relationship with Friends	1.9	2.1		1.7	2.2	2.29
Helping Others	1.9	1.9		2.1	2.2	
Participation in Public Affairs	3.1	3.3		1.9	2.4	
Opportunities to Learn	2.1	1.2	-3.08	1.7	2.2	
Understanding Oneself	1.4	1.5		2.0	1.7	
Work	1.6	1.3		1.5	1.2	
Creative Self-expression	2.6	1.8	-2.18	2.2	2.0	
Socializing	2.6	2.9		1.8	2.2	
Passive Entertainment	2.1	2.0		1.7	2.1	
Active Recreation	2.1	2.4		2.0	2.4	

*All t-values are significant at the .04 level or beyond.

The mean mood scores of the two groups were also very similar. In general, both groups of participants reported high levels of positive mood. The only significant group difference occurred on the tension-anxiety factor. Employees reported being more tense than the retirees (employees = 3.61, retirees = 1.92; $t(1, 30) = 2.19$, $p < .036$).

Activities. Participants were asked to estimate the frequency with which they engaged in 21 different types of activity during the preceding 12 months. The frequency estimates of the retired and employed participants are presented in Table 6. There were significant differences between the retired and employed participants in the frequency of occurrence of five of the activity types. As expected, the employed faculty engaged in paid employment activities more frequently than the retirees. The retirees reported more frequent occurrences of household maintenance activities, phoning or writing friends, visiting with friends, and volunteer activities. For many types of activities, the mean number of occurrences were similar for both groups. Reading, watching TV, and helping with meals occurred 5-7 times per week. Activities associated with learning and self-expression, physical exercise, and management of personal finances occurred approximately 3-4 times per week. Leaving the home to seek entertainment, contact with children and other relatives, and religious activities occurred

Table 6

Mean Number of Days per Year Spent in Each Type of Activity by Retired and Employed Faculty

Activity	Employment Status Retired	Employed	t-value
Personal Finances	138.2	79.1	
Household Maintenance	279.5	122.6	-4.65*
Preparing Meals	283.4	270.6	
Washing Clothes	220.6	34.8	
Exercising	152.8	139.0	
Writing/Phoning Relatives	59.7	22.9	
Visiting Relatives	17.1	13.5	
Writing/Phoning Children	113.9	68.7	
Visiting Children	57.3	147.2	
Writing/Phoning Friends	89.8	20.2	-2.07***
Visiting Friends	106.9	33.0	-2.78**
Volunteer Work	160.7	59.2	-2.57**
Public/Civic Affairs	45.1	14.6	
Learning	174.1	208.6	
Religious Activities	74.8	55.3	
Work	8.1	307.2	25.49*
Creative Activities	105.3	111.5	
Eating Out, Going to a Theatre, etc.	87.5	58.1	
Passive Entertainment Reading, Watching TV	358.5	305.2	
Active Recreation	88.7	91.7	
Traveling	18.6	29.3	

*$p < .0001$

**$p < .02$

***$p < .05$

once or twice per week. Participation in active recreation and attendance at public affairs or political activities occurred, on the average, once or twice per month.

Comparison of Participants and Nonparticipants

Individuals who met the criteria for participation in the present study but did not wish to do so were mailed a short questionnaire. Questionnaires were returned by 42 of 48 retirees (an 87.5% return rate) and 39 of 66 employed faculty (a 59.1% return rate). The information provided by the questionnaires allowed the participants and nonparticipants to be compared on a number of important variables. Table 7 presents the comparisons between the participants and nonparticipants.

The retired participants differed significantly from the retired nonparticipants only with respect to their major job-related activity ($X^2 = 13.59$, df = 4, $p < .0087$). Teaching was the primary responsibility of 53.6% of the retired nonparticipants and only 31.2% of the retired participants. Extension responsibilities were more prevalent among the retired participants than the retired nonparticipants (31.2% versus 4.9%). There were no significant differences between the employed participants and nonparticipants on any of the variables.

Table 7

Summary Statistics of Demographic, Employment and Retirement Variables of Retired and Employed Participants and Nonparticipants

Variable	Particupants		Nonparticipants	
	Retired	Employed	Retired	Employed
N	16	16	42	38
Rating of Income Adequacy	4.35	3.94	4.19	4.10
Health Rating	3.58	3.69	3.36	3.46
Job Satisfaction Rating	5.56	5.31	5.19	4.97
Retirement Satisfaction Rating	5.81	5.45	5.37	4.89
No. of Years Retired	3.50		4.00	
	Percentages		Percentages	
Marital Status				
Married	94.12	100.00	95.24	89.74
Not Married	5.88	0.00	4.76	10.26
When Retired?				
Before Mandatory Age	37.50		33.30	
At Mandatory Age	37.50		47.60	
After Mandatory Age	25.0		19.00	
Primary Job Duty				
Teaching	31.25	43.75	53.66	51.28
Research	6.25	18.74	17.07	30.77
Extension	31.25	6.25	4.88	12.82
Administration	12.50	12.50	21.95	5.13

Two differences between the retired and employed participants described above were also evident among the retired and employed nonparticipants. Retired nonparticipants were significantly older ($\bar{X}$ age = 66.9 years) than employed nonparticipants ($\bar{X}$ age = 58.9 years; F (1, 79) = 22.33, $p <$ .0001). Also, retired nonparticipants' ratings of their present satisfaction with retirement were marginally higher than employed nonparticipants' ratings of their expected satisfaction with retirement (5.37 versus 4.89; $F_{1, 78} = 3.46$, $p < .06$). In general, the participants in the present study were similar to those who did not wish to participate, indicating that the participants constituted a representative sample of the population from which they were drawn.

Coding and Reliability of the Monitoring Data

Reliability of the Monitoring Data

The reliability of the information provided on the Daily Activity Forms was assessed by comparing it to information obtained from five other sources: verbal reports of activities provided by the participants during phone interviews; public schedules of meetings and activities in which the participants reportedly engaged; verbal reports about participants' activities from their spouse or secretary; Daily Activity Forms completed by a spouse describing her activities during a monitoring day; and chance encounters between participants and a member of the research staff

during monitoring days. The first two sources of reliability information mentioned above do not constitute independent verification of the information provided on the participants' Daily Activity Forms since no independent observers were involved. The last three sources of reliability data described were based on observer reports and do provide independent verification of the monitoring data. Table 8 presents separate reliability estimates based on each of the five sources of reliability data; separate reliability estimates based on the verified and nonverified sources and a single estimate based on all the reliability data collected. Reliability was calculated using the formula agreements/(agreements + disagreements). An agreement was scored when the activity described on the Daily Activity Form matched the information provided by the reliability source in each of the following ways: (1) the major activity reported was the same; (2) the beginning and ending times for the activity as reported by the reliability source were completely incorporated within the beginning and ending times recorded on the Daily Activity Form; and (3) the category of other people involved in the activity (e.g., spouse, child, coworker, etc.) was the same.

The reliability estimates from the five sources ranged from .78 (spouses' Daily Activity Forms) to .93 (public schedules). The sources reflecting unverified reliability

Table 8

Summary of Reliability Data and Reliability Estimates of Retired and Employed Faculty's Activity Monitoring Data

Data Source	Total No. Activities Reported	No. of Correspondences	Reliability Estimates
Unverified			
Calls to Participants	67	55	.84
Public Schedules	40	37	.93
Total	107	92	.86
Verified			
Calls to Informants	24	21	.88
Spouses' Activity Forms	9	7	.78
Chance Encounters with Staff	10	9	.90
Total	43	38	.88
Total	150	130	.87

data produced an estimate of .86 and the verified sources produced a reliability coefficient of .88. The overall reliability of the monitoring data was .87. The above estimates are comparable to those obtained in studies using similar forms of self-monitoring data (Winett & Neale, 1981) and are within acceptable limits of reliability.

Coding of Monitoring Data

There were three types of information recorded on the Daily Activity Forms that were numerically coded to permit computer entry. Companions were placed in one of the 10 categories described in the method section of the present paper. The locations of the reported activities were divided into 21 categories. The coding system for activities contained 60 categories which are described in Appendix K. The reliability of the activity coding system was assessed by having a research associate code the major activities contained on 20 randomly selected Daily Activity Forms. The forms contained 248 (11.1%) of the 2231 major activities recorded by the participants. Reliability was calculated using the formula agreements/(agreements + disagreements). The reliability estimate was .90.

Tests of Activity Theory Hypotheses

Questionnaire Data

The most common method of testing the hypotheses of Activity Theory has been to correlate scores on a measure

of life satisfaction with estimates of time spent in formal, informal, and solitary activities during the previous year. Similar data were collected in the present study. The Life Satisfaction Index-Z provided a single index of life satisfaction. Data from the Activity Survey provided estimates of the frequency of solitary activities (i.e., household maintenance, personal finances, preparing meals, mending clothes, exercising, hobbies, and passive entertainment), formal activities (i.e., paid employment, volunteer service, organized religious activities), and informal activities (i.e., writing or visiting friends, children or other relatives, going to parties, restaurants, playing cards). Pearson product-moment correlations between LSI-Z scores and frequency estimates for each type of activity are presented in Table 9. There was only one significant correlation. Frequency of informal activities was positively associated with LSI-Z scores for retirees ($r = .50$, $p < .048$). The correlations based on data provided by the employed participants were uniformly lower than those obtained from the retired participants.

Monitoring Data

One goal of the present study was to test the hypotheses of Activity Theory using activity data that were more detailed and reliable than those obtained from the surveys traditionally used. The major activities recorded on the

Table 9

Correlations Between LSI-Z Scores and Estimates of the Yearly Frequency of Formal, Informal and Solitary Activities

Employment Status	Activity Type		
	Informal	Formal	Solitary
Retired	.500*	.304	-.036
Employed	.007	.084	-.280

*$p < .048$

Daily Activity Forms were therefore categorized as formal, informal, or solitary activities and the mean number of minutes per day spent by each participant in each type of activity was calculated. The Pearson product-moment correlations between these mean activity duration scores and the mean, total score on the POMS for the retired and employed participants are presented in Table 10. The total POMS score increased as self-reports of negative mood increased. Consequently, correlations between activity duration and total POMS scores must be negative to support the Activity Theory hypotheses. None of the individual correlations between mean activity duration and mean total scores on the POMS was significant.

Activity duration was associated with scores on several subscales of the POMS. Activity Theory would predict that subscales reflecting negative mood would be negatively correlated with time spent in each category of activity. Consistent with such predictions, mean time spent in solitary activities by employed participants was negatively correlated with their scores on the Confusion scale ($r = -.61$, $p < .01$) and the Depression scale ($r = -.70$, $p < .002$). Additionally, retired participants demonstrated a negative relationship between time spent in formal activities

Table 10

Correlations Between the Mean Daily Duration of Self-monitored Formal, Informal and Solitary Activities and Mean Total Scores on the POMS

Employment Status	Activity Type		
	Informal	Formal	Solitary
Retired	-.29	.23	.13
Employed	-.33	.32	-.34

and scores on the Anger scale ($r = -.64$, $p < .008$). Contrary to predictions, however, mean time spent in formal activities by employed participants was positively correlated with scores on the Confusion scale ($r = .70$, $p < .01$) and the Depression scale ($r = .56$, $p < .02$).

The correlations reported above were based on 16 pairs of scores reflecting the average duration of activities and level of mood during the 6 days of monitoring. Correlational techniques are not very powerful for such small samples, therefore, a second type of analysis was performed to identify any relationship between daily duration of the three activity types and daily mood level. A MAXR multiple regression (Goodnight, 1979) predicting daily, overall POMS scores from variables representing total time spent in formal, informal, and solitary activities each day and employment status was conducted. Variance accounted for by repeated measurement of the same subjects was removed prior to the introduction of the above variables. The analysis revealed that no linear combination of the three activity duration variables and one employment status variable significantly increased the variance accounted for in total POMS scores once the effects of repeated measurement were removed.

Tests of the Behavioral Model of Retirement Satisfaction Hypotheses

It was predicted that the reinforcement value of reported activities, as measured by the associated enjoyability ratings, would be positively associated with overall daily mood, as measured by the total score on the POMS. The prediction was supported by a significant, negative Pearson product-moment correlation between average total scores on the POMS and average enjoyability ratings for each participant ($r = -.48$, $p < .004$).

It was also predicted that level of self-reported positive mood would increase as time spent in activities rated as enjoyable increased. Additionally, it was hypothesized that the strength of the positive relationship would increase as the enjoyability rating of the activity increased. Table 11 presents the Pearson product-moment correlations between mean, total scores on the POMS and mean time spent per day in activities rated as slightly enjoyable, moderately enjoyable, or very enjoyable. Contrary to predictions, the correlations are not all negative. Only increases in time spent in activities rated as very enjoyable were significantly correlated with level of positive daily mood. Amount of time spent in moderately enjoyable activities was associated with higher POMS scores (i.e., more negative mood) for retirees ($f = .50$, $p < .05$); a trend also evident when

Table 11

Correlations Between Mean Daily Activity Duration and the Mean Total Scores on the POMS for Activities Rated as Slightly, Moderately, or Very Enjoyable

Group	Enjoyability Rating		
	Slightly	Moderately	Very
Retired Faculty	.04 n=15	.50* n=16	-.56* n=15
Employed Faculty	.23 n=15	.22 n-16	-.58* n=16
All Faculty	.13	.32***	-.58**

*$p < .03$
**$p < .001$
***$p < .07$

data from both groups were combined ($r = .32$, $p < .07$). As predicted, the magnitude of the activity duration-POMS score correlations increased as enjoyability ratings increased.

It was also predicted that amount of time spent in activities rated as unenjoyable would be associated with increases in self-report of negative mood. Very few unenjoyable ratings were given by the participants. Too few ratings in the unenjoyable range were obtained to test the above hypothesis.

It was predicted that an index of the reinforcement value of a day's activity would be positively associated with level of daily mood. The reinforcement value of each major activity recorded on the Daily Activity Form was calculated by multiplying the number of minutes spent in the activity by the enjoyability rating given the activity. An index of daily reinforcement value was calculated by summing the reinforcement values of all the major activities recorded on a Daily Activity Form. The relationship between daily reinforcement value and daily mood level was assessed by conducting a multiple regression analysis predicting daily overall POMS scores from daily reinforcement scores after variance accounted for by repeated measurement of the same participants was removed. The analysis revealed that, contrary to prediction, the index of daily reinforcement

value was not a significant predictor of daily, overall POMS scores.

It was also hypothesized that an index of the reinforcement value of a day's activities would be a better predictor of daily mood level than variables representing employment status or amount of time spent in formal, informal, or solitary activities. The hypothesis was tested by performing a MAXR regression (Goodnight, 1979) predicting overall daily POMS scores from the five variables mentioned above, after controlling for the effects of repeated measurements on the same subjects. Contrary to predictions, the analysis revealed that no linear combination of the five variables was a significant predictor of daily overall POMS scores.

Descriptive Analysis of Systems Data

Microsystem Analyses

The data contained on the participants' Daily Activity Forms was categorized into microsystems. A microsystem was defined by the location in which an activity took place and the type of companion who participated in the activity. There were 131 microsystems which could have been identified from the Daily Activity Form data using the 21 location codes and 11 companion codes. All but 11 of these microsystems appeared rarely, if at all, in the Daily Activity Forms of the participants. The 11 microsystems are described in

Table 12. System 12 contained all the activities which did not meet the criteria for inclusion in microsystems 1 through 11. There were three microsystems which focused on participants' family home life, five which defined their social/community activities, and three which centered on work activities.

The first set of analyses conducted on the systems data was designed to delineate differences in time spent in each microsystem. Table 13 presents the mean daily duration in minutes of time spent in each of the 12 microsystems by the retired and employed participants. A 2 X 12 repeated measures analysis of variance on mean time spent in each microsystem revealed a significant main effect for the system variable, F (11, 330) = 65.62, $p < .0001$, and a significant system X group interaction, F (11, 330) = 11.24, $p < .0001$. Simple main effects analyses between retired and employed participants revealed that employed participants reported more time spent working with students ($t_{(1, 30)} = 4.37$, $p < .0005$), more time at work interacting with colleagues ($t_{(1, 30)} = 4.02$, $p < .0008$), more time at solitary work-related activities ($t_{(1, 30)} = 7.47$, $p < .0001$) and more time engaging in activities with their children outside the home ($t_{(1, 30)} = 2.39$, $p < .03$). Retirees spent more time than employees engaging in solaritary activities at home ($t_{(1, 30)} = 4.73$, $p < .0001$). Post hoc comparisons using

Table 12

Description of the 12 Microsystems Identified from the Daily Activity Form Data

System (Companion/Location)	Description
Spouse/Home	All activities involving interaction only with one's spouse which occur at home.
Child/Social	All activities which primarily involve interaction with one's children away from home.
Friend/Home	Any activities involving interaction with friends or neighbors in one's home.
Friend/Social	Any activities involving interaction with friends or neighbors awary from one's home.
Coworker/Work	Any work-related interactions with coworkers at the work place.
Comember/Social	Any interactions with comembers of a group or organization wich occur at an organizational function.
Service Provider/ Social	Any interactions with service providers (e.g., doctors, lawyers, mechanics, etc.) which take place outside the home.
Student/Work	Any interactions with students which occur at the work place.
Alone/Home	Any activities involving no companions which occur at home.
Alone/Social	Any activities done alone outside the home.
Alone/Work	Any activities done alone at the work place.
Miscellaneous	Any activities which do not meet the criteria for any of the above systems.

Table 13

Mean Number of Minutes of Daily Activity in Each Microsystem for Retired and Employed Faculty

System	Employment Status		t-value
	Retired	Employed	
Spouse/Home	247.42	18.196	
Child/Social**	11.09	43.52	2.39**
Alone/Home*	411.25	227.10	-4.73*
Friend/Home	19.98	17.07	
Friend/Social	36.51	25.61	
Comember/Social	30.62	21.77	
Service Profider/ Social	68.64	58.72	
Alone/Social	14.53	23.50	
Coworker/Work*	20.47	110.40	4.02*
Student/Work*	3.91	67.32	4.37*
Alone/Work*	8.38	118.80	7.47*
Miscellaneous	57.23	79.64	

*t-values significant at $p < .001$
**t-values significant at $p < .03$

the Scheffe procedure (Keppel, 1973) revealed that both retired and employed participants spent the greatest amount of time in solitary activities at home.

Table 14 presents the mean enjoyability rating given to activities in each of the 12 microsystems by retired and employed participants. Analyses of the differences in mean enjoyability ratings was complicated by the discrepancies in the number of subjects who contributed to the mean ratings for each system. T-tests between the mean ratings of retired and employed participants for each system in which at least eight retirees and eight employees reported activities revealed no significant differences between the two group.

Mesosystem Analyses

The following mesosystem analyses were conducted to delineate the effects of the amount of time spent in each microsystem on participants' daily mood. Pearson product-moment correlations between the mean time spent in each microsystem and the mean daily POMS scores were calculated for both retired and employed participants. The correlations indicated that high levels of positive mood were associated with increases in time spent in only two microsystems. Retirees reported lower total POMS scores (reflecting more positive mood; $r = -.60$, $p < .01$) and higher scores on the Vigor subscale ($r = .59$, $p < .01$) as time spent

Table 14

Mean Enjoyability Rating of Activities in Each Microsystem for Retired and Employed Faculty

System	Employment Status				t-value
	Retired		Employed		
	N	Mean	N	Mean	
Spouse/Home	15	5.07	16	5.20	.629
Child/Social	4	5.00	10	5.34	.634
Alone/Home	16	4.70	16	4.66	-.200
Friend/Home	10	5.30	6	5.50	.364
Friend/Social	12	5.55	11	5.13	-1.330
Comember/Social	9	5.26	4	5.75	1.130
Service Provider/ Social	15	4.57	16	4.95	1.510
Alone/Social	7	5.25	9	4.77	-1.300
Coworker/Work	7	5.11	16	4.56	-1.850
Student/Work	2	6.00	13	4.78	-2.790
Alone/Work	3	5.47	16	4.18	-3.040

entertaining friends at home increased. As mean time spent in solitary work activities increased, mean total POMS scores decreased ($r = -.60$, $p < .01$), as did Depression scores ($r = -.72$, $p < .002$), Confusion scores ($r = -.76$, $p < .0006$) and Tension scores ($r = -.54$, $p < .03$).

The mean time spent in several microsystems were related to increases in negative mood. Mean time spent interacting with coworkers at work was positively associated with mean Fatigue ($r = .52$, $p < .04$) and Depression ($r = .58$, $p < .02$) subscale scores for retired faculty. Mean time spent by employed faculty in the Coworker/Work microsystem was positively related to Fatigue scores ($r = .52$, $p < .04$), Anger scores ($r = .49$, $p < .05$), Depression scores ($r = .73$, $p < .001$), and total scores on the POMS ($r = .58$, $p < .02$). Mean time spent interacting with comembers at group meetings was positively related to mean Confusion subscale scores of employees ($r = .50$, $p < .05$) and mean Fatigue scores of retirees ($r = .70$, $p < .002$). In contrast to the association between mean time spent entertaining friends at home and positive mood for retirees, mean time spent in the Friends/Home microsystem was positively correlated with Depression scores ($r = .50$, $p < .05$) for the employed participants.

Stepwise regression analyses were conducted to identify the effects of daily time spent in each micosystem on the

six daily subscale scores and total POMS scores of retired and employed participants. Variance accounted for by repeated measurements of the same participants was removed before the microsystem variables were entered. Microsystem variables contributed significantly to the prediction of Fatigue scores and Confusion scores for the employed participants. Time spent interacting with service providers and engaging in solitary activities at work were found to be negative predictors of Fatigue scores (see Table 15). Time spent interacting with coworkers at work was a positive predictor of Confusion scores (see Table 16). For retirees, Fatigue scores were positively associated with time spent interacting with friends outside of one's home (see Table 17). Time spent engaging in activities alone at home was found to be a positive predictor of Tension scores (see Table 18).

It was hoped that the reinforcement index would provide a useful measure of the degree to which activities in each microsystem contributed to daily mood. However, the validity of the index as a measure of reinforcement value was not substantiated in the analyses reported above. Consequently, the variable was not used to analyze the systems data.

Table 15

Summary of Stepwise Regression Analysis Using Employed Facultys' Daily Duration Scores for Each Microsystem to Predict Fatigue Subscale Scores

Source	b	df	SS	R^2	R^2 Increment
Total		94	1756.10	.571	
Error		77	754.30		
Subjects		15	889.27		.506*
Service Provider/Social	-.0107	1	41.71		.041**
Alone/Work	-.0106	1	58.85		.024***

*$p < .0001$
**$p < .04$
***$p < .02$

Table 16

Summary of Stepwise Regression Analysis Using Employed Facultys' Daily Duration Scores for Each Microsystem to Predict Confusion Subscale Scores

Source	b	df	SS	R^2	R^2 Increment
Total		94	257.22	.306	
Error		78	178.39		
Subjects		15	66.85		.260*
Coworker/Work	0.0029	1	11.97		.046**

*$p < .02$
**$p < .04$

Table 17

Summary of Stepwise Regression Analysis Using Retired Facultys' Daily Duration Scores for Each Microsystem to Predict Fatigue Scores

Source	b		SS	R^2	R^2 Increment
Total		92	1096.47	.479	
Error		76	570.88		
Subjects		15	489.27		.446*
Friend/Social	0.0089	1	36.31		.033**

*$p < .0001$
**$p < .003$

Table 18

Summary of Stepwise Regression Analysis Using Retired Facultys' Daily Duration Scores for Each Microsystem to Predict Tension Subscale Scores

Source	b	df	SS	R^2	R^2 Increment
Total		92	362.13	.454	
Error		76	197.84		
Subjects		15	149.85		.414*
Alone/Home	0.0025	1	14.45		.040**

*$p < .0001$
**$p < .02$

DISCUSSION

Characteristics of the Participants

It was argued elsewhere in this study that previous research using heterogeneous samples may have failed to identify activity-life satisfaction relationships even if they were present in the data because the relationships differed among subgroups of the sample. A major goal of the present study was to obtain a group of participants who were homogeneous with respect to their current living situation and employment experiences.

The descriptive data collected from the participants indicated that they were very similar on many demographic and employment variables. All participants were male, and the majority were married, living in their own home with their spouses, in good to very good health, and felt that their needs were being well met by their current income. Although retired participants were older than the employed participants, the age difference was not associated with any other demographic differences between the two groups.

The participants' work experiences at the university were similar. They had been with the university an average of 20 years or longer and most had attained the rank of associate or full professor, had held a variety of administrative titles, and tended to spend most of their time in teaching or administrative activities. The retirees, of

course, were currently spending substantially fewer hours per week in paid, employment-related activities than were the employed faculty.

Perhaps the most important demographic similarities among the participants were the consistently high ratings of income adequacy and current health status. In contrast to many previous studies, none of the participants in the present investigation were seriously hampered in their activities by lack of money or physical disabilities.

The participants were also similar on their ratings of life satisfaction and mood. The two indices of general life satisfaction (LSI-Z score and Quality of Life Survey total score) indicated that both retired and employed participants were currently very satisfied with the overall quality of their lives. The same trend was reflected in the overall mood scores of the participants during their 6 days of monitoring.

Both employed and retired faculty indicated moderate to high levels of satisfaction with their current or preretirement job. It was interesting, however, that employees expected retirement to be somewhat less satisfying than the retirees reported it to be. The reason for this difference was not clear. The employees were expecting to derive the same satisfactions and experience the same difficulties during retirement that the retirees reported having already

encountered. Perhaps the employed faculty were simply being conservative in their estimates of future satisfactions.

Many of the employed faculty were planning to retire before the mandatory age. Relatively few of the retirees had done so. The most likely explanation for the finding was the increase in the university's mandatory retirement age from 65 to 70 at the beginning of the present study.

The generally high levels of life satisfaction and mood reported by the participants introduced two limitations in the present study. First, the restricted variance of the general life satisfaction and overall mood scores hindered the identification of relationships between these measures and the activity measures. Correlational techniques of statistical analysis tend to become less powerful when the variance of the measures of interest are reduced (Kerlinger & Pedhauser, 1973). Secondly, the virtual absence of ratings reflecting dissatisfaction with overall quality of life eliminated the possibility of identifying patterns of activity associated with a generally dissatisfying life style. The analyses reported above were limited to detecting patterns of activity related to different degrees of satisfaction with life.

The data provided by the nonparticipants who returned the questionnaires mailed to them indicated that the participants were similar in most respects to those who did not

volunteer to participate. This conclusion was especially well supported for the retired participants since 58 of the 64 individuals who were eligible for the present study either participated or returned a questionnaire. The findings described below, therefore, should be representative of the majority of the older, employed faculty and the recently retired faculty members of the university at which the study was conducted who have chosen not to move from the area.

The Activity Theory of Aging

The three hypotheses derived from Activity Theory which were tested in the present study were:

1. Life satisfaction is positively related to time spent in informal, formal, and solitary activities.
2. The magnitude of the relationship will be greatest for informal activities and greater for formal activities than solitary activities.
3. The magnitude of all activity-life satisfaction relationships will be greater for employed than retired individuals.

Data from the present study allowed the hypotheses to be tested in two different ways. The traditional method of testing Activity Theory hypotheses has been to correlate subjects' scores on a life satisfaction measure with their estimates of time spent in each type of activity over the

past year. In the present study, the correlations between participants' responses to the Activity Survey and their LSI-Z scores provided a traditional test of Activity Theory. Support for Activity Theory was minimal. Only time spent in informal activities by retirees was significantly correlated with life satisfaction. All other correlations were not reliably different from 0 and, therefore, failed to show the differences in the magnitude of the correlations predicted by hypothesis 2. The prediction that the activity-life satisfaction relationships of the employed participants would be of greater magnitude than those of the retirees was also disconfirmed. In fact, the magnitude of the correlations obtained for the employed faculty were smaller than those obtained for the retired faculty.

One purpose of the present study was to test the hypotheses derived from Activity Theory using data that were more specific and reliable than the commonly used yearly estimates of time spent in informal, formal, and solitary activities. The correlations between mean activity durations derived from the daily monitoring data and the average daily total score on the POMS provided such a test. Although the construct of life satisfaction is not thought to be equivalent to average daily mood (George & Bearon, 1980), LSI-Z scores and the mean total score on the POMS were correlated ($r = -.39$, p .02). It therefore appeared

appropriate to assume that the total POMS score provided an adequate estimate of "daily" life satisfaction.

The collection of activity and mood data from each participant on 6 separate days provided an opportunity to investigate the effects of informal, formal, and solitary activities on daily variations in mood. The MAXR regression conducted on the daily mood and activity data obtained in the present study produced no support for any of the Activity Theory hypotheses, indicating that they do not accurately describe the relationship of daily activity patterns to daily mood.

In summary, almost no support was found for Activity Theory in the present study. The use of accurate and reliable behavioral measures of activity provided less support for the hypotheses than the more traditional survey measures. It was suggested earlier in this paper that some factor other than the type of coparticipant associated with an activity moderated activity duration-life satisfaction relationships. Lemon, et al. (1972) had suggested a similar explanation for the failure of their data to conform to the predictions of Activity Theory. The Behavioral Model of Retirement Satisfaction (BMRS) described above proposed such a factor, the reinforcement value associated with an activity.

The Behavioral Model of Retirement Satisfaction

The BMRS provides numerous assumptions and hypotheses which can be empirically tested. Only two hypotheses were tested in the present study. Underlying the hypotheses was the assumption that increases in the level of positive daily mood would be associated with increases in the average level of reinforcement provided by the daily activities. It was also assumed that participants' ratings of an activity's enjoyability would provide an adequate measure of its reinforcement value. The significant, negative correlation between participants' mean total scores on the POMS and mean rating of activity enjoyability supported the above assumption.

It was hypothesized that daily level of positive mood would increase as time spent in activities rated as enjoyable increased. The hypothesis was only partially supported. The predicted relationship was evident for activities rated as very enjoyable. However, there was no statistically significant relationship between mean time spent in activities rated as slightly enjoyable and mean total score on the POMS. The lack of a significant relationship for slightly enjoyable activities was not particularly damaging to the BMRS. Participants were not provided a neutral point on the enjoyability rating scale and were, therefore, forced to use the "slightly enjoyable" rating for activities which

elicited no positive or negative affect. The BMRS would predict that amount of time spent in neutral activities would be unrelated to daily mood level.

More damaging to the BMRS was the positive, though not statistically significant relationship, between time spent in moderately enjoyable activities and level of negative, daily mood. The finding was the opposite of that predicted. An analysis of POMS subscale socres revealed that feelings of both fatigue and depression increased as time spent in moderately enjoyable activities increased. It seems intuitively reasonable that people might report becoming tired even if they are engaged in a moderately enjoyable activity. It is not, however, easy to explain why they would experience an increase in the negative emotions associated with depression. One possible explanation is that events which detracted from participants' positive mood occurred during the same period of time as an activity rated as moderately enjoyable. For example, a participant may have worked in his garden for an hour, even though he had a headache. Gardening may have been an activity that he enjoyed and, consequently, he could have rated it "moderately enjoyable" on the basis that the headache and not the activity per se was unenjoyable.

It has hypothesized that the magnitude of the relationship between daily activity duration and mood level would be

greatest for "very enjoyable" activities and greater for "moderately enjoyable" than "slightly enjoyable" activities. The prediction was supported even though the direction of the relationship was the opposite of that predicted for moderately enjoyable activities.

It was also hypothesized that an index of the total reinforcement value of a day's activities would be a positive predictor of daily overall mood level. In addition, it was hypothesized that the index of reinforcement value would account for a greater proportion of variance in daily mood scores than would participants' employment status or time spent in informal, formal, or solitary activities. Multiple regression analysis failed to provide support for either hypothesis.

The present findings seem to contradict those of Lewinsohn (e.g., Lewinsohn & Libet, 1972) and others (Rehm, 1978) who have found positive relationships between reinforcing activities and positive mood. It is worth identifying possible reasons for the current failure to fully replicate the previous findings since they provided the basis for the development of the BMRS. One difference between the procedures followed in the present investigation and those employed by Lewinsohn was the use of an enjoyability rating as a measure of an activity's reinforcement value. Lewinsohn had subjects rate the pleasantness of activities. It

is possible that ratings of enjoyability provide a less accurate measure of reinforcement value than do ratings of pleasantness, although there is no theoretically based reason why this should be the case.

It is also possible that participants' enjoyability ratings were inflated due to a bias against rating activities as unenjoyable. Participants rated few activities as unenjoyable. Anecdotal comments from several participants suggested that they felt it "would be one's own fault" if the activities they engaged in were unenjoyable. If such a response bias was operating, it would have made the enjoyability ratings an inaccurate measure of reinforcment value.

Despite the possible problems associated with the enjoyability ratings, it is not clear that the results of the present investigation actually contradicted those of previous studies. Consistent with previous research, time spent in activities rated as very enjoyable was positively correlated with indices of positive mood. Only activities rated as slightly or moderately enjoyable failed to show the predicted relationship. Previous studies, however, may not have assessed the effects of time spent in slightly and moderately enjoyable activities. They used Lewinsohn's Pleasant Events Schedule (Lewinsohn & Libet, 1972) as their measure of activity. The Schedule consists of a standard set of activities rated as pleasant by a standardization sample.

The fact that the activities were those rated as pleasant by a majority of the standardization sample suggests that these activities may be equivalent in reinforcement value to those rated very enjoyable in the present study. The present study might, therefore, be the first to demonstrate that mood and time spent in activity are not necessarily positively related for activities that are perceived to be only slightly or moderately enjoyable.

A final difference between the present investigation and previous studies concerns the index of daily reinforcement value used. The Pleasant Events Schedule yields a very simple index reflecting only the number of pleasant activities which occurred during the day. The present study attempted to combine both the enjoyability rating and the actual amount of time spent in daily activities into an index of daily reinforcement. However, the computational formula used was derived intuitively rather than empirically. It was based on the assumption that the reinforcement value of a given activity could be adequately represented by the product of its enjoyability rating and duration and that level of daily reinforcement could be determined by summing these products. It is quite possible that the relationship between daily reinforcement value and activity duration and enjoyability is more complicated than was initially assumed.

In summary, the present findings provided some support for the Behavioral Model of Retirement Satisfaction that seems sufficient to warrant additional investigation of the theory. Several research questions present themselves:

1. On what dimension (e.g., enjoyability, pleasantness, satisfaction) should activities be rated to enhance the prediction of daily mood?
2. How should activity duration and enjoyability information be combined to enhance the prediction of daily mood?
3. Do other daily experiences (e.g., a headache) not recorded during self-monitoring affect daily mood?

Systems Analysis

Unlike the Activity Theory and BMRS analyses described above, the systems analyses conducted with the daily activity and mood data were not designed to test specific hypotheses. They were conducted to provide descriptive information about the activities in which the participants had engaged and the relationship between those activities and daily mood. There are, therefore, several limitations associated with the findings reported above. First, the large number of analyses conducted increased the probability that some statistically significant results would occur on the basis of chance alone. Second, the statistically significant correlations reported betwen activity durations and mood scores

do not, of course, indicate that the two variables are causally related. Finally, all analyses were based on data representing only 6 days of activity. Such a sample obviously does not include all the activities in which the participants sometimes engage. Consequently, no claim can be made that all the activities which influence participants' mood were identified in the present study. The sole purpose of the systems analyses was to identify relationships between mood and activity which warrant further investigation.

Comparisons of time spent in each of the 11 systems by retired and employed participants did not reveal any surprising differences. Employed faculty spent more time than retirees in all systems related to work, while retirees spent more time in solitary activities at home than did employed participants. Employed faculty also spent more time with their children than did retirees, apparently because more of the employees had children living at home.

It was noteworthy that employed and retired faculty did not differ significantly from each other in their mean enjoyability ratings for the 11 systems. The similarity of the ratings suggested that retirement neither enhanced or decreased the satisfactions derived from activities engaged in both before and after retirement.

The relationships between mood and time spent in each of the systems did differ for retired and employed faculty.

Retired faculty who reported the highest scores on the Vigor subscale and the most positive overall mood were those who had spent the greatest amount of time entertaining friends at home. The relationship was consistent with the Activity Theory hypothesis that the strongest mood-activity relationships are those involving informal activities. In contrast, the regression analyses revealed that days characterized by high levels of fatigue were days in which time spent interacting with friends in a social setting (e.g., restaurants, parties, etc.) was high. The Friends/Social microsystem was also comprised of activities which would be labelled "informal" by Activity Theory, but it was associated with an increase in negative mood. A criticism of Activity Theory presented earlier in the present paper was that the classification of informal, formal, and solitary activities was too broad. Within each category, some activities might have positive effects on life satisfaction and other activities might have a negative impact. Such differences could result in a failure to observe any significant relationship between duration of all activities categorized as informal and life satisfaction. Exactly this result appears to have occurred in the present study. There was no significant relationship between mean time spent in informal activities and average, total mood scores of retirees during the monitoring days, perhaps because of the existence of a positive

activity-mood relationship for the Friends/Home microsystem and negative relationship for the Friends/Social microsystem.

Retirees also demonstrated higher levels of tension on days in which time spent in solitary activities at home was high. Several possible explanations for the finding are possible. The Tension subscale of the POMS consisted of those adjectives which most closely described feelings of boredom. It may be that increased boredom, rather than anxiety, was the mood associated with increasing amount of time in the Alone/Home microsystem. Additionally, the relationship was evident only from the regression analyses, suggesting that the existence of high levels of tension concommitant with high levels of solitary activity at home was a characteristic of particular monitoring days. The monitoring days of many of the retired participants included several days of inclement weather which, according to their self reports, forced them to cancel scheduled activities away from home. Thus, the observed relationship may have resulted more from an unexpected and uncontrollable cancellation of out-of-home activities rather than any negative characteristics of the solitary activities engaged in at home during those days.

Even though only five retirees reported any paid employment activities during the monitoring period, there was

a significant positive relationship between Fatigue and Depression scores and time spent interacting with coworkers. The implications of this finding are discussed below since a similar relationship was observed among the employed faculty.

The variations in mood among the retired participants were associated with differences in the amount of time spent in a variety of microsystems, most of which involved interaction with non-family members. Variations in mood among the employed participants were most strongly associated with time spent in two specific sets of activities: solitary activities at the work place and activities involving coworkers at the work place. The relationships between these two microsystems and mood level of employed faculty also appeared to be stronger in terms of the number and magnitude of the correlations with the POMS subscale and total scores than any of the relationships observed for the retirees. For example, employed faculty who spent the greatest amount of time interacting with coworkers reported the highest Fatigue, Depression, Confusion, and Tension scores and the lowest overall level of mood. Conversely, employed participants who spent the greatest amount of time engaged in solitary work activities reported the lowest Fatigue, Anger, and Depression scores and the highest levels of overall mood.

The strong positive relationship between time spent with coworkers and indices of negative mood was a surprising finding. Results of several studies have suggested that interactions with coworkers often buffer the effects of job stress (Cohn, 1982). The results of the present investigation suggested the opposite conclusion. A closer examination of the data, however, provided some clarification of the apparent inconsistency between the results of the present and previous investigations.

The statistically significant correlations do not, of course, necessarily indicate that time spent in the Alone/Work or Coworker/Work microsystem directly affected participants' moods. In addition, time spent in solitary work activities and time spent interacting with coworkers was negatively correlated ($r = -.79$, p .04). It was not clear, therefore, whether time spent with coworkers was related to negative mood because of aversive properties associated with such interactions or simply because they took time away from enjoyable, solitary work activities.

Anecdotal evidence from the employed faculty did indidate that the activities comprising the Coworker/Work microsystem were perceived negatively. The activities were predominantly departmental faculty meetings which the majority of employed participants described as trival and routine. Previous research was concerned with coworker interactions

of a less formal nature and, consequently, their results are not directly comparable to those found for the Coworker/ Work microsystem. It is interesting to note that there were very few interactions with coworkers which occurred outside of departmental meetings. It is often assumed that informal interactions with professional colleagues is a particular benefit of working in a university setting. The lack of such interactions may, however, have been an artifact of the limited number of days monitored or the failure of the participants to record such interactions as major activities. It would be interesting to verify or disconfirm the low frequency of informal interactions with coworkers at work in future studies using self-monitoring procedures.

Significant positive correlations between indices of negative mood and two additional microsystems were obtained for the employed faculty. Similar to the results obtained for retired faculty, employed participants who spent the greatest amount of time interacting with comembers at organizational meetings reported the highest scores on a subscale reflecting negative mood (i.e., the Confusion subscale). The observed association between indices of negative mood and time spent in activities with other club or organization members was consistent with findings reported by Longino and Kart (1982). They found that older individuals who spent the greatest amoung of time in "formal" (i.e.,

club or organizational) activities tended to support lower life staisfaction scores. Longino and Kart's data did not provide a conclusive explanation for the unexpected relationship. The investigators suggested, however, that the social interaction which occurs during meetings of clubs and organizations may not always be a positive experience for the participants. Extrapolating from previous studies, Longino and Kart argued that social organizations tend to produce an informal social hierarchy among members. Those individuals perceived to be near the bottom of the hierarchy may be treated by other group members in a manner which tends to lower their self-concept and, as a result, decrease their life satisfaction.

Findings from the present study suggested an alternative explanation for the apparently negative impact of time spent with comembers at club and organization meetings. Comember/Social activities were preceded by personal grooming and other preparatory activities and both preceded and followed by time spent traveling to the meeting place. The time spent in travel and preparation for the social events may have been primarily responsible for the positive association between retirees' Fatigue scores and employed faculty's Confusion-Disorganization scores and time spent in the Comember/Social system.

The regression analyses revealed that daily variation in employed participants' moods could be predicted for only two subscales of the POMS. Confusion scores were found to be highest on days in which time spent in activities involving coworkers at work were greatest. The finding was consistent with the correlations discussed above which depicted the negative relationship between mood level and time spent in the Coworker/Work microsystem. Fatigue scores were found to be lowest on days in which the amount of time spent in solitary work activities and obtaining services from service providers (e.g., taking care of banking needs, visiting the doctor, etc.) were the highest. The finding that time spent in the Alone/Work microsystem was a negative predictor of Fatigue was consistent with the correlational analyses. The reason why increased time with service providers was associated with low levels of Fatigue was not discernable from the present data.

Integration of Findings

A large amount of information about the participant's employment and retirement experiences was collected during the present study. Taken together, it provided a partial description of the retirement experiences of individuals who have pursued academic careers at a state, land-grant university. Of course, the methodology employed placed several limitations on the interpretation of the data. The study

used a cross sectional design which could not monitor actual pre-to postretirement changes in activity and mood. Additionally, specific and detailed data concerning participants' daily activity and mood were collected over a period of time that cannot be considered a representative sample of the participants' yearly experiences. However, the data obtained still provided a useful description of the population's retirement experiences.

Retirement was perceived to be quite satisfying by the majority of retired participants. Although employed faculty expected to be somewhat less satisfied with retirement, no one expected to be dissatisfied. This finding is in accord with the findings of previous studies which found 85%-90% of their sample to be satisfied with retirement (e.g., Harris, 1975).

Retirement was associated with changes in the amount of time spent in several types of activity. Estimates of the yearly frequency of activities provided in response to the Activity Survey indicated that retirement was associated with increases in the frequency of household maintenance activities, writing and visiting friends, and volunteer work and decreases in the frequency of paid employment activities. The monitoring data indicated only that retirement was associated with more time spent in solitary activities at home and less time in work related activities.

Changes in the satisfaction derived from various activities was evident only in participants' responses to the overall Quality of Life Survey. Retirement was associated with the decreased importance of having opportunities to learn and to express oneself in a creative manner to overall quality of life. The enjoyability of specific types of activities recorded during the monitoring period did not differ as a function of retirement.

It had been hoped that the participants' monitoring data would suggest what activities eventually take the place of work-related activities in the production of daily mood following retirement. Differences in activity-mood relationships between pre- and postretirement were observed in the monitoring data. However, no postretirement activities were found to be as strongly associated with mood as were the work activities. In addition, the only type of activity associated with positive mood for retirees (i.e., entertaining friends at home) was found to be associated with negative mood for employed faculty.

The failure of the participants' monitoring data to clearly reveal specific types of activities which were likely to become the major contributors to daily mood following retirement does not necessarily indicate that such information cannot be derived from the current activity patterns of retired and employed faculty members. The

methodology employed in the present study may not have been optimal for collecting the needed data. Suggestions for improving the methodology of future studies are presented in the following section.

Summary and Conclusions

The present study had several goals and each of them was met. It was hypothesized that the failure of previous studies to identify relationships between activity patterns and retirement satisfaction was due to their use of unreliable and global measures of activity and selection of participants who differed substantially from each other on a variety of background variables. The recruitment of employed and retired faculty of a single university provided the present study with a sample of individuals who were very similar on a variety of demographic and work history variables. The self-monitoring procedure for obtaining activity data provided a large amount of information whose accuracy was assessed and found to be quite acceptable.

Hypotheses derived from Activity Theory were tested using both traditional survey measures and more detailed and specific monitoring measures. Results from both sets of measures provided only limited support for Activity Theory. Consistent with other studies (e.g., Longion & Kart, 1982), statistically significant relationships between life satisfaction or mood measures and activity duration did not exist

for each category of activity. Additionally, increases in time spent in specific formal activities were found to be related to increases in negative, rather than positive, mood as predicted by Activity Theory. It was hypothesized that the predictions derived from Activity Theory have been only occasionally supported because the categories of formal, informal, and solitary activity were too broad. Two activities falling within the same category may demonstrate different relationships with life satisfaction/daily mood. The systems analysis of the retired participants' monitoring data supported the above hypothesis. Time spent entertaining friends at home was positively related to mood level, while time spent interacting with friends in a social setting was negatively related to mood. Both activities fell under the classification of "informal activity" which was found to be unrelated to the mean level of retirees' daily overall mood.

Another, more useful method of categorizing activities appeared to be needed. The Behavioral Model of Retirement Satisfaction (BMRS) was developed to meet this need. The BMRS proposed that the reinforcement value of activity determined the relationship between daily mood and amount of time spent in the activity. The BMRS hypotheses about the relationship between daily mood and time spent activities perceived as aversive (i.e., having a reinforcement value

rated as negative) could not be tested due to the paucity of activities rated as unenjoyable. The BMRS hypotheses concerned with activities having a positive reinforcement value were partially supported. As predicted, activities rated very enjoyable were associated with level of positive mood. Contrary to predictions, indices of negative mood tended to increase as time spent in activities rated moderately enjoyable increased. Additionally, an index of reinforcement value computed from the duration and enjoyability scores of recorded activities did not prove to be a significant predictor of mood. These contradictory findings may indicate that the enjoyability ratings were not an adequate measure of an activity's reinforcement value. It could also be due to the failure of the monitoring procedure to account for mood altering events such as headaches and physical illness. Finally, the findings may indicate that mood and activity duration and reinforcement value are not linearly related as predicted by the BMRS. Each of the above possibilities could be empirically investigated in future studies.

The present study was also designed to determine whether Bronfenbrenner's (1977) systems model and Wahler's (Wahler et al., 1981) methodology for social systems analysis could provide a practical and useful method of searching for unique activity-mood relationships worthy of further investigation. Bronfenbrenner's definition of a microsystem

provided a method for grouping the large amount of activity data obtained in the present study into 11 discrete systems. The groupings proved to be quite functional; eight of the systems were found to be related to mood. Bronfenbrenner's systems model also provided a very useful framework for organizing and presenting the disparate and seemingly unrelated literature which discusses retirement.

Correlational analyses of the monitoring data revealed several unhypothesized relationships between activity and mood variables that deserve further study. Time spent at meetings of clubs and organizations was associated with increases in negative mood for both retirees and employed faculty. Future studies attempting to validate and explain the relationship are needed. Retirees are commonly advised to join organizations so that they can stay socially involved and active. Such advice may prove to be ill-founded.

Average daily mood of employees was very strongly associated with work activities. In addition to further explaining the interesting finding that the activities which commonly involve contact with coworkers are strongly associated with negative mood, future studies need to determine whether the absence of relationships between non-work activities and positive mood observed in the present study exist among other groups of individuals.

The present findings suggested several ways in which future studies of the relationship between retirement satisfaction and daily activity patterns can be improved. The relative merits of using different rating scales to assess the positive or negative characteristics of self-monitored activities needs to be evaluated. Lewinsohn obtained ratings of pleasantness, and Winett and Neale (1981) and the present study used enjoyability ratings. There are currently no empirical data to support the use of one scale over the other.

As discussed above, it is important to determine if unrecorded events, such as headaches, are associated with daily mood. If they are, participants either need to monitor them or include their effects in the ratings given to the activity which they accompany.

Pre- to postretirement changes in activity-mood relationships could be best assessed in a longitudinal study. Additionally, a more representative sample of individuals' activities could be obtained if they self-monitored several times over the course of a year.

The self-monitoring procedure employed in the present study required more effort on the part of the participants than many individuals were willing to put forth. Unless some form of incentive is available, volunteers for monitoring studies are likely to represent a select group of

individuals who are specifically interested in the topic under investigation.

The amount of data produced by self-monitoring of daily activities was formidable. Even with the use of high speed computers, analysis of the data can quickly become time consuming and costly, especially if the analyses are of the general, exploratory type performed during the present investigation. Self-monitoring studies, therefore, may be a practical means of investigating mood-activity relationships among large samples of individuals only if consideralbe amounts of money and personnel are available.

The present study was designed to assess how enjoyable specific activities were perceived to but but did not systematically assess what qualities of the activities made them enjoyable or unenjoyable. The potential importance of such information was illustrated by anecdotal reports from three participants who had rated long distance driving as a very enjoyable activity. One individual stated that he found driving enjoyable because it was very relaxing. The second participant liked to make long car trips because they engendered a sense of excitement about visiting new places. The third participant enjoyed driving because it gave him an opportunity to set goals for himself and have the satisfaction of achieving them. This he did by estimating how long it should take him to reach various points

along his route and then attempting to arrive at the locations as close to the estimated time as possible.

Each of the participants was deriving a different type of satisfaction from the same activity. A clear understanding of activity-mood relationships can be obtained, therefore, only if information about activity enjoyability can be supplemented by information about why the activities are enjoyable or unenjoyable.

The present study was based on the premise that the retirement experiences of individuals vary so greatly that it was fruitless to search for a set of experiences common to all retirees. A similar assumption can be made about the variability of retirement experiences of individuals who retire at different points in time. It seems unlikely, for example, that the experiences of the employed participants in the present study will match exactly those of the retired participants. The currently employed faculty will not be forced to retire until age 70, five years later than the mandatory age at which most of the retired participants had to stop working. Mandatory retirement at age 70 may produce changes in the average financial and health status of the retired faculty and thereby change the nature of the activities in which they engage. Retirement in the United States is a relatively young and very dynamic institution. It has been predicted that the basic characteristics of the

country's pattern of education-work-retirement progression through life will change over the next decade (Best, 1980). Consequently, researchers interested in the effects of retirement on the individual must remain cognizant of the ongoing changes in exo- and macrosystemic factors which can alter the retirement experiences of different generations of retirees.

The present study was conceived as an exploratory rather than confirmatory investigation of the relationship of daily activity patterns and retirement satisfaction. It introduced a previously unused methodology for studying the field. Hopefully, it will stimulate other researchers to take a new look at an important but recently neglected area of gerontological research.

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APPENDICES

APPENDIX A

ACTIVITY SURVEY

Code No. _____

ACTIVITY SURVEY

Instructions. "I would like to find out about how often you spend time in particular types of activities. After I read off an activity, please tell me about how many times you do that activity per day, per week, per ponth or per year, whichever is most appropriate. Here's a list of the activities I'm going to ask about (give sheet to participant). (Begin each question with the phrase ...) "HOW OFTEN DO YOU SPEND TIME ...?"

____ 1. Taking care of financial matters such as banking, insurance, Social Security, Pension - Medicare, Medicaid problems, etc.)

____ 2. On household maintenance activities such as cleaning up or fixing things around your house or aprtment or in your car or doing things like yard work?

____ 3. Fixing a meal or cleaning up after a meal?

____ 4. Washing or mending clothes?

____ 5. Exercising? (What kind?) _____

_____

____ 6. Writing or phoning your relatives, that is parents, brothers, sisters, etc.?

____ 7. Visiting with your relatives in person?

____ 8. Writing or phoning your children?

____ 9. Visiting with your children in person?

____ 10. Writing or phoning friends?

____ 11. Visiting with friends?

____ 12. Doing volunteer work or helping other people in some way?

____ 13. In political activities or getting involved in public affairs?

____ 14. Learning new things by taking classes, going to the library, visiting museums, etc.?

____ 15. At religious activities such as church services or engaging in other spiritual activities?

____ 16. At work (i.e. doing a job that you get paid for)?

____ 17. Doing creative things such as drawing, painting, writing, craftwork, etc.

____ 18. Going "out on the town", for example eatting out, going dancing, going to a party, etc.?

____ 19. Reading, watching TV, listening to music, watching a movie or some similar type of entertainment?

APPENDIX B

DAILY ACTIVITY FORM

WHAT DID YOU DO?	TIME BEGUN	TIME ENDED	WHERE WAS THIS?	WITH WHOM?	DO ANYTHING ELSE?	HOW ENJOYABLE WAS THE ACTIVITY? Very Unenjoyable	Moderately Unenjoyable	Mildly Unenjoyable	Mildly Enjoyable	Moderately Enjoyable	Very Enjoyable
						☐	☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐	☐

Code Number:__________ Date:__________/__________

Day Date

APPENDIX C

DEMOGRAPHIC QUESTIONNAIRE

Code No. _____ Group _____

BACKGROUND INFORMATION SHEET

_____ 1. How old are you?

_____ 2. Are you ..... 1) married or 2) not married or 3) widowed

_____ 3. How many children do you have who are still living?

_____ 4. Do you live in .... 1) your own home 2) an apartment
3) in a relative's home 3) other
_____

_____ 5. How many people live with you? Who are they _____
_____

_____ 6. What is your approximate yearly income? 1) less than $5,000
2) $5,000 - $9,999 3) $10,000 - $14,999 4) $15,000 - $19,999
5) $20,000 - $24,999 6) $25,000 - $29,999 7) $30,000 - $34,999
8) $35,000 - $39,999 9) $40,000 or more

_____ 7. Over all, how well does your current income meet your needs:
1) not at all well 2) only slightly well 3) moderately well
4) well 5) very well

_____ 8. Does your current income interefere with your ability to lead the kind of live you would like to live right now? (If so) how?
_____
_____
_____
_____

_____ 9. How would you evaluate your health, relative to other people your age? 1) poor 2) fair 3) good 4) very good

_____ 10. Does your health interefere with your ability to lead the kind of life you would like to live right now? If so, how?
_____
_____
_____
_____

Activity Survey - page 2

____ 20. Participating in a sport, playing cards, fishing, hunting or some other active type of entertainment?

____ 22. Traveling?

____ 23. Are there activities that you would like to engage in more frequently than you do now?

(If so) What are these activities? _____

_____

_____

_____

What keeps you from engaging in these activities more often?

_____

_____

_____

_____

APPENDIX D

QUALITY OF LIFE SURVEY

Code No. _____

Group _____

QUALITY OF LIFE SURVEY

RATINGS

I N

___ ___ 1. Material comforts --- things like a desirable home, good food, posessions, conveniences, an increasing income and security for the future.

___ ___ 2. Health and personal safety --- to be physically fit and vigourous, to be free from anxiety and distress, and to avoid bodily harm.

___ ___ 3. Relationships with your parents, brothers, sisters and other relatives--- things like communicating, visiting, understanding, doing things and helping and being helped by them.

___ ___ 4. Having and raising children --- this involves being a parent and helping, teaching, and caring for your children.

___ ___ 5. Close relationship with a husband/wife/a person of the opposite sex.

___ ___ 6. Close friends --- sharing activities, interests and views; being accepted, visiting, giving and receiving help. love, trust, support and guidance.

___ ___ 7. Helping and encouraging others --- this includes adults or children other than relatives or close friends. These can be your own efforts or efforts as a member of some church, club or volunteer group.

___ ___ 8. Participation in activities relating to local and national government and public affairs.

___ ___ 9. Learning, attending school, improving your understanding, or getting additional knowledge.

___ ___ 10. Understanding yourself and knowing your assets and limitations, knowing what life is all about and making decisions on major life activities. For some people, this includes religious or spiritual experiences. For others, it is an attitude toward life or a philosophy.

___ ___ 11. Work in a job or at home that is interesting, rewarding, worthwhile.

___ ___ 12. Expressing yourself in a creative manner in music, art, writing, photography, practical activities, or in leisure-time activities.

___ ___ 13. Socializing --- meeting other people, doing things with them, and giving or attending parties.

___ ___ 14. Reading, listening to music, or observing sporting events or entertainment.

___ ___ 15. Participation in active recreation --- such as sports, traveling and sightseeing, playing games or cards, singing, dancing, playing an instrument, acting and other such activities.

APPENDIX E

JOB INFORMATION SURVEY

Code No. _____

INITIAL INTERVIEW -R

I Job Information

____ 1. What was your official title in the job from which you retired?

_____

____ 2. What did you do in the job from which you retired? (obtain a brief description of duties and number of people supervised)

_____

_____

_____

_____

_____

_____

____ 3. How long did you work in your last job?

____ 4. How many years did you work full time?

____ 5. What do you miss most about your work?

_____

_____

_____

_____

_____

_____

____ 6. What do you miss least about your work?

_____

_____

_____

_____

_____

Initial Interview - R - page 2

____ 7. Have you accomplished all that you hoped to accomplish during your working years?

(If not) What were you not able to accomplish? _____

_____

_____

_____

_____

_____

____ 8. Overall, how satisfied were you with the job from which you retired?

1= very dissatisfied 2= moderately dissatisfied 3=slightly dissatisfied
4= slightly satisfied 5= moderately satisfied 6= very satisfied

____ 9. Are you currently working for pay in any capacity?

(If yes) What kind of work are you doing? _____

_____

_____

_____

_____

____ On the average, how many hours per week do you work?

____ About how much money do you make from the work you are doing?

1= less than $500 2= $500-$999 3= $1,000-$1,499 4= $1,500-$1,999
5= $2,000-$2,499 6= $2,500-$2,999 7= $3,000-$3,499 8= $3,500-$3,999
9= $4,000 or more

Code No. _____

INITIAL INTERVIEW - W

I Job Information

____ 1. What is your official job title? _____

____ 2. What do you do in your job? (obtain a brief description of duties and number of people supervised)

_____

_____

_____

_____

_____

_____

____ 3. How long have worked in your present job?

____ 4. How many years have you worked full time?

____ 5. What do you like most about your work?

_____

_____

_____

_____

_____

_____

____ 6. What do you like least about your work?

_____

_____

_____

_____

_____

_____

____ 7. Have you accomplished everything you hoped to accomplish at this point in your working life?

(If not) What have you not been able to accomplish? _____

_____

_____

_____

_____

_____

____ 8. Overall, how satisfied are you with your current job?

1= very dissatisfied 2= moderately dissatisfied 3= slightly dissatisfied
4= slightly satisfied 5= moderately satisfied 6= very satisfied

APPENDIX F

LIFE SATISFACTION INDEX-Z

Code No. _____

LIFE SATISFACTION INDEX - Z

I am going to read some statements about life in general that people feel differently about. After I have read a statement, please tell me whether you agree with the statement, disagree with the statement or you are not sure one way or the other.

___ 1. As I grow older, things seem better than I thought they would be.

___ 2. I have gotten more of the breaks in life than most of the people I know.

___ 3. This is the dreariest time of my life.

___ 4. I am just as happy as when I was younger.

___ 5. These are the best years of my life.

___ 6. Most of the things I do are boring or monotonous.

___ 7. The things I do are as interesting to me as they ever were.

___ 8. As I look back on my life, I am fairly well satisfied.

___ 9. I have made plans for things I'll be doing a month or a year from now.

___ 10. When I think back over my life, I didn't get most of the important things I wanted.

___ 11. Compared to other people, I get down in the dumps too often.

___ 12. I've gotten pretty much what I expected out of life.

___ 13. In spite of what people say, the lot of the average man is getting worse, not better.

APPENDIX G

NONPARTICIPANTS' SURVEY

UNIVERSITY FACULTY

1. How old are you? _____

2. Are you ..... married? not married? (Please circle one)

3. What is your current academic rank? (Please check one)

___ Assistant professor ___ Associate professor ___Professor

4. In general, which of the following types of activities takes the greatest percentage of your time? (Please check one)

____ Teaching related activities ____ Extension related activities

____ Research related activities ____ Departmental &/or University administration related activities

5. Overall, how satisfied are you with your present job here at Tech? (Please circle the most appropriate number on the scale below.)

1	2	3	4	5	6
Very Dissatisfied	Moderately Dissatisfied	Slightly Dissatisfied	Slightly Satisfied	Moderately Satisfied	Very Satisfied

6. Overall, how satisfied do you think you will be with retirement?

1	2	3	4	5	6
Very Dissatisfied	Moderately Dissatisfied	Slightly Dissatisfied	Slightly Satisfied	Moderately Satisfied	Very Satisfied

7. Overall, how well does your current family income meet your needs? (Please circle the most appropriate number on the scale below.)

1	2	3	4	5
Not at all well	Only slightly well	Moderately well	Well	Very Well

8. How would you evaluate your health, relative to other people your age? (Please circle the most appropriate number on the scale below.)

1	2	3	4
Poor	Fair	Good	Very Good

APPENDIX H

PROFILE OF MOOD STATES

PARTICIPANT NUMBER _____ DATE _____ PHASE _____

Below is a list of words that describe feelings people have. Please read each one carefully. Then circle the answer to the right which best describes how you have been feeling today.

The numbers refer to these phrases:
0 = not at all
1 = A little
2 = Moderately
3 = Quite a bit
4 = Extremely

1.	Friendly	0	1	2	3	4
2.	Tense	0	1	2	3	4
3.	Angry	0	1	2	3	4
4.	Worn out	0	1	2	3	4
5.	Unhappy	0	1	2	3	4
6.	Clear-headed	0	1	2	3	4
7.	Lively	0	1	2	3	4
8.	Confused	0	1	2	3	4
9.	Sorry for things done	0	1	2	3	4
10.	Shaky	0	1	2	3	4
11.	Listless	0	1	2	3	4
12.	Peeved	0	1	2	3	4
13.	Considerate	0	1	2	3	4
14.	Sad	0	1	2	3	4
15.	Active	0	1	2	3	4
16.	On edge	0	1	2	3	4
17.	Grouchy	0	1	2	3	4
18.	Blue	0	1	2	3	4
19.	Energetic	0	1	2	3	4
20.	Panicky	0	1	2	3	4

21.	Hopeless	0	1	2	3	4
22.	Relaxed	0	1	2	3	4
23.	Unworthy	0	1	2	3	4
24.	Spiteful	0	1	2	3	4
25.	Sympathetic	0	1	2	3	4
26.	Uneasy	0	1	2	3	4
27.	Restless	0	1	2	3	4
28.	Unable to concentrate	0	1	2	3	4
29.	Fatigued	0	1	2	3	4
30.	Helpful	0	1	2	3	4
31.	Annoyed	0	1	2	3	4
32.	Discouraged	0	1	2	3	4
33.	Resentful	0	1	2	3	4
34.	Nervous	0	1	2	3	4
35.	Lonely	0	1	2	3	4
36.	Miserable	0	1	2	3	4
37.	Muddled	0	1	2	3	4
38.	Cheerful	0	1	2	3	4
39.	Bitter	0	1	2	3	4
40.	Exhausted	0	1	2	3	4
41.	Anxious	0	1	2	3	4
42.	Ready to fight	0	1	2	3	4
43.	Good natured	0	1	2	3	4
44.	Gloomy	0	1	2	3	4
45.	Desperate	0	1	2	3	4
46.	Sluggish	0	1	2	3	4
47.	Rebellious	0	1	2	3	4
48.	Helpless	0	1	2	3	4
49.	Weary	0	1	2	3	4
50.	Bewildered	0	1	2	3	4

The numbers refer to these phrases:

0 = Not at all

1 = A little

2 = Moderately

3 = Quite a bit

4 = Extremely

51.	Alert	0	1	2	3	4	The numbers refer to these phrases:
52.	Deceived	0	1	2	3	4	
53.	Furious	0	1	2	3	4	0 = Not at all
54.	Efficient	0	1	2	3	4	1 = A little
55.	Trusting	0	1	2	3	4	2 = Moderately
56.	Full of pep	0	1	2	3	4	3 = Quite a bit
57.	Bad tempered	0	1	2	3	4	4 = Extremely
58.	Worthless	0	1	2	3	4	
59.	Forgetful	0	1	2	3	4	
60.	Carefree	0	1	2	3	4	
61.	Terrified	0	1	2	3	4	
62.	Guilty	0	1	2	3	4	
63.	Vigorous	0	1	2	3	4	
64.	Uncertain about things	0	1	2	3	4	

APPENDIX I

RETIREMENT INFORMATION SURVEY

Initial Interview - R - page 3

II Retirement Information

____ 10. How long have you been retired?

____ 11. Did you want to retire?

(If no) Why did you retire? _____

_____

_____

_____

_____

____ 12. What do you like most about being retired?

_____

_____

_____

_____

_____

____ 13. What do you like least about being retired?

_____

_____

_____

_____

_____

____ 14. Overall, how satisfied are you with retirement?

1= very dissatisfied 2= moderately dissatisfied 3= slightly dissatisfied
4= slightly satisfied 5= moderately satisfied 6= very satisfied

Initial Interview - W - page 3

II Retirement Information

____ 10. At what age do you expect to retire?

____ 11. Are you looking forward to retirement?

Why or why not _____

_____

_____

_____

_____

_____

____ 12. What do you think you will like most about being retired?

_____

_____

_____

_____

_____

____ 13. What do you think you will like least about being retired?

_____

_____

_____

_____

_____

____ 14. Overall, how satisfied do you think you will be with retirement?

1= very dissatisfied 2= moderately dissatisfied 3= slightly dissatisfied
4= slightly satisfied 5= moderately satisfied 6= very satisfied

APPENDIX J

RECRUITMENT LETTER

COLLEGE OF ARTS AND SCIENCES

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Blacksburg, Virginia 24061

DEPARTMENT OF PSYCHOLOGY

May 21, 1982

I am a graduate student in psychology and am currently working on my dissertation. As part of my research, I am attempting to collect information about the similarities and differences in the types of daily activities engaged in by retired and employed members of Tech's faculty. The purpose of this letter is to request your assistance in the collection of this information. I am collecting the information in two ways. General information about daily activities and degree of satisfaction with work and/or retirement is gathered during an interview which lasts 1 - 1 1/2 hours. More specific information about daily activities is obtained by having individuals list, on a specially prepared form, the major activities which occur on six different days. Recording the major activities of the day takes about 10-15 minutes. To provide information about the general impact of the day's activities, individuals will also complete a mood scale for those days on which they record their activities. The mood scale requires about 3 minutes to complete.

It will be extremely helpful to me if you can assist me in this project but I realize that both the amount of time and paper work involved may be more than your schedule can accomodate. If you are willing and able to participate or would like more information about the project, please detach the form below and return it to me through campus mail. I can also be reached at Extension 5291 during the day and 951-0468 in the evening, if you have any questions.

Sincerely,

Steven Lovett

____ I AM WILLING TO DISCUSS THE POSSIBILITY OF PARTICIPATING IN YOUR PROJECT.

NAME _____

APPENDIX K

ACTIVITY CODES

ACTIVITY CODES

Instructions: Definitions and/or examples of each activity code are given below. Each code number is composed of a major category code (the number to the left of the decimal point) and a subsidiary code (the number to the left of the decimal point. Subsidiary codes of "0" are given to activities which meet the criteria for a major category code but do not meet the criteria for any other associated subsidiary code.

1.0 PERSONAL CARE: any activity done primarily to enhance physical appearance or health.

1.1 Hygeine/grooming - "getting up"; getting dressed, bathing: getting a haircut, etc.

1.2 Health care - visiting the doctor, dentist, optometrist, pharmacist, etc.; any type of home treatment for an illness.

1.3 Exercise - walking; jogging; doing calesthenics, aerobics, etc. Does not include participation in a sport.

2.0 Meals: any activity involving the preparation, consumption or cleaning up of a meal

2.1 Preparing food - fixing breakfast, lunch, dinner, a snack; canning; baking; etc.

2.2 Consuming food - eating breakfast, lunc, dinner, a snack; drinking a beverage.

2.3 Cleaning up - washing dishes; putting away food; wiping the table, etc.

2.4 Combination - any combination of the above activities.

3.0 ERRANDS: any activity done inside or outside the home which provides needed goods and services to the family and does not meet the criteria for any other major category code.

3.1 Shopping - any activity such as grocery shopping; going to the store; buying stamps at the post office, etc.

3.2 Providing transportation - any activity in which the person was transporting a member of the immediate family to some location. Transportation provided to a nonfamily member should be coded 9.1 (see below).

3.3 Traveling - time spent traveling in a car, bus, taxi, etc. between two points; trip to Roanoke to shop; driving to a friend's house to visit; etc. Traveling for the purpose of sight-seeing or to conduct business is coded 5.5 or 10.6, respectively (see below).

4.0 PROPERTY MAINTENANCE: any activity done to preserve the functioning or appearance of any form of personal property. Pet care is included.

4.1 Household - vacuuming; dusting; repairing plumbing, woodwork, etc.; any activities done to keep the house in good repair.

4.2 Yard - cutting grass; raking leaves; etc. Gardening is coded 5.1 (see below).

4.3 Personal-washing and/or mending clothes.

5.0 RECREATION: any activity which provides recreation, relaxation or entertainment.

5.1 Physically active - sports, hiking, hunting, gardening, etc.

5.2 Social - playing cards; conversing; attending parties; etc.

5.3 Sedentary/Solitary - reading; listening to music; watching TV; etc.

5.4 - Sleeping/Resting - taking a nap; nonspecific forms of relaxing.

5.5 - Travel and sight-seeing - "going for a drive"; any time spent on the road during a vacation, etc.

5.6 - Creative - drawing; painting; writing; craftwork; etc.

5.7 - Planning/Preparing recreation - planning trips; packing for trips; looking at travel brochures.

6.0 RELIGIOUS ACTIVITIES: any activities of a religious or spiritual nature or involving contact with members of a formal religious institution.

6.1 Formal/Informal services - church services; bible study; devotions.

6.2 Volunteer service - serving on a church board; helping at a church social function.

6.3 Social events - attending a church picnic, reception, etc.

7.0 COMMUNITY ACTIVITIES: any activities which concern politics, civic affairs or community service.

7.1 Volunteer service - hospital aide, red cross volunteer; helping at a Walk-A-Thon; volunteer service to a religious organization is coded 6.2 (see above).

7.2 Civic/Political - attending town meetings; being on town council; working for a political candidate; etc.

7.3 Formal organizations - attending meetings of organizations such as Lions Club; bridge groups; etc.

7.4 University service - sitting on any university-related committee; performing any nonpaid service for the university.

8.0 FINANCIAL ACTIVITIES: any activities concerning the finances of a business or home.

8.1 Personal - paying bills; going to the bank; reading about investiments.

8.2 Business - any financial activites related to work or business.

9.0 HELPING OTHERS: any activities which are done as a favor another person.

10.0 Business/Work: any activities related to one's job; any activities for which one is paid.

10.1 Teaching/Advising - teaching a class; advising a student.

10.2 Teaching administration - any form of paper work that deals directly with a class or student, e.g. grading tests, preparing lectures, etc.

10.3 General administrative - any form of paperwork or meetings dealing with departmental/university issues rather than students.

10.4 Discussions with colleagues - any informal discussions with coworkers which occur during business hours.

10.5 Research/Consulting - any activities related to research or consulting.

10.6 Travel - any travel done as part of work.

10.7 Writing - writing professional articles, reports or books during business hours.

10.8 Phoning - phone conversations with colleagues held during business hours.

10.9 Correspondence - reading or answering correspondence during business hours.

12.0 PROFESSIONAL ACTIVITIES: activities related to a person's profession or career that are not done at the worksite or during time for which an individual is being paid.

12.1 Talking with colleagues - conversations with coworkers during times for which the individual is not being paid.

12.2 Reading -journals, papers, etc. related to one's area of professional interest.

12.3 Workshops - attending workshops. professional meetings, conventions, etc.

12.4 Writing - writing professional articles, books, etc. away from the wrok place.

13.0 PERSONAL COMMUNICATION: correspondence with reatives or friends not pertaining to work.

13.1 Mail - writing or reading letters, etc.

13.2 Phone calls - making or receiving phone calls from friends, relatives, etc.

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THE RELATIONSHIP OF DAILY ACTIVITY PATTERNS AND RETIREMENT SATISFACTION: A BEHAVIORAL ECOLOGICAL INVESTIGATION

by

Steven B. Lovett

(ABSTRACT)

The present study proposed a Behavioral Model of Retirement Satisfaction (BMRS) and tested hypotheses derived from it against predictions made by the more traditional Activity Theory of Aging. Retired (N=16) and employed (N=16) faculty of a state university monitored their activities and mood for 6 days and participated in an interview designed to elicit general information about yearly activities and during which responses to the Life Satisfaction Index-Z were obtained. The results provided almost no support for Activity Theory. Only retirees' estimated yearly frequency of formal activities was positively correlated with LSI-Z scores. Partial support was obtained for the BMRS hypothesis that a positive correlation would exist between daily mood level and time spent in positively reinforcing activities (i.e., activities rated as enjoyable). Contrary to predictions, an index of daily reinforcement value which combined daily activity duration and enjoyability information was not correlated significantly with a measure of

daily mood (i.e., Profile of Mood States). Participants' self-monitored activity data was grouped into 11 microsystems, as defined by Bronfenbrenner (1977). A variety of correlational analyses were conducted to identify relationships between time spent in each microsystem and level of daily mood. The analyses revealed several relationships worthy of further investigation. Mood was positively correlated with the amount of time retirees spent entertaining friends at home and employees spent in solitary activities at work. Mood was negatively correlated with the amount of time both retired and employed faculty spent interacting with friends away from home; amount of time retirees spent engaging in solitary activities at home; and amount of time employees spent interacting with coworkers at work. The implications of the above relationships and the utility of both the self-monitoring procedure and the systems analysis were discussed.