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MATURE CONSUMERS:

THEIR ALLOCATION AND CONSUMPTION

OF TIME ON-LINE

by

CHARLES A. MCMELLON

A dissertation submitted to the Graduate Faculty in Business in partial fulfillment of the requirements for the degree of Doctor of Philosophy.
The City University of New York
1997

This manuscript has been read and accepted for the Graduate Faculty in Business in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

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Abstract

MATURE CONSUMERS: THEIR ALLOCATION

AND CONSUMPTION OF TIME ON-LINE

by

Charles A. McMellon

Advisor: Professor Leon G. Schiffman

The purpose of this study is to examine the personal and situational differences that are associated with, or influence, the allocation and consumption of time by mature consumers on the Internet. The theoretical base for this study is in the continuity approach of aging (Atchley, 1989; Kaufman, 1987), which takes the perspective that the behavior of the aging individual is based on a desire to maintain one's basic internal and external structure in life through adoptive choices. To analyze the data collected from mature on-line participants, multivariate stepwise regression was used.

The results indicate that mature adults allocate their time on-line to many different activities (e.g., surfing or e-mailing to children) and that each of these activities is influenced by a unique set of variables. Basic to all on-line allocation of time is the key finding that satisfaction with the activity plays an important positive role. Other key findings are the relationships between education, computer literacy, age of first interest in

technology, locus of control, and the dependent variable the number of years of on-line experience. There are also significant relationships between perceived mobility limitations, age, gender, income, education, and the dependent variable total time spent on-line per week.

Support for the continuity approach was found in the relationship between the age individuals first became interested in technology and the number of years of experience spent on-line. This relationship suggests that those individuals with an early interest in technology continued their interest as they aged by progressing in their involvement with on-line activities. Segmentation between "technology lovers" and "technology users" indicated that "technology lovers" had higher levels of satisfaction with their time on-line, had spent more time on-line, had higher levels of computer literacy, had a higher need for cognition, and had less monetary limitations in pursuing their Internet activities than "technology users."

Managerial implications derived from the results of this study include refutation of the stereotyped image of the mature consumer as unwilling to adopt new technologies; and the importance of developing new products that allow a sense of accomplishment and control back into the lives of mature consumers. Public policy implications include the suggestion that the inclusion of computers and on-line activities into the lives of mature consumers offers the possibility of increasing their quality of life.

DEDICATION

To my wife, Tobee, whose patience and
understanding allowed me to grow.

To my good friend and mentor,
Leon Schiffman, who opened the door for me.

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CHAPTER 1

INTRODUCTION

One of the most important segments of our population and one of the most important technological innovations of the twentieth century are converging as millions of mature adults become active on the Internet.

The Internet gains about 160,000 new individual users each month with commercial on-line servers like CompuServe and America Online growing to more than 5 million users (Verity, 1995). These individual users have formed over 100,000 specific group addresses on the Internet (Lewis, 1995). Although total size is difficult to estimate, the more optimistic number for the net is over 40 million individual users (Hof, 1997).

At the same time that the Internet has emerged as an important technological innovation, the mature population has continued to grow in numbers and economic power. The segment of consumers 55 and older reached 54.7 million in 1995 with an estimated growth to 95 million by the year 2020 (U.S. Department of Commerce, 1996). The economic power of mature consumers has already been well documented. One example of this segment's economic power is that the median net worth of households comprised of mature consumers is close to twice the national average (American Association of Retired Persons, 1994).

Connecting to the Internet offers many benefits to the mature adult, such as

"logging on" any time of the day or night, shopping or paying bills on-line when it is difficult to get out of the house, and e-mailing to grandchildren or friends who may live far away. The American Association of Retired Persons (AARP) reports over 2 million computer users among its members. Nationally, over 30% of all mature consumers own computers, up over 21% since 1994 (AARP, 1996). They are "Cyberseniors," those over the age of 55 who are active on the Internet. In addition, with the oldest baby boomers now reaching 50, the mature segments of the population will grow larger with those who have been using computers for a significant part of their lives either through business or at home with the children. Boomers are already somewhat computer literate with many of them logged on to the Internet. Importantly, they may increase their usage after retirement as they discover the benefits of on-line activities.

Contradicting this trend of convergence with the Internet is the stereotype of the mature adult as someone resistant to change, generally less positive toward technology, and last in trial and adoption of new products or services (Gilly and Zeithaml, 1985; Wylde, 1995). If this stereotype of the mature adult is not an accurate description, it can lead to managerial and public policy decisions that may not be in the best interests of either the decision makers or the mature adult population.

Enders (1995) points out the irony in stereotyping the mature consumer as resistant to technology. Here is a generation who has seen the world evolve from the first flickering lights to laser beam surgery and from horseless carriages to men on the moon. The older generations have seen and adopted many technological innovations. Thus, it should not be too surprising that the mature adult is adopting computer technology as they begin to discover the benefits of increased productivity and better quality of life

gained from on-line activities (McMellon, Schiffman, and Sherman, 1996).

The importance of this dissertation is in its potential to contribute new knowledge on the convergence of mature adults and the Internet because little is known of their on-line behavior and the personal characteristics that may influence that behavior. Indeed, the allocation and consumption of time of any consumer behavior has received little attention (Hirschman, 1987; Venkatesan and Anderson, 1985). Thus, if mature adults as an important economic group and the Internet as an important technological innovation and economic force in the marketplace are converging, examination of this phenomenon may be critical for more informed managerial decisions and for the development of public policy that is more supportive of the mature adult population.

A review of the literature on time allocation suggests a need for consolidation and integration. While the literature in economics, sociology, and psychology is extensive, each is somewhat narrow in focus. Economists tend to use aggregate data, conceptualizing the value of time in dollars and examining constraints (e.g., money) and demographic variables (e.g., age). Sociologists focus on the structure of time activities while psychologists focus on the individual and the influence of personality. The need for consolidation and integration is the result of how little is actually known about how these various influences work together. Consumer behavior research offers an opportunity to examine the interaction of constraints, demographics, personality, and situational variables.

The literature on mature adults also appears to have some gaps. There has been little empirical examination of the theories of aging beyond physical, social, and cognitive deterioration. In addition, what influences the mature computer user's time

allocation on the Internet is not understood very well.

Because the Internet is a relatively new area of examination, a pilot study was conducted as a first exploratory step in examining the on-line mature adult (McMellon, Schiffman, and Sherman, 1996). The results suggested many variables as potentially influential. For example, the need for cognition may motivate the search for information on the Internet or a low level of computer literacy may act as a constraint for certain on-line activities. The potential for a new segmentation approach also emerged from the pilot study. There were indications of two segments of mature consumers—"technology lovers" and "technology users"—who differ on a number of influential variables such as the amount of time spent on-line, involvement with technology, and satisfaction.

The purpose of this dissertation is to examine the personal and situational differences that are associated with or influence the mature consumer's allocation and consumption of time on-line. The goal is to integrate the relevant literature review findings on time and on the mature consumer, various influential variables, and the findings of the pilot study into a picture of mature adult computer users and their allocation and consumption of time on the Internet.

Based on the literature reviews and the findings of the pilot study, time allocation hypotheses were developed. The hypotheses build on the Feldman and Hornik (1981) time allocation framework through the addition of specific personality differences such as time orientation, constraints such as health, and situational aspects such as computer capacity. A questionnaire was developed to gather data to be used in examining the hypotheses. A new method of data gathering was developed that utilized both on-line solicitation (i.e., email) of participants and the more traditional mailing of surveys.

Results of the analysis suggest many relationships exist. In addition, the sample was segmented successfully along the lines of the individual's involvement with technology.

This study extends the theoretical and empirical work of time allocation for consumer behavior by examining potentially influential variables such as the need for cognition and constraints like computer literacy. It extends the empirical literature on time because it examines another consumer behavior in the manner of shopping time, travel time, and waiting time for time allocation. It adds empirical support to aging theories by demonstrating a link between earlier life interests and later life behavior. It also is one of the first studies to examine behavior on-line and what personal characteristics are influential.

This dissertation is divided into seven chapters. Chapter 1 is the introduction. Chapter 2 is a review of the relevant literature for time value and allocation. Chapter 3 is a review of the relevant literature for mature adults and individual difference variables. Chapter 4 suggests 20 hypotheses and 5 demographic variables for examination. Chapter 5 discusses the research method, scale reliability, and data reduction. Chapter 6 presents and interprets the research results. Chapter 7 presents a summary of the findings, conclusions and limitations, along with directions for future research.

CHAPTER 2

A REVIEW OF THE RELEVANT LITERATURE ON TIME

Marketing's interest in time began three decades ago when researchers and trade commentators noticed the trend toward increased leisure time (e.g., Daignault, 1965; Garretson and Mauser, 1963; Weiss, 1968). Other stimuli for marketing's interest were the works of economists who focused on non-work time and its value for the production of goods (e.g., Becker, 1965) and sociologists who were studying time allocation in society (e.g., Donald and Havighurst, 1959). Since then, economists, sociologists, consumer psychologists, consumer behaviorists, and marketers have discussed and examined time's value and allocation (Hornik, 1993). The mature consumer's allocation of time on-line may be of interest because it is a type of time allocation that is easily measured in discrete units (i.e., hours, weeks, years), has a variety of different activities within its domain, and has monetary, sociological, and psychological value. These characteristics may allow researchers to examine the theoretical and empirical aspects of time allocation in a new and interesting manner.

Time is an integral factor in most consumer behavior activities (Gronmo, 1989; Jacoby, Szybillo, and Berning, 1976; Schary, 1971). Some even feel it is the most important factor because it is so integral in every step of the consumer behavior process (Nicosia and Mayer, 1976). Marketing theorists have also recognized the importance of

time by including it in their consumer behavior models (e.g., Engel, Blackwel, and Miniard, 1978; Hansen, 1972; Howard and Sheth, 1969; Nicosia, 1966).

The general review papers on time in the marketing literature (e.g., Hirschman, 1987; Jacoby, Szybillo, and Berning, 1976; Venkatesan and Anderson, 1985) suggested that much more research is needed in the area of time and consumer behavior. This dissertation reviews most of the same literature and agrees with their findings. In addition, it extends the list of studies examined and adds work completed after their reviews were published.

What follows is a literature review covering the aspects of time relevant to the study of the mature adult on the Internet: (a) time value, (b) time allocation, and (c) the examination of time allocation for specific behaviors. A review of each aspect is presented for the literature of economics, psychology, sociology, and marketing. The review ends with a summary of the relevant accumulated knowledge of time.

The Value of Time

How consumers value their time may be important in understanding why consumers allocate their time on the Internet because many believe value is a key determinant in non-work allocation of time (Becker, 1965; Feldman and Hornik, 1981; Kaplan, 1972; Kelly, 1972). Economists approach the value of non-work time as an extrinsic reward. It is directly related to the individual's wage rate or total income with a few variables associated with or influencing the value (e.g., family life cycle). Sociologists, psychologists, and marketers approach non-work time value as an intrinsic reward based on the individual's evaluation of the benefits of the activity. Most

theoretical work in this area was done 25 years ago.

The Economic Value of Time

Economists assume that time is a scarce resource, that its value is equated to money, and that individuals and family units act rationally to maximize utility. Based on the rational man approach and the concept that individuals will attempt to maximize income, economists have pursued the economic value of time for more than 35 years.

Becker (1965) conceptualized the household unit beyond the common thinking that it only consumes. He suggested that households combine time and goods to produce more goods making it a production unit as well as a consumption unit. For example, the value of the mature consumer's time spent on-line is combined with the value of the activity itself to form a new good with a new value. Becker appears to be the first economist to truly focus on leisure time as a major variable by pointing out the importance of allocation and efficiency of non-work time.

Economic thinking advanced again when Linder (1970) suggested that the scarcity of time will effect the individual's level of satisfaction and attitudes toward time. For example, consumption of ten ice cream cones per hour would yield a different level of satisfaction than ten ice creams cones per month. Linder theoretically links time and consumption, suggesting they are combined "to achieve the ultimate utility in the economic process—material and spiritual well being" (Linder, 1970, p. 2).

How economists approached the value of non-work time continued to evolve as researchers found evidence that the value of time was not homogenous, but varied with different activities. Gronau (1973a, 1973b) found that husbands and wives value time

differently, that working women value time differently than non-working women, and that family life cycle influenced the value of time. Gronau (1977) pointed out that the value of non-work time differed for work at home and leisure. He also demonstrated that other variables may influence the value of time such as education or the number of children. Psychological variables were also suggested as influences on the value of time through preference (Coursey, 1985; Hornik, 1985).

By 1980, the basic economic value of time had been theoretically stated. Time had a monetary value and could be directly related either to income or opportunity costs, although some economists were suggesting additional components. These findings may have relevance for on-line allocation of time research. Family life cycle and employment differences (Gronau, 1973a, 1973b) suggest that mature individuals may value their time on-line differently than others. For example, retired mature consumers, living alone or with spouses, may have more free time to pursue on-line activities that fulfill their needs (e.g., increasing control over their lives) than those still working or with children at home.

The Socio-Psychological Value of Time

Sociologists and psychologists take a different perspective from economists, focusing on the subjective benefits or meaning derived from the cognitive, emotional, and social value of time. One of the first to examine the value of time was Kaplan (1972) who suggested a holistic view of leisure, combining the notion of leisure as an end (e.g., joy or contemplation) and leisure as a means (e.g., rest or relaxation). Kaplan defined leisure time: "To consist of relatively self-determined activities and experiences that fall into one's economically free-time roles, that are seen as leisure by participants, that are

psychologically pleasant in anticipation and recollection" (Kaplan, 1972, p. 45).

The abstract conceptualizations of Kelly (1972) and Lauer (1981) also contributed to how we value time. Kelly's (1972) freedom-discretion and independent-dependent of work dimensions defined activities and the satisfaction derived from allocating time to them. Lauer (1981) suggested duration of time can also be a measure of its value. That is, how long a person performs an activity is a measure of how they value that activity. These notions (i.e., Kaplan, 1972; Kelly, 1972; Lauer, 1981) may be of special interest when examining on-line activities because on-line activities are mainly discretionary which may influence levels of satisfaction.

During this same period, Neulinger and his associates were examining leisure time and various personality traits as measures of the value of time. Neulinger and Raps (1972) examined the value of time in areas that are relevant to this study. They compared a norm group with a group of Mensa members (i.e., individuals with high IQ's) finding differences in gender, religion, and education in their allocation of time to various activities. The second half of their comparative study dealt with the meaning of these activities. Sixteen adjective pairs were rated and compared (e.g., boring-interesting and satisfying-unsatisfying). The authors found many significant differences between work and leisure and between the norm group and the Mensa group. The authors felt some of their measures could be operationalized as the value or meaning of time. The research of Neulinger and Raps (1972) may be helpful because it suggests that the many different on-line activities will have different levels of satisfaction.

The Marketing Value of Time

Marketers, both those who took a theoretical approach (e.g, Feldman and Hornik, 1981; Schary, 1971) and those who examined time empirically (e.g., Hawes, Talarzyk, and Blackwell, 1975; Hendrix, Kinnear, and Taylor, 1983; Hornik, 1985), may contribute to the understanding of on-line time.

The theoretical approach of Schary (1971) focused on the economic value of time while Feldman and Hornik (1981) borrowed from sociology and psychology to operationalized their subjective value (i.e., meaning) of time as satisfaction from the activity itself and the association with people while participating in the activity. Empirical research in marketing measures the value of time in terms of satisfaction and importance (Hawes, Talarzyk, and Blackwell, 1975), enjoyment and outcome (Hendrix, Kinnear, and Taylor, 1983), and monetary value (Hornik, 1985).

Summary of the Value of Time Literature

In summary, the value of time has been measured both extrinsically (i.e., related to income) and intrinsically (i.e., related to a socio-psychological benefit). The economic approach uses a more macro-analytic approach and the socio-psychological approach uses a more micro-analytic approach. Although both approaches appear to be useful in the prediction of on-line time allocation, they are also problematic in that their focus may be too narrow for consumer behavior. They are useful for the examination of on-line time allocation in that the economic approach offers the researcher an easy form of measurement (i.e., hours or years) while the socio-psychological approach offers a richer understanding of individual behavior. They are problematic in that the economic

approach assumes behavior is motivated to maximize utility as realized through income, given certain constraints. The socio-psychological approach also assumes maximization of utility but their approach is to identify the individual characteristics that define how time is valued and what variables might influence that behavior.

The economists have demonstrated that the value of time (i.e., utility) can be related to the allocation of time. They have shown this value can be monetary in nature (e.g., Becker, 1965), related to material and spiritual well being (Linder, 1970), and varies with the activity and the individual (Gronau, 1973a, 1973b). Sociologists, psychologists, and marketers have also shown that the value of time varies by activity but suggest an emotional approach to the value of time (i.e., satisfaction).

The value of time is important in understanding the mature consumer's allocation and consumption of time on-line. The more the value of an activity increases the more the allocation of time, subject to various constraints (e.g., money). As the next section indicates, constraints play an influential role in how individuals allocate their time. This should also be true for the mature consumer on-line.

The Allocation of Time

How individuals allocate their time among various possible behaviors has been of interest to social scientists for over thirty years. The literature on time allocation includes the economic perspective which focuses on the household unit, examining the relationship between the monetary value of time, the constraints on time, the actual amount of time allocated to all non-work activities (e.g., Becker, 1965), and, to a lesser extent the allocation of time for specific behaviors such as travel time (e.g., Truong and

Hensher, 1985). The sociological perspective examines the structure of allocated time and how it relates to society or to individuals (e.g., Donald and Havighurst, 1959). The psychological perspective focuses on the personal characteristics that influence information acquisition time and on choice time (e.g., Bishop and Witt, 1970). The time allocation literature in marketing can be divided into three categories: (a) allocation as a market segmentation tool (e.g., Hawes, Talarzyk, and Blackwell, 1975); (b) models of time allocation (e.g., Feldman and Hornik, 1981); and (c) empirical time allocation studies of specific activities (e.g., McDonald, 1994). Each perspective, with varying degrees of detail, examines the amount of time individuals allocate to consumer activities and what variables may influence the amount of allocated time.

The Economic Perspective

Economists focus their attention on the relationship between either aggregated time data or specific activity time data and the monetary value of the allocated time. Usually the constraints of time and money are included. As research in this area developed, a number of demographic variables were also examined (e.g., age, education, number of children, or marital status). Becker's (1965) work in developing the household production function sparked interest among economists in the non-work allocation of time. This led to a stream of literature that continues to this day (e.g., Zaman, 1995). Almost all link the allocation of time directly to the monetary value of time. Economists have also examined specific activities such as travel time (e.g., Chavas, Stoll, and Sellar, 1989; Truong and Hensher, 1985), waiting for a service time (e.g., Nichols, Smolensky, and Tideman, 1971), and shopping time (e.g., Blaylock and Smallwood, 1987). What follows is a

discussion of the relevant literature that examines either aggregate data or specific behaviors.

Examination of Aggregate Data

Becker (1965) developed a choice model that included both the cost of time and the market cost of the good or service. Together, the total cost of the good or service and the total cost of the time formed a new commodity. Thus, households are both utility maximizers and production units (i.e., producers of the new commodities). Importantly, they are subject to time, money, and space constraints. This may be important for the examination of time on-line. For example, without the proper level of discretionary funds, mature consumers would not be able to purchase the computer equipment and software necessary to pursue on-line activities.

Adding to Becker's work, Mabry (1970) suggested that individuals need energy or stamina to consume a product or service. He also proposed that the constraints of time, money, space, and energy vary between work and non-work. This may be especially important because mature consumers may not have the level of stamina necessary for prolonged on-line activities, thus moderating the amount of time they spend on-line.

As the household production theory became accepted, economists began to examine other variables that might influence the value of time, challenging the notion that the value of time could easily be equated to income or opportunity costs. Gronau (1973a) noted that most women with children do not work, suggesting they value their time at home at a higher rate than the value of their time at work (i.e., the wage rate). Using census data, he examined a woman's age, education, family income, husband's age

and education, and the number and ages of her children. Results demonstrated that the woman's educational level had a major influence on how she valued her time, while the husband's age and education and their family income influenced the value of time to a lesser degree. Having children also influenced the value of their time but it appeared to vary over time (i.e., diminishing in influence as their children aged). Building on this, Gronau suggested the value of an individual's time varied over the life cycle. Gronau (1973b) also compared working and non-working women, finding that while working women value their non-working time similar to their wage rate, non-working women value their time differently. In addition to employment, the differences in value are explained with age, education, and children.

Examination of Specific Behavior Data

Economists have demonstrated that the allocation of time can vary for specific behaviors. These behaviors include waiting time (Holtman, 1972), travel time (Chavas, Stoll, and Sellar, 1989; Truong and Hensler, 1985), and grocery shopping time (Blaylock and Smallwood, 1987). In addition, Becker's (1965) model has been expanded to distinguish between a number of activities (Kooreman and Kapteyn, 1987).

Holtman (1972) analyzed how changes in income influence waiting time in the medical care market. The author hypothesized that as income rose, individuals had a tendency to purchase more goods, but a negative effect was also apparent because of the increased use of time necessary for the consumption of these goods. This was operationalized as the time spent visiting clinics, doctors' offices, and home visits. Holtman hypothesized that poor people choose doctors with lower prices but more

waiting time. He found a relationship between income and how the individual values time.

Travel and shopping time have also been examined. For example, Truong and Hensher, (1985) examined the possibility that the value of time was either continuous or discrete across activities. The authors used observed travel time by car, bus, train, and walking. Their results supported both possibilities, depending on the activity, suggesting differences in the two approaches that might be explained through the opportunity costs of time allocated for various activities. Chavas, Stoll, and Sellar (1989) suggested the value of allocated time was a combination of the utility produced by the commodity and the value of any opportunity cost of time allocation to other activities. The utility of the trip was influenced by the characteristics of the trip (e.g., number of trips or the quality or cost of the trip itself). Their results suggest that the value of travel time varies for different recreational activities. Blaylock and Smallwood (1987) took a similar dimensional approach to the value of time for shopping. They found that wage rates and the efficiencies of shopping for a lower price were major determinants to the value of shopping time. In addition, they found that the regional location of households, rural versus urban, number of young children, number of hours working, age, and education were influential in who shops and the amount of time they allocate.

Kooreman and Kapteyn (1987) developed a utility function that incorporated N activities so that even though taste and technology could not be specifically identified in a data set, they could be measured in such a way as to indicate their influence. They also allowed for the influence of various exogenous variables (i.e., wage, age, and education of both the wife and husband, the number and age of children, race, and unearned

income). Seven types of non-work activity were included in their study: (a) household activities; (b) child care; (c) obtaining goods and services; (d) personal needs and care (including sleep); (e) organizational activities; (f) entertainment and social activities; and (g) radio, television, and books. Using a random sample of U.S. households, the authors found a variety of results. For example, young children have a stronger influence on child care for the wife than older children. This influence decreases as the child matures. In two-earner households, the female's entertainment time is reduced while the males seem to not be affected. Age also influences leisure time. For the male, it decreases with age until about 50 when it appears to increase. Education is positively related to the husband's time spent with media. Wage rate influences the male's hobby time negatively and the female's positively. The importance of Kooreman and Kapteyn's (1987) work lies in its support for the influence of many socio-demographic variables and their demonstration that different non-work time segments are influenced by different variables.

In summary, the economic approach has demonstrated a strong relationship between the value of time and the allocation of time. To the economist, households maximize utility by combining the physical good and its consumption time constrained by time, income, stamina, and a variety of other variables (e.g., number of children in the household). They appear to equate the value of time directly with the allocation of time. Economists have also demonstrated that many other variables are influential such as age, education, income, number of children, and life cycle stage. Economists rarely examined psychological factors. The two exceptions are Coursey (1985), who included preference, and Kooreman and Kapteyn (1987), who examined taste and technology. Unfortunately

for this study, these studies do not differentiate these factors; they only attempt to accommodate them in some aggregate measure. Hirschman (1987) also noted the absence of non-monetary intrinsic rewards such as satisfaction and the pleasure one derives from the activity. Yet, the contribution of economic researchers is not without importance for examining the allocation of on-line time of mature consumers. For example, the value of time appears to vary with the number of children living at home. This might be of special interest as mature individuals have few children living at home.

The Sociological Perspective

Sociology utilizes a more descriptive approach to the allocation of time for various activities (Jacoby, Szybillo, and Berning, 1976). Although sociologists have tended to focus on the activity itself and not on the amount of time allocated, there are a few exceptions which are relevant for this study.

Donald and Havighurst (1959) noted that previous work had focused mostly on the actual allocation of time, neglecting the variables that might relate to motivation. They examined two notions: (a) that meanings and context of activities are related; and (b) that meanings are related to age, gender, social class, and other personal characteristics. The authors defined the meaning of leisure as the satisfactions gained from the activity (e.g., sheer pleasure and contact with friends). They interviewed people in New Zealand and the United States on the various meanings of their own leisure pursuits finding satisfaction varied for different activities. They also found gender differences, no relationship between age and satisfactions, a possible relationship between occupation and satisfactions, and several personal variables that might also be related. These

personal variables were as follows: (a) overall personal adjustment; (b) attitudes; and (c) manifest complexity, a construct that described an individual's relationship with people, interests, activities, imagination, and emotional life. Donald and Havighurst (1959) suggested three conclusions: (a) the meaning or value of leisure activities varies among individuals; (b) certain sets of satisfactions relate to certain activities; and (c) satisfactions depend more on personality traits than sex, age, or social class.

Meissner (1971) examined the effect of an individual's work on their leisure time. Theory suggests that the level of discretionary activity in the work place (i.e., freedom to make choices) influences how workers behave during non-work hours. For example, a worker who is employed in a very structured environment, such as an assembly line, may look for more freedom of choice in leisure activities such as fishing or camping. Another theoretical approach suggests that the influence of work on leisure time is based on the level of social interaction at work. For example, an isolated worker might seek out leisure time with social interaction, like joining a club, as a form of compensation. Conversely, an individual who deals with social interaction at work might seek it out in leisure time also in a carry-over effect. A third approach is an instrumental-expressive dimension. Leisure is instrumental when the individual needs to do something to achieve a goal where an expressive time activity is done more for its own sake (e.g., religion). The relationship between work and leisure might be carry over, compensatory, or have no effect. Results show a strong carry-over effect from work. Generally, a worker who is employed in a constrained work atmosphere does not become involved in voluntary organizations. The carry-over effect also appears for workers who have social interaction at work as they also seek to join voluntary organizations.

Meissner (1971) recognized the weakness in using membership in voluntary organizations as a surrogate for both discretion in choice and social interaction activities. Thus, he also had the workers fill out a 24-hour time budget. Results were somewhat different from the initial interviews. High-discretion workers (i.e., those who make decisions at work) continued to seek out discretionary activities as predicted in the carry-over effect, but low discretion workers appeared to take a more balanced approach to their leisure time by seeking out both high- and low-discretion activities. The same findings held true for social interaction. Meissner concluded that the type of work the individual does, might influence the type of leisure activity that individual might chose, in that the carry-over and compensatory influences of work were activity specific for the low-level discretion and social interaction worker.

Brail and Chapin Jr. (1973) conceptualized time by needs, using basic life needs (e.g., sleep), culturally defined extensions of needs (e.g., homemaking), socially defined needs (e.g, visiting friends), and individual enjoyment needs (e.g., reading a book). The authors saw the allocation of time for an activity as either obligatory or discretionary. They categorized the activities as social interaction, participation, passive diversions, or rest and relaxation. Time was constrained by access opportunities (e.g., not enough money) and personal status (e.g., gender, occupation, and family responsibility). Results suggest gender and age differences in almost all areas of time allocation, while no differences were found in occupation and city size. Income was influential in social interaction and participatory activities. The authors suggested a simple framework of access and status, constrained by gender, family, and employment, influence the allocation of discretionary time.

Robinson (1977), using both questionnaires and diaries, chronicled American's allocation of time in detail. This study examined labor force families in urban locations with the goal of collecting and comparing the data to develop descriptive statistics and benchmark data for future work. Multivariate analysis suggested many relationships between the specific leisure activities of the family members and gender, marital status, race, work status, age, income, education, and number of children.

In summary, sociological studies examining how people allocate their time to activities continue to this day (e.g., Hamlin, 1995). In the past 80 years, they have specified how we spend each minute of our day and have identified many personal socio-economic variables that are linked with specific leisure activities (Brail and Chapin, Jr., 1973; Donald and Havighurst, 1959; Meissner, 1971; Robinson, 1977). With the exception of Donald and Havighurst's (1959) pioneering examination of meaning (i.e., satisfactions), most sociological studies appear to focus on socioeconomic variables.

Sociologists expanded understanding of what influenced the allocation of time beyond demographic variables. For example, Donald and Havighurst (1959) suggested attitudes may be influential. For this study, attitudes toward computers or technology might influence on-line time. For on-line time, this suggests that individuals with specific needs may find satisfaction on-line. If they do, their on-line time allocation may be more than those who are not satisfying needs on-line.

The Psychological Perspective

Although psychological research has tended to focus on the individual's perception of time, some research and discussion on the influence of psychological variables on

leisure time allocation has been conducted.

Bishop and Witt (1970) studied the influence of individual and situational variables on leisure time activity (i.e., personology and situationists). Personology emphasizes the free choice nature of behavior that is not influenced by the situation. With this approach, personality (i.e., style or trait) is influential, not the situation. Situationists take the opposite point of view, suggesting that the situation creates a need that was satisfied by the behavior. To examine this issue, the authors asked subjects to project what they would do in their leisure time (i.e., active, prestigeful/intellectual, rugged outdoors, sociable-partying, and nonintellectual, non-strenuous leisure activities) given certain situations (e.g., compensation, catharsis, surplus-energy, relaxation, and task generalization). They found that behavior is influenced by both situation and personal differences. This may also be true for on-line time. For example, a computer's capacity will limit on-line time (i.e., situational) while the need for entertainment (i.e., personal difference) may direct the individual to spend more time on-line.

Groves, Kahalas, and Erickson (1975) posited that how individuals spend their leisure time contributes to their mental health through satisfaction of personal needs. The authors suggested that personality should be examined, especially how it relates to motivation. Using Maslow's (1943, 1954) hierarchy of needs as the dependent variable, they examined individual differences in attitudes (i.e., cognitive, affective, and conative), judgmental processes, situational variables (i.e., gender, age, residential status, occupation, and marital status), expectations, meaning, and adolescent experiences. The judgmental processes modified attitudes and were defined by levels of awareness and rationality. Situational variables were defined as limits on how the individual expressed a

need. Four measures of meaning were also developed: (a) concrete (i.e., real events like firearm noise); (b) use (i.e., utility of the land, such as bird watching); (c) emotional (i.e., aesthetics); and (d) symbolic (i.e., abstract ideas such as freedom). Adolescent (i.e., ages 8-18) experiences were with organizations, with the occupations of their mothers and fathers, and with their urban or rural environments. These sets of predictor variables were examined for specific perceptions of outdoor leisure time as conceptualized by Maslow's hierarchy. The individual's needs were weighted for importance. Using semi-structured interviews for data collection and stepwise regression for analysis, the authors found a positive relationship for the cognitive and affective components, expectations, judgmental processes, symbolic and concrete meaning, and a negative relationship for the action tendency, residential status, and use meaning. Their results suggested that psychological variables influence leisure time behavior through the satisfaction of needs.

Iso-Ahola (1976) described a theoretical relationship between leisure time and personality, strongly recommending the inclusion of personality in time research. Little work exists on understanding how traits relate to the subjective meaning of behavior for the individual. Iso-Ahola pointed out that the past research had not clarified the question of influence consistency of the individual's personality across behaviors and situations. For example, will an individual who is achievement oriented at work, also be achievement oriented in all of their leisure activities? Iso-Ahola presented a model where both situational and personality factors influence the individual's subjective definition of leisure which, in turn, effects leisure behavior.

Martin and Myrich (1976) examined the relationship of personality to the leisure activities of sky diving, scuba diving, and snow skiing, basing their approach on symbolic

interactionist theory which, suggests individuals define their activities on meanings attached to their actions. They collected personality data using the Veldman-Parker (1970) Adjective-Self-Description questionnaire identifying seven different dimensions of personality: (a) attitude or feelings; (b) behavior (i.e., crude versus well-mannered in social situations); (c) efficiency or achievement; (d) orientation (i.e., introversion versus extroversion); (e) anxiety; (f) ideology (i.e., individualism versus fatalism); and (g) attractiveness (i.e., pride in one's self). Results suggested that the three sports groups were different from the norm group in personality traits. Specifically, the behavior and anxiety traits were strongly related to the specific activities. For example, individuals who tended to be socially abrasive and calm also tended to be in these particular sports groups.

Howard (1976) examined a broader range of personality traits and leisure activities. Using the Personality Research Form (PRF) (Jackson, 1967), Howard studied 14 traits and 24 leisure activities, finding many relationships supporting the notion that personality traits influence an individual's activities. The traits were achievement, affiliation, aggression, autonomy, dominance, endurance, exhibition, harm avoidance, impulsivity, nurturance, order, play, social recognition, and understanding. The leisure activities were factored into four categories: (a) outdoor/nature; (b) sports; (c) aesthetic/sophisticate (e.g., playing musical instruments); and (d) leisure detachment (e.g., negative reactions to leisure). Howard pointed out the weakness of only using demographic variables to predict leisure activity. Results supported the notion that personality traits influence leisure activity more than demographic variables. The four activity factors were correlated with the 14 PRF scores suggesting many possible relationships. For example,

the outdoors/nature factor correlated with such traits as endurance, autonomy, dominance, and understanding. The key findings of this study were that individuals with different needs are attracted to different activities and that individuals of similar personalities are attracted to similar leisure activities.

Some of these studies have also examined personality over time, which may be helpful as they offer clues to the stability or changes in personality in the mature adult. Stability of a personality characteristic suggests that as individuals age and deteriorate physically, they may develop strategies to continue satisfying their individual needs. On the other hand, if they change in personality, that too may effect their behavior as we know personality influences behavior. Thus, as personality changes so does behavior. For example, Costa, Jr. and McCrae (1991) suggested that personality in general is stable over time, although they have demonstrated that as one ages, such traits as impulsiveness, activity, excitement seeking, and openness to fantasy decrease in strength while straightforwardness and modesty increase. The traits do, however, maintain their ranking among the individuals measured. These findings are still inconclusive, as confounding elements such as cohort effects may cloud findings.

In summary, the psychological approach to leisure time offers strong support for the influence of personality traits on behavior through the individual's subjective definition of the activity. This point-of-view is only problematic in that a different set of traits may be in effect for each situation (Iso-Ahola, 1976; Martin and Myrich, 1976).

The notion that influential personal differences may be different for different activities may also be true for on-line activities. The type of individual who searches out information for the pure joy of the activity may be a different personality type than the

individual who is aimlessly wandering around the Internet.

The Marketing Perspective

Marketing focuses on the influences and amount of time an individual allocates to their consumer related activities (e.g., how long they are willing to travel or shop). For marketing, the allocation of time includes the actual time allotted for consumption of the product or service (Schary, 1971). As Arndt and Gronmo (1980, p. 230) state, "Interwoven with the processes of acquisition, consumption, and dispossession of products and services is the expenditure of energy and time."

Marketing researchers began to notice the growing importance of leisure time during the 1960s. The value of leisure time was thought to be increasing, leading to discussions of time as a scarce resource (Daignault, 1965; Garretson and Mauser, 1963; Weiss, 1968). One stream of relevant research to emerge from these early discussions can be broadly classified as the market segmentation approach. This approach includes actual segmentation studies, models developed from this work, and empirical investigations of specific activities.

The segmentation approach identifies groups of consumers by their time allocation to activities and then examines the members of the activity groups for differentiating characteristics. This approach may be relevant to on-line time allocation research because of the variety of activities available to on-line users. The evolution of market segmentation and time allocation in consumer behavior has progressed from simple studies that examined preferences in non-work activities and gender differences (e.g., Foote, 1966) to more complex studies that examine many activities and their influencing

socioeconomic variables (e.g., Hawes, Talarzyk, and Blackwell, 1975; Hawes, 1977). Theoretical models also emerged from the work examining time (Feldman and Hornik, 1981; Hirschman, 1987; Schary, 1971). Lastly, there has been empirical examination of specific consumer activities and their influences. These studies included financial purchase behavior (Lee and Ferber, 1977); shopping time (Arndt and Gronmo, 1980; Hornik, 1982; 1985, 1992; McDonald, 1994a; Omura and Talarzyk, 1975; Tauber, 1972); travel time (Barff, MacKay, and Olshavsky, 1982; Cherlow, 1981); meal preparation, housework, and shopping (Hendrix, Kinnear, and Taylor, 1983); and watching mass media (Hornik and Schlinger, 1981).

Segmentation Studies

Using the time budget approach (i.e., a time diary is kept by the consumer), Foote (1966) categorized how people allocated their leisure time (e.g., watching television or drinking coffee) by their preferences and actual time allocated. Many differences were found between preferences and what consumers actually did. For example, both men and women watched television the most of any activity, while both preferred talking to friends and family the most of any activity. Gender differences were also found. Women preferred games and hobbies as a leisure activity more than men, yet men spent more time per day on these activities. Foote's findings suggested that constraints (e.g., housework, money, or time) might also influence behavior because people do not always do what they prefer to do with their non-work activities.

Andreasen (1967) reviewed much of the previous literature, mainly from sociology, and suggested a link between time allocation and life styles (i.e., social class). He found

many differences among social classes and leisure activities, pointing out the relationships between occupational levels and social class to certain leisure activities (e.g., blue collar workers spend more time watching television). Andreasen (1967) suggested that segmentation by time or life styles would be desirable, because it appeared that leisure time would be increasing more in the area of clusters of extra time at holidays or retirement.

Drawing more from sociology and leisure research than from economics, Hawes, Talarzyk, and Blackwell (1975) explored satisfactions (defined as perceived felt benefits) generated by time allocation of consumer leisure activities. They were able to group both activities and satisfactions. They, like Foote (1967), found gender differences in many of the activities. Using a questionnaire, Hawes, et al. (1975) asked about preferred and actual leisure pursuits, satisfactions and their importance, level of agreement on 87 AOI (i.e., activity, opinion, interest) statements, and a variety of socio-economic variables. Gender differences suggested that men like outdoor activities somewhat more than women do. They used 32 satisfaction statements, finding many differences in activities and levels of satisfactions. For example, while both males and females picked "peace of mind" and "chance to get the most out of life while I can still enjoy it" as their number one and two choices, women placed "chance to learn new things" among their top five satisfactions, while men placed "adventure and excitement."

Hawes (1977) examined socio-demographic factors and their relationship to consumers' allocation of time to leisure activities. Hawes reported age, gender, education, income, and occupation differences with specific activities. For example, males with college degrees and high incomes watch less television than others. In

addition, Hawes also asked what consumers would do with additional discretionary time. There were fewer gender differences to report for most activities.

Hornik (1982) examined situational influences on the consumption of time. Based on the Feldman-Hornik (1981) framework, time allocated to activities was classified on the obligatory-discretionary continuum of work, necessities, home work, and leisure. Hornik suggested a typology of influential factors: (a) economic constraints (e.g., money); (b) personal attributes (e.g., age); (c) subjective values expressed as preferences (e.g., needs); and (d) situational encounters. Hornik believed the allocation of time was influenced by these factors and their interactions. His study used time diary data. The dependent variables were the four time groups and the independent variables were personal characteristics (e.g., six demographic/socioeconomic variables), preference measures (e.g., satisfaction), and four situational variables (e.g, physical and social surroundings, and mood). General results indicated that work and necessities are influenced by personal characteristics, while home work and leisure are influenced more by preferences and situational factors. Specifically, Hornik found a strong relationship between age and necessities, gender and home work, and some variables in all sets of predictors for leisure activities (e.g., weather and outside activities). Hornik concluded that his study adds support to the notion that behavior is influenced by both personal and situational characteristics.

Models of Time Allocation

Building on the initial work in marketing of Andreasen (1967), Foote (1967), and Garretson and Mauser (1963) and in economics of Becker (1965), Lancaster (1966), and

Mabry (1970), Schary (1971) developed the first theoretical model for a consumer's allocation of time. In it, time, money, and consumer behavior are linked. Schary suggested that the type of activity leads to a time and money valuation by the consumer which, in turn, influences the time allocated toward that activity. The consumer's attitudes and perceptions also influence the allocation of time. Lastly, the allocated time generates some level of satisfaction in the activity. Schary separated the act of consumption from the product or service. He posited that the actual act of consumption contributed more to the satisfactions than the actual product or service. Thus, consumers performed certain activities in order to attain expected satisfactions. These activities were determined by two factors: (1) how the individual values the time and (2) the life style or behavior patterns of the individual.

Feldman and Hornik's (1981) conceptual framework for the allocation of time includes: (a) time structure (i.e., work time and the various components of non-work time); (b) resource availability (i.e., what constraints money, time and space have on allocation); (c) activity availability (i.e., how accessibility to the activity affects allocation); and (d) and personal characteristics (i.e., what demographic and personality differences influence time allocation). Time value is operationalized as satisfaction derived from the activity itself and satisfaction based on interaction with others while performing the activity (Kaplan, 1972; Neulinger and Raps, 1972).

Specific Time Behaviors

Market researchers have also examined influences on the specific time allocation behaviors of financial behavior (Lee and Ferber, 1977), shopping time (Arndt and

Gronmo, 1980; Hendrex, Kinnear, and Taylor, 1983; Hornik, 1985; McDonald, 1994; Omura and Talarzyk, 1975; Tauber, 1972), travel time (Cherlow, 1981; Barff, MacKay, and Olshavsky, 1982), and mass media watching time (Hornik and Schlinger, 1981).

Lee and Ferber (1977) examined the link between time allocation and financial behavior. Time allocation, in this case was thought to be a lifestyle. This lifestyle, along with various socio-economic and attitudinal variables, was thought to influence the dependent variable of purchase behavior for certain financial resources (i.e., durables, credit cards, and insurance). The socio-economic independent variables were home ownership, wife working, number of children, education, age, income, and occupation. Their life style variables (i.e., time use) were housework, shopping for home needs, job, school, travel time, television or stereo use, other home recreation, spectator recreation outside home, participatory recreation outside the home, and visiting friends and relatives. These were aggregated into life style categories of home, career, and recreation hours. Initial results on patterns of time use reported show that: (a) wives were different geographically in career activity; (b) income levels are different for some activities (e.g., as income and career hours go up, time spent at home goes down but recreation time remains constant); (c) as the number of children goes up, time at home goes up.

Lee and Ferber (1977) showed that life style variables are better predictors than socio-economic variables in explaining financial behavior. For example, career time totals for the husband contribute most to ownership of insurance. In another example, home hours of the husband explain a significant variation in credit card ownership. Lee and Ferber concluded that although socio-economic variables are important and cannot be replaced in the prediction of certain financial behaviors, life style (i.e., time use) variables

are more important.

"Why Do People Shop?" was the question asked by Tauber (1972). In this pioneering study, consumers spoke of many personal and social reasons for shopping (e.g., diversion or the pleasure of bargaining). Tauber hypothesized that the motives behind shopping behavior were satisfactions derived from the shopping activity and the utilities from the actual products purchased. Although not mentioned directly, the implications were that personality and other variables might play a role in shopping behavior.

Arndt and Gronmo (1980) expanded on earlier economic and sociological work by examining the time dimension of shopping behavior. Their focus was on such non-economic independent variables as structural conditions (e.g., distance), possessions (e.g., ownership of car), shopping orientation (e.g., a supply or a non-economic need), and social position (e.g., sex or number of children). They theorized that an individual's shopping orientation was the intervening variable between the above mentioned antecedent variables and shopping time. Results confirmed the importance of non-economic influences. Structural conditions (i.e., distance, urban versus non-urban, and occupational structure of area) were all related to allocation of shopping time. Not all possessions were related with only possession of a freezer supported. Social position produced a variety of findings with sex, employment status, employment status of spouse, work time, stage of family life cycle (for women only), education of spouse, and total household income supported. Other possessions such as ownership of a car, health of the respondent, number of children, and education of the respondent were not supported. The authors concluded that their study added support for the psycho-social

functions of shopping.

Hendrix, Kinnear, and Taylor (1983) examined meal preparation, housework, and shopping time. The authors suggested that both constraints and motivation influence time allocation behavior. They added two new variables: intrinsic reinforcement and how spouses' spent their time. The constraining factors they examined were family life cycle, gender, work time, health, education, age (i.e., as a proxy for experience), energy necessary for activity, income and assets, ownership of time-saving appliances, and spouses' time expenditures. The motivating factors were enjoyment of activity, importance of outcome, and age (i.e., as a proxy for role identity). Time diary data was used, with results suggesting a variety of relationships among the three time allocation activities and gender and predictor variables. For example, family life cycle influenced both meal preparation and housework for females in that another adult or the presence of children increase the time spent on these activities. Enjoyment was also positively related to time expenditure while employment was negatively related. The authors concluded that an examination of discrete activities could be accomplished and would aid in understanding time allocation.

McDonald (1994a) examined the influence of personal characteristics on shopping time, supporting the notion that shopping time was related to socio-demographic variables (i.e., gender, marital status, loyalty, and age). More importantly, McDonald showed a relationship between shopping time allocation and an individual's personal characteristics such as perception of time and loyalty. Regression results found that gender, marital status, paid work time, brand and store loyalty, and income related negatively to time, and that age and physical well-being related positively. The study

developed three segments of time orientations using a time structure questionnaire (Bond and Feather, 1988) which were also related to the allocation of shopping time. As McDonald pointed out, the inclusion of psychological variables in shopping time analysis is sparse. His study was one of the first to include psychological variables in shopping time allocation. It suggested the importance of time orientation as an influential variable. McDonald (1994b), reporting on other aspects of his study of time and personality characteristics, stated that time perception acts as a moderating variable on frequency of shopping and a quasimoderator on the allocation of time spent on shopping.

Travel time has also received some attention in marketing. Cherlow (1981), in a review of behavioral and non-behavioral travel time models, found general agreement that travel time was related to the wage rate of the individual. Cherlow theorized that people value time savings by what they can do with it, but that any common valuation of time would depend on the homogeneity of the group measured. Cherlow suggested that travel time depended on the individual, the type of time used, and what alternatives were available.

Conversely, Barff, MacKay, and Olshavsky (1982) noted the wide variety in values that had been found, suggesting that instead of using a monetary value for travel time, researchers should use the utility gained from the experience of the time spent. They suggested the value of the time was related to the type of trip, the individual, and the time of the year. Both Cherlow (1981) and Barff et al. (1982) were review articles that did not empirically examine their hypotheses. They used a meta-analysis approach to support their approaches.

Lastly, Hornik and Schlinger (1981) examined the link among lifestyles,

demographics, and the allocation of time listening to the radio, watching television, and reading magazines and newspapers. They theorized that different media behaviors produce different gratifications, thus requiring different personal characteristics to satisfy those needs. They suggested that different personal characteristics will predict media usage time. They defined lifestyle broadly to include a variety of activities and opinions (e.g., religious orientation, community activities, health anxiety, homemaking activities, and active recreation). Results supported their contention of the importance of lifestyle variables, however they also recognized the importance of demographic variables to time allocation.

In summary, as with the other disciplines, the marketing approach has not led to any agreement on how to categorize activities into groups. In addition, most of the marketing research studies appear to support work done in other disciplines. For example, Hawes (1977) found support for the link between demographic variables and various activities. This is not to say that marketing's contribution is not important. For example, the family life cycle was found to be related to a number of activities (Arndt and Gronmo, 1980). Successful segmentation, model building, and examination of specific behaviors by marketing researchers suggest similar approaches to on-line time allocation might also be useful. In particular, by focusing on specific consumer behavior, marketers have added a more concrete dimension to time allocation studies. They have also found support for similar variables examined in other disciplines.

Summary of Time Allocation Studies

The study of time allocation has focused on two broad areas: the categorization of

the activity and the amount of time allocated to those activities. The economic perspective has contributed by calling attention to the importance of the value of time, how constraints limit behavior, and have shown many relationships between the allocation of time and personal demographic attributes.

The sociological perspective has contributed by focusing our attention on the categorization and meaning of non-work time and by showing relationships with personal attributes, satisfaction, and various categories of time. Categorization is somewhat problematic because the categories are not mutually exclusive because the subjective meaning of some activities may differ among individuals (Hirschman, 1987).

The psychological perspective has focused on the individual, finding much support for the contention that personal differences are influential. This perspective is also limited in that subjective estimation of time allocation for a specific activity may vary widely by age, gender, education, and other variables (Hirschman, 1987).

The marketing perspective has contributed to the understanding of time allocation by finding additional support for the research done in other disciplines. Importantly, marketers have demonstrated that the allocation and consumption of time can be related to personal attributes (e.g., age), personality characteristics (e.g., time orientation), individual resources (e.g., health), and situational factors (e.g., demographics). In addition, they have also demonstrated that a relationship exists between allocation and satisfaction.

Each of these perspectives (i.e., economic, sociological, psychological, and marketing) offers possible direction for the examination of on-line time allocation. For example, anecdotal stories suggest mature consumers may be constrained by money (e.g.,

Enders, 1995). Money has also been found to be a constraint in other time allocation studies (e.g, Becker, 1965). Thus, examination of money as a constraint would seem appropriate when it comes to studying on-line time activities.

Summary of the Relevant Literature for Time

This review of the economic, sociological, psychological, and marketing literature for the value and allocation of time leads to some general conclusions. They are as follows:

1. There is an economic value for time (e.g., Becker, 1965; Gronau, 1972a, 1972b; Linder, 1970).

2. The economic value of time can influence behavior (Becker, 1965) and is constrained by time, money, and stamina (e.g., Becker, 1965; Mabry, 1970).

3. There is a socio-psychological value for time (e.g., Neulinger and Raps, 1972).

4. The value of time will vary among both individuals and activities (e.g., Neulinger and Raps, 1972; Gronau, 1977).

5. The influences on the allocation of the individual's time appear to be specific for each activity (Martin and Myrick, 1976).

6. Many personal attributes are associated with differences in time allocation. These include gender, employment, number and age of children, education, income, family life cycle, and personality traits (e.g., Becker, 1965; Blaylock and Smallwood, 1987; Truong and Hensher, 1985; Donald and Havighurst, 1959; Robinson, 1977; Howard, 1976).

7. Both situational and personal factors can influence the allocation of time (e.g., Bishop and Witt, 1970; Groves et al., 1975; Feldman and Hornik, 1981; Arndt and Gronmo, 1980).

CHAPTER 3

A REVIEW OF THE RELEVANT LITERATURE FOR MATURE ADULTS AND FOR INDIVIDUAL DIFFERENCE VARIABLES

Two areas are reviewed in this chapter. First, the relevant mature adult literature on theories of aging, time and consumer behavior, technology, and computers and the internet are discussed. Second, the relevant literature on individual difference variables is discussed.

Although there are a number of theories of aging, the focus of this dissertation will be on the continuity approach (Atchley, 1989; Kaufman, 1987) in deference to others as it appears to be the most relevant. First, theories of aging are discussed. Then the literature of time, consumer behavior, and the mature adult are examined. Unfortunately, there has been little research conducted on the mature adult and time, but upon examination of the more general review articles on the mature adult it is possible to identify potential links to the on-line behavior of the mature adult. Both the incidental mentions of the mature adult in the general time literature and the small amount of literature that focuses directly on this subject are discussed. Next, technology and the mature adult literature is examined. Although not extensive, we find some clues that may help explain computer and Internet use. Lastly, the literature that specifically focuses on personal computer and Internet use by the mature adult is covered. This last section, the mature adult and the Internet,

consists mainly of anecdotal stories that have appeared in the popular press. We could find little in the academic literature on this subject.

The second half of this chapter reviews the literature on the individual difference variables suggested by the previous literature reviews and an exploratory pilot study (McMellon, Schiffman, and Sherman, 1996) as potentially influential. The variables reviewed are as follows: (a) the need for cognition, (b) the locus of control, (c) time orientation, and (d) cognitive age. Situational and demographic variables such as age, gender, education, income, and others are not discussed in any detail in this chapter but will be incorporated into research.

Theories of Aging

The biological, psychological, and sociological effects of aging can create problems for the mature consumer (Birren and Fisher, 1991). The biological effects result in physical deterioration: hair begins to gray and physical strength begins to lessen. In general, aging individuals start to slow down and lose control over their lives (Rodin, 1986). There is also a psychological and sociological deterioration: cognitive processing slows down and social relationships change (Kaufman, 1987). Mature adults have trouble remembering the name of the place visited years earlier and go to fewer parties on Saturday nights.

Many theories attempt to explain the phenomenon of aging and how the mature individual copes with it. For example, psychologists have developed theories that encompass human development, personality, and the self (e.g., Maslow 1943, 1954; Thomae, 1970). In sociology, the structural functionalism approach posits that an

equilibrium in social systems is maintained by the individual influenced by roles and norms. It also suggests age stratification theory, which proposed a hierarchy of age strata with obligations and prerogatives. A second sociological approach encompasses the symbolic interactionist approach and the social breakdown model (Kuypers and Bengtson, 1973) which suggests that people adjust their behavior according to the responses of others, thus adopting the negative characteristics ascribed to them.

Covey (1983) reviewed many of these theories stating that no one theory is dominant. In reviewing these theories, he found that many did not seem appropriate in explaining the mature adults' on-line behavior. For example, activity theory (Havighurst and Albrecht, 1953) suggested individuals continue their life style into old age at the same rate as when they were younger. This seems unlikely, as aging produces real physical changes that may inhibit complete equilibrium with past life styles. Disengagement theory (Cumming and Henry, 1961) suggests that individual will slowly and voluntarily disengage from roles and status of their younger years in order to increase life satisfaction. Involvement with computers after retirement would be behavior contradictory to disengagement. Social-breakdown syndrome (Kuypers and Bengtson, 1973) suggests that loss of normative guidance, shrinkage of roles, and lack of appropriate reference groups make the individual susceptible to social labeling. If social labeling is operative in this case, the stereotype of the mature person resistant to technology would dictate that the elderly would neither learn computers nor participate in the Internet.

The Continuity Approach

Although generalizations about the mature consumer are difficult because of the heterogeneity of this population (Maddox, 1970), a theoretical approach that might help explain the mature consumer's behavior on the Internet is the continuity approach (Atchley, 1989; Fry, 1992; Neugarten, Havighurst, and Tobin, 1968; Kaufman, 1987; Rosow, 1963) which takes the perspective that behavior of the aging individual is based on a desire to maintain one's basic structure in life through adaptive choices. These choices are based on past experiences and one's perception of the environment. The continuity approach was conceived by Rosow (1963) to explain the individual's life from childhood to death, but has evolved into an explanation of the transition from adulthood into old age (Fry, 1992). The continuity approach has yet to be conceptualized into a formal theory although many researchers have discussed its issues and predictions.

Continuity in the aging individual was identified by Kaufman (1987) who had analyzed 60 lifestyles. Kaufman agreed that the aging individual experiences psychological, psycho-social, economic, and political losses. He noted that aging individuals focus more on their sense of self and less on their chronological age. This sense of self and identity is maintained over a lifetime. Kaufman believed that the aging individual maintains continuity with the past by continually interpreting and recreating it into the present self concept. Many themes emerged from his analysis. These themes (e.g., social status, self-determination, religion) helped individuals organize and explain their lives. Kaufman also points out that continuity does not happen spontaneously, that the individual must achieve it through behavior. Achievement of continuity then leads to higher life satisfaction. Cognitive age (Barak and Schiffman, 1981) may be a good

example of a coping strategy. It may reflect the individual's perception of a decline in social competence resulting from physiological change. Individuals try to achieve consistency with their own past self-concept by thinking of themselves as younger than their chronological age.

Atchley (1989) brought a broad perspective to continuity by suggesting that it is how individuals perceive the physical, psychological, and sociological changes in their lives that influence them as they age. Continuity is viewed as dynamic. Change can occur as long as one's basic psychological and sociological structure remains consistent with the individual's past. Continuity suggests aging individuals make adaptive choices to maintain both internal and external structures. These adaptive choices to achieve continuity are based on experience (i.e., familiar strategies) and perceptions of the social environment. According to Atchley, the individual experiences both internal and external continuity. Internal continuity focuses on remembered inner structures, including the "psychic structure of ideas, temperament, affect, experiences, preferences, dispositions, and skills" (Atchley, 1989, p. 184). External continuity is the remembrance of "the structure of physical and social environments, role relationships, and activities" (Atchley, 1989, p. 185).

Atchley (1989) suggests the reasons individuals maintain internal continuity are because: (a) it aids in successful day-to-day decision making; (b) it is essential for ego integrity; (c) it aids in satisfying the individual's need for self-esteem; and (d) it can be an effective method for satisfying other important needs. The reasons for external continuity are as follows: (a) people expect individuals to behave in a manner tied to past performances; (b) individuals receive social support; (c) people receive feedback about

self-concept; (d) it gives a strategy for coping with the effects of physical and mental effects of aging; and (e) it reduces personal goal ambiguity when major life events occur.

Inner structure is defined by Atchley as a combination of the self (i.e., what we think about ourselves) and identity (i.e., personality and self that remain stable in any social situation). Atchley pointed out that there is evidence to support the notion that individuals try to maintain identity as they age (e.g., Costa, Jr. and McCrae, 1984). The aging individual also perceives much change in their lives. To maintain identity while the world around them changes, individuals utilize the vast storehouse of experiential information (i.e., successes and failures) stored in their memory. There is also evidence for external continuity in the individuals' skills, activities, environment, roles, and relationships. When retiring or when children leave the home, individuals have time "to concentrate their activities in areas they define as their strengths..." (Atchley, 1989, p. 188), thus supporting their identities to optimize satisfaction with life. Also, external continuity gives the individual a sense of comfort, security, and predictability.

Fry (1992), after reviewing much of the literature on the continuity approach, suggested that a certain stability exists in psychological and social needs of the aging individual. That is, activity patterns, family and leisure roles, personality traits and life styles, value systems, and family interaction patterns remain relatively the same throughout adulthood and into old age. Fry is clear that continuity does not imply the absence of change. There is a certain amount of structural loss in the aging individual, while stability and continuity remain the influential forces as the individual ages.

A review of the literature finds little direct empirical support for the continuity approach. Thomae (1981), in an empirical study that examined the contrast in

individuals between actual economic deprivation and life satisfaction, found that individuals used cognitive reappraisals of their life histories to make judgements on life satisfaction, but not necessarily the current economic deprivation. Albaum (1985) found that those mature adults who continue their basic lifestyle, attitudes, values, and gratification of needs as they age will tend to have higher life satisfaction scores.

The continuity approach suggests an explanation for those mature individuals on-line in that they are using computers and on-line activities as a strategy to maintain continuity of the self and identity. While self and identity can take many different forms in the individual, there are also similarities. For example, personal control and independence can diminish as one ages (Rodin, 1986). The individual may use on-line activities to express independence and increased control over one's life, because computers and on-line activities allow the individual to do what they want when they want to do it. Increasing sense of control leads to psychological and physical well-being and increased life satisfaction (Hanson, 1989; Rodin, 1986).

Time, Consumer Behavior and the Mature Adult

This section discusses review articles that either incidentally mention the mature adult from the general time allocation literature or the few articles that examine the mature adult and time.

Review articles that focus on the mature adult and time could not be located, however, general review articles on the elderly and consumer behavior (Meadows, Cosmas, and Plotkin, 1980; Moschis, 1994; Schewe, 1984) cited the literature that may offer clues linking the mature adult and time. The two earlier review papers (Meadows et

al., 1980; Schewe, 1984) examined empirical studies published on the mature adult. Moschis (1994) took a different approach by reviewing the theoretical approaches to aging in biology, psychology, and sociology, along with related empirical studies.

Meadows et al. (1980) reviewed past articles that called attention to the growing importance of the mature consumer. They also reviewed articles that focused on the general behavioral, decision-making, and information processing findings. Schewe (1984) examined the past literature from a four Ps perspective (i.e., product, price, promotion, and place). Their conclusions about the mature consumer were as follows: (a) they are limited in mobility (e.g., Samli and Palubinskas, 1972); (2) they are not a homogeneous group (e.g., Towle and Martin, 1976); and (c) their speed of learning, continuous attention, and information processing decreases with age. Importantly, the decreases are more apparent when self-pacing is not allowed or distractions are significant (Phillips and Sternthal, 1977). This last conclusion may be of importance to understanding why more mature consumers are using the computer because it is basically a self-paced communication medium with less distractions.

Moschis (1994) pointed out that individuals age biologically, psychologically, and sociologically, and that these changes influence their consumer behavior. Biological aging, both natural and disease related, is not fully understood. It may alter the aging individual's need and ability to function by either limiting their physical strength or slowing them down. Psychological aging focuses on cognition and personality. The traditional approach suggests that consumers appear to slow down cognitively later in life although currently this notion is being challenged as an inevitability. Cognitive improvement in older consumers has been detected and may be influenced by education,

increased social life, or increased intellectual stimulation, for example, learning to use a computer. One interesting finding suggests that older individuals focus on experience rather than possessions (Dychtwald and Flower, 1989). This was further supported by Schiffman and Sherman (1991) who identified a segment of mature consumers (i.e., new age elderly) who were less concerned with physical possessions. These findings suggest the importance of the Internet as it is experiential in nature. Process theories are also discussed, especially Thomae (1970) who sees the individual as a continuously developing personality influenced by the environment with the self and the environment interacting as the self tries to maintain itself. One focus of cognitive personality theory is on how the individual develops coping strategies given the environmental and social changes while aging. The use of computers may be a coping strategy (i.e., keeping up with the younger people). Sociological aging reflects the evolution of roles and relationships. Of special interest are the changing roles and relationships of the elderly. In summary, Moschis and his associates suggested a multiple method approach to the study of aging. They also urged the use of theory in all research.

Incidental Mentions of the Mature Adult and Time

As stated earlier, the literature on time and the elderly is sparse. Although many studies in the time allocation literature—reviewed in Chapter 2—include age as an independent variable, only a few specifically discuss the mature adult's allocation of time as a specific subject of interest.

Economists appear, for the most part, to have ignored the mature adult. Their focus has been on the household production function and its relationship to wages and income.

Mature consumers, perhaps because most are retired, do not easily fit into the economist's paradigm. One notable exception is Menefee (1982) who, using the traditional economic approach, found that demand of non-work time (i.e., consumption time) increases at a declining rate as the individual ages. Demand peaks around the age of 55 or 60, then declines. This suggests that after 55 or 60, the individual begins to perceive time as less of a scarce resource. Thus, the life cycle may have some effect on how the mature consumer values time, perhaps because of a change in income or the ratio of work to non-work time.

Sociologists and psychologists also appear to have paid little attention to the mature consumer. Brail and Chapman (1973) noted that socializing, housework, childcare, and home maintenance were negatively related to age, while passive forms of leisure like watching television and rest and relaxation, were positively related to age. Costa Jr. and McCrae (1991), in their own research and through meta-analysis of others research on personality traits, found that there was long term stability among individual's personalities: that contrary to many theories (e.g., disengagement), individuals maintained the same personality type throughout their lives. The authors did report some decreases in impulsiveness, activity, excitement seeking, and openness to fantasy with increases in straightforwardness and modesty.

Marketing researchers appear to have examined the mature adult and time more than other disciplines. For example, Omura and Talarzyk (1975), while examining shopping and leisure activities and their relation to the energy crises, reported that older adults tended to be more satisfied with leisure activities and that they had not altered their number of shopping trips because of the energy crisis. Hawes (1977) found that age is

negatively related to entertaining outside the home, participating and attending sports events, and playing with children, but positively related to increased time with hobbies, games, crafts, and reading the newspaper. Landon Jr. and Locander (1978), when examining the family life cycle, reported that during later life cycle stages, the mature individual spends less time away from home for outdoor recreation. Hawes (1979) noted that some of the changes related to aging are inaccurate recall of information, a growing awareness of the finite nature of time, and more need to schedule time. When individuals age, their life changes. For example, retirement, children leaving the home, and income changes add to the individual's leisure time availability. The mature consumer tends to develop new time schedules to accommodate this new time. They develop patterns of time that give them some kind of psychological support that is similar to the support they received when they were younger, working, and had children in the house. Hornik (1981) reported that older adults spend more time reading newspapers. Hendrix, Kinnear, and Taylor (1983) reported that meal preparation and housework diminish. Hornik (1985) reported less shopping time because of fatigue and social withdrawal. McDonald (1994), when examining the role of personal characteristics in shopping with a special emphasis on age groups, found that aging individuals spend more time shopping. McDonald also segmented the older groups by their approaches to time, finding that the mature consumer was not a homogeneous group. He found that ages 45-65 tended to be "purposeful organizers" while the 65-75 group were more evenly split between "routine managers" and "aimless wanderers" when it came to time.

In summary, the economic, sociological, psychological, and marketing literature offer some information about the mature consumer and how they allocate time. The

mature adult appears to have more leisure time; their income changes; they do less outside the home and they do less housework. To utilize some of this extra time, they appear to read more newspapers and watch more television.

A Review of the Mature Adult and Time Literature

Little was found specifically discussing time and the elderly. The studies found appear to focus on the notion that perceptions of time differ by age group.

Markson (1973), accepting the disengagement approach to successful old age, suggested that aging individuals should drop the goals of earlier stages and reintegrate past, present, and future time with internal time and accept objective time. In other words, for successful aging to occur, the individual should get ready to die. Markson was one of the first to recognize that time might be different for older individuals.

Lomranz, Friedman, Gitter, Shmotkin, and Medini (1985) examined six age segments on perceptions to time orientation (i.e., past, present, and future). They also had the members of each segment rate their own life stage and the general concept of time as a factor in the flow of their lives. Their findings suggested that aging individuals focus more on the past and less on the future. Three factors were used to examine the individual's perception of time: (a) evaluation (i.e., good-bad); (b) potency (i.e., strong-weak); and (c) activity (i.e., active-passive). Lomranz et al. (1985) also suggested that older individuals value time more because as the individual experiences life, the amount of time from experiences builds in memory and an awareness of the amount of future time left for experiences grows. The mature individual attempts to reconcile the experiences of the past to maintain self image (i.e., a sense of integrity while leaving a

legacy). These actions suggest mature individuals will focus more on the past and less on the future. The authors found considerable support. The old age group studied rated the general concept of time as most active, lowest in evaluation, and, along with children, the least potent. This suggested that they might be more experiential in their approach to time. Results also suggested that ratings of the past were positively related to age. The older group rated potency and activity the highest while evaluation of time was rated the lowest, perhaps suggesting that they have already reconciled themselves with their past. The future was negatively related to age while there were no differences on rating the present. Results suggested that perception of time changes with age and that the life cycle may be an important variable when examining time. The conceptualization of time (i.e., evaluation, potency, and activity) may aid individuals in goal organization, life event expectancies, and self development.

Guy, Rittenburg, and Hawes (1994) explored the implications of subjective time perceptions in consumer behavior with special focus on the mature adults. Two propositions were posited. The first suggested that because of significant life events in the mature years (e.g., retirement, independence from child rearing, and perhaps the death of a spouse), the older individual begins to disengage from social obligations and roles. During this disengagement, they restructure time away from the linear, mechanical approach to a more circular-traditional approach to time in which cycles and routines are more important. Sequencing of events begins to dominate over linear clock time. The second proposition was that time orientation (i.e., how the individual related to the past, present, and the future) will change as a person ages.

Cognitive age (Barak and Schiffman, 1981) might also influence orientation. That

is, the younger the individual feels, the longer into the future one's time orientation will be. Guy et al. (1994) suggested that those individuals with less long-term orientation will be more interested in immediate or short term gratification. Experience becomes important, offering such benefits as consumption enjoyment, personal growth, and enhancement of the moment. A more detailed discussion of cognitive age comes later in this chapter.

Summary

In summary, six relevant notions emerge from this literature review concerning the physiological, sociological, and psychological effects of aging influence time behavior in mature adults. First, the effects of aging vary with the situation and activity (Phillips and Sternthal, 1977). Second, mature adults tend to be more experiential and less possession-oriented than younger adults (Dychtwald and Flower, 1989; Schiffman and Sherman, 1981). Third, mature adults perceive time as less of a scarce resource (Menefee, 1982). Fourth, mature adults go outdoors less for active behaviors and spend more time indoors for passive activities (Brail and Chapman, 1973; Hawes, 1977; Hornik, 1981; Landon Jr., and Locander, 1978). Fifth, their personalities appear to be stable from middle age to old age (Costa Jr., and McCrae, 1984). Sixth, their time orientation tends to be in the past (Lomeranz, et al., 1985; Guy, Rittenburg, and Hawes, 1994).

Some of these findings may be indicators of why mature adults go on-line. Interest in activities tends to be indoors, although personal computing may not be considered passive. Computing is experiential in nature and may provide benefits to solve the needs of the individual (e.g., cognitive processing and entertainment).

Technology and the Mature Consumer

The literature on technology (i.e., a manufactured device for a particular working purpose) and the mature consumer is relatively new. What little there is has focused on how technology can help the mature consumer overcome the effects of aging or has examined the adopting process. Although there is nothing in this literature which directly examines the factors that effect the mature consumer's behavior on-line, the discussion presented is relevant and may offer guidance in the examination of on-line behavior.

More than ten years ago, Faris (1983) pointed to technology as aiding in increasing home security (e.g., transmitting signals if an accident in the home occurs), health, (e.g., pacemakers), independence (e.g., electronic bill paying), and convenience (e.g., microwave ovens). Technologically advanced appliances (e.g., personal computers) create convenience by allowing many activities which formerly could only be experienced outside of the home into the home, such as information search, entertainment, financial services, shopping, education, and community participation. Faris believed the elderly might be resistant to technology because of cost, lack of sophistication, or a lack of openness.

Fox, Roscoe Jr., and Feigenbaum (1984) examined the mature consumer for usage of new telephone technologies. They segmented the sample into four psychographic groupings: (a) fashion innovators; (b) gadget orientation; (c) bargain shopping behavior; and (d) keeping in touch. The authors further segmented their four factored population by Sherman and Schiffman's (1983) mature adults aged 55-64, young elderly aged 65-74, and the old elderly aged 75 plus. The authors also examined employed versus retired older adults. The relevant finding was that the mature consumer population was

heterogeneous in psychographic composition with potential sub-segments of age and employment. In addition, usage of new telephone technology appeared to lessen with age.

To better understand whether products were meeting the needs of the mature consumer, Carmone Jr., Krauser, and Baker III (1984) classified 158 products into three broad categories: (a) technological groups (e.g., emergency response systems); (b) physiological limitation categories (e.g., hearing aids); and (c) personal needs areas (e.g., microwave ovens). They had their sample assess these products on six criteria: (a) compensates for physiological limitations; (b) substitutes or reduces social support services; (c) enhances psychological/sociological independence; (d) availability; (e) benefit/cost ration; and (f) market potential. Results suggested that the communications industry was the best meeting the needs of the mature consumer and that the mature consumer was using communication products to satisfy needs. Of special interest was that older adults were using these products to compensate for physiological limitations and that the products enhanced psychological/sociological independence.

Gilly and Zeithaml (1985), recognizing that past research had demonstrated that mature consumers were resistant to change and to adopting new products or new technologies, examined mature consumers for where they fit within the adoption process for consumer-related technologies (e.g., ATMs). Results suggested that, although mature consumers are aware of these technologies, age continued to be a major factor in trial and adoption of three of the four technologies tested. Their results appear to support the contention that mature consumers are resistant to change or lag behind the rest of the population in trial and adoption of new technologies. These findings may be misleading

because the mature consumer in this study used electronic funds transfer more than younger people suggesting that it may be the type of need that the technology satisfies that is important and not that it is just a new technology.

Zeithaml and Gilly (1987) again examined why mature consumers were resistant to change. They reviewed previous literature on the characteristics of technology adopters, pointing out that education, locus of control, and interconnectedness with social systems might be influential. Results showed that the mature consumer—like most other consumers—adopt some new technologies passively (e.g., grocery scanners), adopt some enthusiastically (e.g., electronic funds transfer), and do not adopt others (e.g., automatic teller machines). The authors found external locus of control individuals less prone to be aware of, try, and adopt innovations, while education and social connectedness was positively related. Basic to their findings was that mature consumers adopted the technology because it fulfilled a need.

This notion of need was also examined by Schiffman and Sherman (1991) in their discussion of the "new age" elderly. New-age elderly perceive themselves as: (a) younger in age and outlook, (b) more self-confident and in control of their lives, (c) less concerned with accumulated possessions, (d) seekers of novel experiences and personal challenges, and most importantly for this discussion, (e) more responsive to products and services that satisfy a real need. These findings suggest the "new-age" elderly may also be on-line users. If they feel more self-confident, they may tackle the challenges inherent in learning procedures for on-line activity. This may be based on their years of accumulated knowledge.

Smither and Braun (1994) expanded the research on the mature consumers'

resistance to adoption of automatic teller machines (ATM) by focusing on attitudes toward technology and their mechanical skills in operating ATMs. They also examined education and income. Results of their questionnaire found a positive relationship between ATM use and both attitudes and skill in operating machines. The main reason for not using an ATM was there was no real need for them.

The special edition of Generations magazine on "Technology and Aging: Developing and Marketing New Products for Older People" should also be noted. Although this issue was more advocacy than empirical research, the writers offered valuable insights and opportunities. For example, Wylde (1995) in the guest editorial, advocated technology for mature consumers because it allows them to do what they want when they want to do it. Technology increases independence from the limitations of aging. Enders (1995) suggested that cost is a major constraint for the use of technology for mature consumers. She also suggested the driving force for adoption of technology is usefulness and design features. Gatlin (1995) empirically examined acceptance or rejection of assistive technology in mature consumers. She points out that from research and experience, acceptance or rejection is complex with a number of possible factors influencing adoption decisions. Those factors are (a) perceived need, (b) functional status, (c) attitudes toward the devices, (d) social context of use, (e) demands of the task, and (f) ease of use. Although assistive devices are a different technology, the similarities in fulfilling needs, attitudes, and ease of use may be of guidance in understanding participation in the Internet.

In summary, the research found in this literature review is related to either adoption of technology or how assistive it might be. Nothing could be found on the actual use of

technology by mature consumers. Many of the writers here have discussed how technology can help the consumer. They suggested technology aids in security, health, independence, and convenience. Fulfilling these needs appears to be constrained by cost and sophistication, ability, attitudes of the adopters, and if there was a real need (Schiffman and Sherman, 1991). The authors suggested that the mature consumer group is not homogeneous and that psychographics, age, and employment segments may occur. Although many may feel that the mature consumer is resistant to technology (e.g., Faris, 1983), it also appears that they adopt technology when it fulfills a need such as an aid in overcoming physiological limitations or when increasing psychological or sociological independence (e.g., locus of control or social interaction). It appears adoption of technology is related to needs, skills, attitudes, and perhaps, education and income. Although the focus of this dissertation is on those who already use technology, we can draw some parallels between adoption and use that may be important.

Personal Computers, the Internet, and Mature Consumers

Interest in the mature adult's interaction with computers began in the early 1980s (Ogozalek, 1991). News stories advocated the benefits of computer use among mature adults. Specific activities were identified such as programming, desktop publishing, and e-mailing. Mature adults—like the rest of the population— had generally positive attitudes toward computers (Brown, Brown, and Baack, 1985; Jay, 1989).

Hoot and Hayslip Jr. (1983) promoted the notion that personal computers were an excellent technology to improve self-sufficiency and expand educational opportunities for mature people. The authors identified three potential constraints which they suggested

could be overcome: the ability to learn computers, the physical capabilities in operation computers, and the cost of computers. Chin (1984) chronicled the growing use of computers by mature adults. Based on anecdotal stories, it appeared the physical limitations thought by some to be a barrier to computer use were not materializing. Chin suggested the reasons for using computers were because: (a) it was a challenge, (b) it could make the user appear to be more modern, and (c) it was fun. The major benefits of their continued use of computers were that they might be thinking more clearly and speaking more precisely. Another advocate was Gorovitz (1985) who suggested that computers could enhance the lives of mature adults through helping them live safer, healthier lives. Computing could be a hobby or used to handle the ever increasing information processing difficulties of the aging individual. Gorovitz even pointed out potential physiological changes that may occur as a result of computer activities such as increased vitality, concentration, and interaction.

The first actual usage figures of mature consumers on-line were reported by Furlong (1987). Mary Furlong is the founder of SeniorNet, an organization dedicated to teaching mature adults how to use the computer and the Internet. She stated that mature consumers were going on-line to access information, to communicate, to have social interaction, to entertain themselves, and to learn. She believed on-line activities helped minimized loneliness. Information access was the more frequently cited reason for using the Internet in a survey she conducted, along with keeping up with technology, remaining active, and connecting up with others. Furlong also advocated computers for mature adults suggesting that computer activities contribute to continued intellectual growth.

Brown, Brown, and Baack (1988), in a small scale study, compared a twenty-item

attitudes toward computers scale between young respondent data from an earlier study and mature adults. The authors had posited that there should be differences because of less exposure to computers in the mature group. Results suggested that there were no substantial differences in the groups. Both were relatively positive towards computers.

Ogozalek (1991) reviewed the computer literature on mature adults identifying five areas where the effects of the computer had been discussed: (a) health care, (b) work and retirement, (c) communications and social interaction, (d) lifestyle, and (e) economic uses. In healthcare, computers reduce cost and improve quality of life (e.g., personal health data collected via modem). With work and retirement, those mature adults still working appear to consider time as a resource to be saved while retirees look at time as more of something to be filled (e.g., increasing hobbies). In communication and social interaction, computers will extend and enhance sensory and cognitive abilities. They also increase personal and social interaction. For lifestyles, computers generally make life easier (e.g., home shopping, paying bills, and banking by computer).

Jay (1989) used a computer intervention to examine mature adults for the influence of computer experience on attitudes toward computers, skills, and continued use. Her review of the literature pointed out that mature adults can have positive attitudes towards computers, which can be related to greater usage of new technologies and that experience with technologies can lead to even a more positive attitude. Jay also pointed out the known positive relationship between attitude and internal locus of control. Locus of control will be discussed later in this chapter. Her results found a relationship between prior technological experience, five of the seven dimensions of attitudes toward computers, and continued use. Interestingly, this study found that internal locus of

control was not related while external was related to five of the seven attitudinal dimensions.

Most recently, Dixon (1993) examined uses and gratifications theory as a predictor of the mature male's frequency of use of an electronic community (e.g., SeniorNet). The uses and gratifications approach seeks to understand the influences of mass communication behavior by individuals. Putting aside the definitional question of on-line activity as a mass medium, the results of this study are interesting and may be relevant. It appeared that mature males use SeniorNet for surveillance (e.g., information seeking), communicating utility, to fill time, to escape, for a diversion, and for advice. These uses are related to the number of hours spent on-line. Dixon also found relationships among education and filling time, escape, and diversion; among income and communication and escape; between general health and filling time; between type of residence and communication; among rural location and filling time and escape; and between full-time employment and escape. Dixon suggested uses and gratifications in general and the communication utility specifically as better predictors than demographics.

In summary, much of the work to date on mature consumers and computers is either descriptive, speculative, advocacy, or anecdotal in nature. There are many suggested benefits from computer activity such as physical and mental health (Chin, 1984; Hoot and Hayslip, 1983). All of the reasons why mature adults use computers have not been identified although such reasons as the challenging aspects, keeping up with technology, fun, communicating, and remaining active appear relevant. They appear to be fulfilling needs (Carmone Jr. et al., 1983). Constraints such as cost and mental and physical abilities have also been suggested (Enders, 1995). There is some evidence that

attitudes toward computers are generally positive and that they have been influenced by past or current experiences with computers. This positive attitude suggests continued use of the computer (Jay, 1989). There is also some evidence of segmentation (Fox et al., 1987).

In addition, the pilot study for this dissertation (McMellon, Schiffman, and Sherman, 1996) also supports many of these findings. Mature consumers are going on-line to satisfy real needs (e.g., e-mailing to distant grandchildren). Interestingly, segmentation by involvement with technology (i.e., "technology lovers" and "technology users") also was demonstrated.

Individual Difference Variables

The link between the individual's personal characteristics and time has been eluded to by economists such as attitudes and preferences (Becker, 1995). Sociologists Donald and Havighurst (1959) examined such personal characteristics as personal adjustment, attitudes, and manifest complexity. Psychologists have examined personal characteristics and found links with time allocation (e.g., Costa, Jr., and McCrae, 1991). Interestingly, marketing also appears to have ignored personality type characteristics and time allocation.

The previous literature reviews along with the pilot study (McMellon, Schiffman, and Sherman, 1996) suggested that the need for cognition, locus of control, time orientation, and cognitive age are among the personal characteristics that may be influential in the allocation of time on-line. A brief literature review of these variables is presented here.

Need for Cognition

The need for cognition (NFC) is an individual's intrinsic tendency to engage in and enjoy thinking (Cacioppo and Petty, 1982). It directs behavior toward a goal and causes tension when the goal is not satisfied (Cohen, Stotland, and Wolfe, 1955). The original study that developed the NFC scale (Cacioppo and Petty, 1982) found that it was weakly and negatively related to close mindedness and positively related with general intelligence. Since then, many studies have examined the links between NFC and other behavior.

The relevant variables for this study are self-appraised effective problem solvers (Heppner, Reeder, and Larson, 1983); curiosity and experience seekers (Olson, Camp, and Fuller, 1984), external information searchers (Verplanken, Hazenberg, and Palenewen, 1992), boredom proneness (Watt and Blanchard, 1994), and advertising viewing time (Peltier and Schibrowsky, 1994).

Heppner, Reeder, and Larsen (1983) found a positive link between NFC and those individuals who appraised themselves as effective problem solvers. Self-appraised effective problem solvers tend to be more persistent and have a higher expectation of success at solving problems. They also tend to reinforce themselves more by approaching problems as opposed to avoiding them. Olson, Camp, and Fuller (1984) examined the relationship between NFC and 16 curiosity subscales. The strongest relationship was for a thinking measure of curiosity. Verplanken, Hazenberg, and Palenewen (1992) found a positive relationship with external information searchers in that those with high NFC tended to seek out sources of external information in a quest to satisfy their need. Watt and Blanchard (1994) examined the link between NFC and

boredom proneness. Their results suggested that those with low NFC had higher boredom proneness scores. Thus, those with high NFC (i.e., inclined to self-generated stimulation) were less bored. One of the ways in which boredom rises is through the lack of external stimulation. Interestingly, males appear to experience boredom more than females when there is a perceived lack of external stimulation. Thus, even though NFC is evenly distributed among the sexes, this tendency in males might be a partial explanation as to why there is a preponderance of males on the Internet (i.e., some engage in on-line activities to relieve boredom by exploring or "surfing"). Most recently, Peltier and Schibrowsky (1994) linked NFC and advertising viewing time. Their findings, by using objective measures (i.e., time), added support to the notion that those individuals with high NFC elaborate cognitively for longer periods when confronted with situations that require elaboration.

In summary, the many variables linked to NFC (i.e., effective problem solving, curiosity and experience seeking, external information searching, boredom proneness, and advertising viewing time) appear to suggest a certain type of behavioral difference in those with high NFC as opposed to those with low NFC. The variables reviewed here appear relevant to computer and Internet use. For example, external information searchers might turn to the vast data banks of the Internet as a source of information. Another example might be the bored but curious individual who might spend more time exploring the Internet.

Locus of Control

Internal versus external control of reinforcement (i.e., locus of control) is a

personality characteristic measured by the degree that individuals expect the reinforcement from their activities to be caused by themselves (i.e., internals) or by chance, luck, powerful others, or just plain unpredictability (i.e., externals). It is one of most studied psychological variables (Rotter, 1966; 1990).

Crandall and Crandall (1983), after an extensive literature review, stated that, in general, individuals with an internal rather than an external locus of control tend to exhibit a wider range of behaviors which include the following: (a) searching more for goal solving information, (b) trying to learn more, (c) trying to achieve more, (d) having a more positive attitude towards life, (e) taking on more challenging tasks, (f) being more persistent and being willing to delay gratification more, (g) doing better in school, (h) being more assertive, (i) having more relationships, (j) being liked by people more, (k) getting more respect, (l) having better emotional adjustment, (m) having higher self-esteem, (n) having more humor, (o) being less anxious, and (p) having a greater life satisfaction.

Beyond these general findings for locus of control which are of interest, researchers have also examined many specific areas. Of interest to this dissertation are the few studies that include mature adults and those that examine computers.

Locus of Control and the Mature Adult

One of the first to include the mature adult in their locus of control research was Reid, Haas, and Hawkings (1977), who noted that locus of control may be important in aging because as the individual ages, the physical and social changes that occur may cause a perceived loss of personal control. The authors examined mature adults using

Rotter's (1966) locus of control scale modified to be relevant to their lives. Each item was also weighted for expected achievement. Results indicated that internal locus of control is strongly related to self-concept. The authors felt their results supported the notion that the individual's sense of control and perceived achievement of that control are essential to the mature adult's well-being and adjustment to aging.

Krause (1986), using a shortened locus of control scale (i.e., government and school control items were deleted), examined the extremes of internal and external locus of control in mature adults. Findings suggested that extreme internals do not cope as well with stress as do moderates. This finding implies a non-linear relationship. Lachman (1986) examined age differences using three locus of control scales: (a) the more generalized, (b) the multidimensional, and (c) the domain specific scale between students and mature adults. Results suggested that the generalized measure was stable between the groups while the multidimensional scale suggested a movement toward the external control on intelligence and health controls. The domain specific scale was a better predictor of behavior than the other two. The findings suggested that care must be taken in choosing the right scale for specific activities and populations.

Lumpkin (1986) also examined age differences using a six item scale combining items from both Rotter's (1966) general and Levenson's (1974) multidimensional scales. Lumpkin examined age differences in locus of control, finding that those over 65 years of age were more external in their locus of control (i.e., they had lost some personal control over their lives). Lumpkin's (1986) research is one of the few that administered a locus of control scale to the elderly. One other was Hickson, Housley, and Boyle (1988) who used Rotter's (1966) 23-item forced-choice scale finding a positive relationship between

internal locus of control and life satisfaction from mature adults who were involved in a retirement center.

Locus of Control and Personal Computers

Although nothing could be found that examined locus of control, computers, and mature adults, a few research studies were found that examined locus of control and computers.

Coovert and Goldstein (1980) were among the first to examine this issue. They tested two locus of control scales (i.e., Rotter and Levenson) against Lee's (1970) attitudes toward computers scale finding that internals had more positive attitudes than externals using Rotter's scale. Although the Levenson scale was not significant, it too was similar in the direction that internals had positive attitudes toward computers.

Meinert, Festervand, and Lumpkin (1991) examined locus of control and end user satisfaction. The authors, after reviewing the available literature, noted the link between locus of control and attitudes toward computers. They also pointed out that prior research suggested that internals were more satisfied when the job environment was participative while externals were more satisfied when the job environment was less participative and more directed. This suggested that internals function better in a less structured environment while externals find the structured work place more satisfying. To examine this issue, the authors, using a shortened form of Rotter's (1966) scale and a one item satisfaction question, selected three methods of human-computer interaction (i.e., question-answer, menu, and command language) for their experiment. The three methods of interaction had differing levels of direction from high to low. No significant

differences were found between internals and externals and the three methods of interaction. The authors concluded that locus of control is not related to user satisfaction.

Summary

Past research has demonstrated much about locus of control and its effects but we know little about the effect in mature adults or its interaction with computers. However, the available research suggests mature adults are similar to the rest of the adult population in that they have generally positive attitudes toward computers.

Time Orientation

Temporal orientation is defined as how the individual relates to the past, present, and future (Lauer, 1981). The order of this orientation may be influential on behavior. For example, those with an orientation toward the past will resist change while those with an orientation toward the future will change more readily (Rakowski, 1986). Although mentioned frequently in the literature, there are few empirical studies that focus on it as an influential variable. Temporal orientation has also been of some interest to those researchers interested in mature adults.

One of the earliest was Markson (1973) who, noting that time was an important element in the aging process, suggested that successful aging required a change in maturing adults from obligatory timetables of the present and future to a more social time which focuses on the roles and status of the individual built up over time (i.e., the past).

Gjesme (1979), using a 13-item scale, found four factors for future time orientation: (a) involvement, (b) anticipation, (c) occupation, and (d) speed. Gjesme (1979) found

relationships for achievement motivations and delay of gratification with the four dimensions. That is, the more future oriented the individual, the more willing to delay gratification to achieve goals.

Lomranz, Friedman, Gitter, Shmotkin, and Medini (1985) examined six age-based groups (i.e., children, adolescents, young adults, adults, late adults, and mature adults asking these groups to rate five concepts: time, past, present, future, and life stage. Their results suggested that past ratings increase with age while future ratings decline. Interestingly, the present remained relatively stable for all five groups. Also life stage did not score highly with mature adults. The authors concluded that a changing perception of time as the individual ages may aid in adjustment.

Rakowski (1986) discussed the theoretical implications among health, care giving, and the individual's future perspective (i.e., temporal orientation). Rakowski suggested that individuals alter their temporal orientation based on life experience. Citing past research, he cataloged the various dimensions of past health experiences that might influence temporal orientation. These include the anticipation of length of a current illness, beliefs in one's future potential and productivity, maintenance of self-image, any future treatments, how well they expect to cope, and any adjustment to future ambiguities and uncertainties. Rakowski also cited a similar set of factors for care giving. The theoretical work of Rakowski suggested that temporal orientation may be a surrogate for the health and care giving constraints that may influence Internet usage. If one's temporal orientation is not more future oriented, the individual may not make the effort to adopt a new technology such as the Internet or will use it to a much more limited degree.

More recently, Bergadaa (1990) developed a model of the individual's cognitive

temporal structure to examine the influences of temporal orientation on consumer behavior. This temporal structure functions through the interaction of the individual's personal time (i.e., perceptions of past, present, and future) and environmental time (i.e., views of society) which leads to action. Bergadaa took a naturalistic approach to examine this issue by interviewing individuals. He found a relationship between time orientation and locus of control. Internals were more future oriented with a focus on action in their activities. This focus on action is more internally driven for the future oriented, while those with a present orientation appear to be influenced more by outside sources. Future oriented individuals use consumer products to become what they want to become.

In summary, time orientation appears to change with age and have some influence on behavior. Future-oriented individuals adopt new technologies (Rakowski, 1986), have a stronger internal locus of control, and have a stronger focus on action (Bergadaa, 1990).

Cognitive Age

Gerontologists have been interested in the individual's perception of their age other than chronological age for many years and have recognized it as important to understanding the psychological make up of aging adults. For example, younger thinking has been linked to innovativeness (Blau, 1973), education (Rostow, 1974), and subjective well-being (Peters, 1971). Gerontologists suspect that perception of age is an indication of the individual's psychological age. Psychological age is thought to be related to self-esteem, life satisfaction, knowledge, anxiety, depression, and locus of control (Linn and Hunter, 1979).

This notion was brought to marketing by Roscoe, LeClaire, and Schiffman (1977)

and refined, operationalized, and named "cognitive age" by Barak and Schiffman (1981). The authors developed and tested a self-perceived measure of cognitive age which contained the four age dimensions identified by Kastenbaum, Derbin, Sabatini, and Artt (1972) as feel-age, look-age, do-age, and interest-age. Barak and Schiffman (1981) conceptualized their measure with the consumer behavior perspective that consumers will purchase and consume products or services influenced more by their perceived cognitive age than their objective chronological age. Results from their study suggested that a majority of adults 55 and older perceive themselves as feeling, looking, and doing younger, and are interested in activities perceived to be more youthful than their chronological age. All four dimensions of cognitive age increase with chronological age.

Investigation of cognitive age in the study of mature adults has continued, although little has been done to examine cognitive age and actual consumer behavior (Van Auken, Barry, and Anderson, 1993). To summarize what has been accomplished, cognitive age has been found to be positively related to chronological age (Barak and Schiffman, 1981) and to our perception of self and identity (Barak and Stern, 1985a). It has also been used as a variable in segmentation studies (Barak and Stern, 1985b) and has been found to be related to other measures of age (Barak and Gould, 1985), to new brand trial, and information seeking (Stephens, 1991), and positively related to higher self-confidence, fashion interest, and a more work orientation (Wilkes, 1992). In addition, Barak and Stern (1985b), after a review of other disciplines, reported that cognitive age is positively related to physiological traits (e.g., self-rated health status), demographics (e.g., education and employment), psychographic traits (e.g., traditionality and price sensitivity), while negatively related to social psychological traits (e.g., femininity and masculinity) and

innovativeness (opinion leadership). Most recently, Van Auken, Barry, and Anderson (1993) found support for reliability and validity of the measure.

CHAPTER 4

HYPOTHESES DEVELOPMENT

In this chapter hypotheses are developed that examine potentially influential relationships of variables for the allocation and consumption of time on-line. The measurement of the individual's time on-line will be discrete units. Specifically, the measurement will be in hours or years. This measurement approach is based on the success of the economic, psychological, and marketing approaches to empirical measurement (Jacoby, Szybillo and Berning, 1976; Laver, 1981). Fourteen dependent variables will be used to test the hypotheses, 12 specific activities (e.g., surfing or paying bills), total number of hours spent on-line per week, and total number of years of experience on-line.

Hypotheses Development

Consumer behavior may be influenced by the personal characteristics of the individual and the situational characteristics of the environment (Bishop and Witt, 1970; Hornik, 1982). In this section the hypotheses are categorized by the four areas that Hornik (1982) proposed as influential on the allocation and consumption of time, and in this case time on-line: (a) individual resources, (b) personal attributes, (c) subjective values expressed as preferences, and (d) situational factors. In addition, a hypothesis

examining the segmentation of the mature adult on-line is suggested.

Individual Resources

The household production function (Becker, 1965; Mabry, 1970) suggests that time and money are expendable, but limited resources that may constrain maximization of utility. In this case, they are constraints on the amount of time spent on-line. The evidence on time and money is conflicting in that they may constrain younger adults differently than older adults. Menefee (1982) found support that time demands decline with age. Mature adults appear to have fewer demands on their time, perhaps because of their retirement. This would suggest that they have the time to participate in on-line activities. Conversely, the pilot study (McMellon et al., 1996) suggested that some retired individuals spending time on-line were quite active and as such still considered time a scarce resource. Money may act differently than time. An example of money as a scarce resource for Internet activity can be found in accessibility. If the individual does not live in a location where there is a local access telephone line, they may have to pay extra for long distance charges, which can be prohibitive. Money can also restrict individuals with regard to the equipment they use. For example, certain activities (e.g., graphics downloading) on the Internet are facilitated by fast and expensive computers. In addition, both Faris (1983) and Enders (1995) specifically pointed to money as a possible inhibiting factor in computer and Internet use by mature adults. The above suggests that:

Hypothesis H1a. The more that time is perceived as a limiting resource for on-line activities, the less time will be spent on-line.

Hypothesis H1b. The more that money is perceived as a limiting resource for on-line activities, the less time will be spent on-line.

In addition to time and money, Mabry (1970) suggested stamina (e.g., energy to perform the activity) as a possible constraint. Adding support for this notion, Hornik (1985) and Hendrix, Kinnear, and Taylor (1983) found shopping time constrained by amount of energy. Also Bishop and Witt (1970) found relationships between energy surplus and various activities. Stamina may be especially relevant to mature adults who are beginning to feel the effects of aging on their physical and mental strength (Birren and Fisher, 1991). They may not be able to spend long amounts of time on-line because of eye strain, fatigue, or loss of attention (Gatlin, 1995). These findings suggest that:

Hypothesis H1c. The more that one's stamina is perceived as limiting with respect to on-line activities, the less time will be spent on-line.

In addition, the exploratory pilot study (McMellon et al., 1996) uncovered another possible constraint: mobility. Mobility is defined as the degree that individuals are limited from leaving their home. Research has shown that mature adults go out less the more they age (Brail and Chapman, 1973; Hawes, 1977). These limits can be influenced by transportation problems (e.g., mature adults do not drive as much as younger adults), by health (e.g., arthritis might limit walking abilities), or by a social life that might be diminished. In addition, in care giving situations the care giver's freedom of choice and action are diminished (Weinblatt, 1994). Restricted mobility could lead to a deterioration of health (Samli and Palubinskas, 1972; Schewe, 1984); thus, as a coping strategy for being more home bound, the mature individual may use the computer and the Internet to

escape the home or to accomplish tasks usually performed outside the home, such as visiting friends. If mobility limits activities in such a manner that the individual develops strategies to overcome the restrictions, then:

Hypothesis H1d. The less mobility that the individual has for out-of-home activity, the more time will be spent on-line.

The constraining effects of scarce personal resources such as time and money are well supported in research. The effects of mobility and stamina have been theoretically proposed in the literature and have received modest support in research. Lane, Kaufman, and Goscenski (1995) have recently proposed a fifth resource, namely, information. This constraint is situational specific (i.e., in order to perform certain activities, situation specific resources must be available to the individual). The authors conceptualized the information resource in an organizational setting (i.e., information for the firm is a valuable resource) but they also note that it might be applicable to individuals. This new constraint appears to fit well for on-line behavior. Individuals must have a certain level of information or knowledge to operate a personal computer on-line. Information in this case can be operationalized as "computer literacy". For example, the individual must have a basic level of knowledge (i.e., knowledge of software and how to operate a personal computer) just to log on to the Internet. It also takes a more advanced level of knowledge to perform certain activities on the Internet (e.g., uploading or downloading graphics). There is little in the literature discussing this constraint with the exception of the Lane, Kaufman, and Goscenski (1995) article. It appears to be an important consideration for on-line allocation of time. If individuals need a certain level of

information or knowledge to operate successfully on-line, then:

Hypothesis H1e. The higher the level of computer literacy, the more time will be spent on-line.

Personal Attributes

The evidence appears overwhelming that certain demographic variables (i.e., age, gender, income, education, and age of interest in technology) are related to non-work activities. Chapters 2 and 3 of this dissertation cite over ten articles for each of these variables that demonstrate a relationship with time allocation. Each of the variables appears to be situation specific. For example, the amount of time spent with media increases with age (Hornik and Schlinger, 1981), while the amount of time spent on shopping goes down with age (Hendrix et al., 1983). In another example, waiting time goes down as income goes up (Holtman, 1972; Nichols et al., 1971), while travel time goes up when income goes up (Barff et al., 1982). In the case of the Internet, it is not completely clear how these demographic variables will influence the amount of time spent in on-line activity. Thus, examination of the data will be exploratory. All results will be reported in the findings section of this dissertation.

A new personal attribute was identified in the pilot study (McMellon et al., 1996). The variable that emerged was the extent to which the individual has been involved with technology. It appears that heavy users of the Internet also had a high involvement or interest in technology, some from childhood. It was also noted that some of the pilot study subjects had been employed in industries that might rate as high-tech industries. For example, one subject had worked 30 years for IBM. The literature review offered a

few clues to better understand this new variable.

Meissner (1971) examined the work-leisure relationship for compensation and carry-over effects. He found support for the carry-over effect. For example, the worker who is socially isolated on the job will also tend to participate in non-social leisure activities. Another clue appeared when Kando and Summers (1971) theorized that carry-over can occur when certain personality or behavioral differences in individuals transfer their work performance attributes to leisure activities. These differences are intrinsic in the individual or have developed through their work experience.

Both carry-over and compensation effects are found in leisure activities. This suggests the possibility that those individuals who spend large amounts of time on-line have been influenced by their involvement with technology. One other clue adds to this notion. Jay (1989) found a relationship among prior technological experience and positive attitudes and continued use of computers.

If the continuity approach (Atchley, 1989; Kaufman, 1987) applies in this situation, it suggests that the individual will develop strategies (i.e., go on-line) to continue satisfying their needs for involvement with technology as they age. Thus, those individuals who have a stronger interest or involvement with technology would be motivated to continue that interest or involvement as they age, more than those with a lesser interest. This need might influence individuals towards using the Internet more than others to regain the level of involvement with technology that they had experienced earlier in life. Thus:

Hypothesis H2. The higher the individual's level of involvement in technology, the more time will be spent on-line.

Subjective Values Expressed as Preferences

The continuity approach to the theory of aging further suggests a scenario that aids in explaining the mature consumer's behavior and allocation of time on the Internet. In it, the individual attempts to maintain their internal structure of personality as they age. Researchers have shown that personality can influence the choice of leisure activity and amount of time spent at it (Brail and Chapin, 1973; Carmone et al., 1984; Costa, Jr. and McCrae, 1991; Gatlin, 1995; Howard, 1976; Iso-Ahola, 1976; Martin and Myrick, 1976; Smith and Braun, 1994).

Five personality characteristics emerged from the pilot study (McMellon et al., 1996) and the literature review as being relevant to the allocation of time spent on-line suggesting that, when measured, those with higher scores for those traits will spend more time on-line than those with lower scores.

Locus of control

Personal control diminishes with age (Reid et al., 1977; Rodin, 1986). This loss of control is probably of special relevance to mature adults because many experiences in later life deal with control. The death of a friend, forced retirement, or sudden illness all suggest to individuals that their control over the outcomes of their actions is diminishing. This loss of control might motivate those individuals who want to regain equilibrium in their lives, as suggested by the continuity approach (Atchley, 1989; Costa Jr. and McCrae, 1984; Kaufman, 1987), to develop behavioral strategies to achieve their goals.

Locus of control in individuals can be internal for people who feel the reinforcement to the self and the identity of their activities are a result of their own actions. It can be external when they believe the results are caused by fate, chance, or others. Achievement of computer and Internet literacy is a difficult task because much of what one learns is accomplished through reading manuals or trial and error. This may be appealing to those whose internal locus of control has been reduced as they age. It appears that the very nature of on-line behavior is more conducive to those wishing to regain internal locus of control because computer operation and access to the Internet is mostly a solitary activity. Using the computer and the Internet may be a strategy for those individuals with a reduced internal locus of control to regain that part of their personal makeup. Thus, if reinforcement of identity and self are achieved through mastery of the computer and use of the Internet, then reduced internals may spend more time on-line.

Mature adults with a reduced internal locus of control might use the Internet as an activity to substitute for their need for personal control because the individual controls—for the most part— their own access and activities on the Internet. They do what they want to do, when they want to do it, and at their own speed. Thus, the evidence cited suggests that:

Hypothesis H3a. The less internal locus of control demonstrated by an individual, the more time will be spent on-line.

Need for Cognition

Individuals who actively seek out activities that require thinking and enjoy thinking have a high *need for cognition* (Cacioppo and Petty, 1982). They appear to spend more time thinking than those individuals with a lower need for cognition (NFC). If individuals gravitate toward enjoyable tasks to satisfy their needs in voluntary situations, then the computer and the Internet could be candidates as an activity for higher NFC individuals.

In addition, a number of variables have been found to be related to NFC. These variables suggest a behavioral direction toward computers and the Internet. NFC has been linked to those individuals who are self-appraised effective problem solvers (Heppner, Reeder, and Larson, (1983). One way of conceptualizing computers and the Internet is that they are problem-solving activities. Many times, the individual has to solve navigation and communication problems without the assistance of documentation or knowledgeable others. Those with high NFC appear to approach problems with confidence and a sense of control. This suggests a history of success in problem solving. Success in this case might translate to more time on-line. In addition, Olson, Camp, and Fuller (1984) linked NFC with curiosity and experience seeking. The Internet is well known as a vast unexplored territory to most users. Thus, exploring becomes an enjoyable and satisfying experience. Verplanken, Hazenberg, and Palenewen (1992) linked NFC with external information searchers. The Internet is also a well known source of information. Watt and Blanchard (1994) linked NFC with boredom proneness. Individuals with high NFC were less bored because they actively sought out experiences to satisfy their NFC. The Internet also offers a variety of experience. Thus, exploring is

one strategy for satisfying their needs and keeping boredom levels low. Finally, Peltier and Schibrowsky (1994) demonstrated that high NFC individuals spent more time on advertisements that they were interested in than those with low NFC. This also suggests that they might act in a similar manner on-line.

All of these findings suggest that, if individuals have a strong need for cognition, they have spent part of their life fulfilling that need (e.g., discussing complex topics with friends or completing jigsaw puzzles). As they age, stamina or other physical deterioration might limit their activities. Thus, the computer and the Internet offer an activity to continue to fulfill that need.

Use of the computer and Internet requires a high level of thinking. Those individuals who voluntarily learn computing and navigation of the Internet may have a higher need for cognition. That is, those who engage in and enjoy increased levels of thinking will tend to be active on-line for longer periods than those with lower levels of NFC. The previous discussion suggests that:

Hypothesis H3b. The higher the individual's need for cognition, the greater the amount of time that will be spent on-line.

Time Orientation

The evidence for time orientation is conflicting. Researchers have used different scales with different dimensional structures to examine time orientation. Generally, time orientation shifts from the future to the past as the individual ages (Lomranz et al., 1985). This may not be true for the on-line mature adult. Additionally, Guy, Rittenburg, and Hawes (1994) found that those with a strong present-time orientation were more

experientially oriented. This suggests that going on-line might be a worthwhile "experience" activity. In addition, mature adults who break the stereotypical role by adopting new products (Rakowski, 1986) and who focus on action instead of passivity (Bergadaa, 1990) may have maintained their future orientation. In addition, time orientation can have a number of dimensions. Gjesme (1979) identified four: (a) involvement, (b) anticipation, (c) occupation, and (d) speed. Gjesme (1979) was able to link these dimensions to achievement motivations and delay of gratification. If operationalization of these results (i.e., hedonism, experience, active versus passive, achievement motivation, and delay of gratification) translates to learning new software, communicating with younger people, and navigating the intricacies of the Internet, then time orientation will be a fruitful area to examine. If this is true, then:

Hypothesis H3c. The greater the individual's future time orientation, the more time the individual will spend on-line.

Cognitive Age

Cognitive age is thought to be one of the dimensions of self-identity (Linn and Hunter, 1979). It has been positively linked to innovativeness (Blau, 1973), fashion interest (Wilkes, 1992), new product trial and information seeking (Stephens, 1991), and self-confidence (Wilkes, 1992). Cognitive age is also an indicator of wanting to look, feel, do, and be interested in youthful activities (Barak and Schiffman, 1981).

The current computer culture appears to position computing and the Internet as modern youthful activities. Research has suggested that one of the reasons mature

consumers are on-line is to stay current (Chin, 1984; Furlong, 1987). Thus, one explanation for mature consumers' on-line activities is that they perceive it as youthful activities. If they go on-line, this activity might influence either their social status or their own personal needs to be current. A second explanation is that cognitive age also directs the mature consumer to "act" in a youthful manner. By going on-line and interacting with various age groups and by experiencing an activity that is perceived as youthful, the mature adult may "feel" younger.

If mature adults are influenced by their needs to feel and act more youthful, then going on-line may aid in their search for continuity of their self-identity as the effects of aging begin. They may need to go on-line as a coping strategy. This thinking leads to:

Hypothesis H3d. The younger an individual's cognitive "feel" age, the more time they will spend on-line.

Hypothesis H3e. The younger an individual's cognitive "look" age, the more time they will spend on-line.

Hypothesis H3f. The younger an individual's cognitive "do" age, the more time they will spend on-line.

Hypothesis H3g. The younger an individual's cognitive "interest" age, the more time they will spend on-line.

Attitudes Toward Computers

Mature adults have been using the Internet since the early 1980s (Ogozalek, 1991). They appear to be using the Internet to fulfill a variety of needs (Dixon, 1993; Furlong, 1987). In addition, mature adult attitudes toward computers are generally positive (Brown, Brown, and Baack, 1988). Also, Jay (1989) demonstrated that the more

time mature adults spend on computing, the more positive their attitudes become.

Because there has been little research concerning mature adults and the Internet, the research concerned with mature adults and technology may offer guidance. The examination of technology and the mature adult has demonstrated a relationship between attitudes toward technology and adoption of ATMs (Smither and Braun, 1994) and assistive devices (Gatlin, 1995). Finally, the pilot study (McMellon et al., 1996) suggested that mature adults have positive attitudes toward computing and the Internet.

Although the evidence is not strong, it suggests that:

Hypothesis H3h. The more positive an individual's attitudes toward computers are, the more time will be spent on-line.

Situational Factors

The pilot study (McMellon et al., 1996), along with the author's personal experience on-line over the past four years, suggested two situational factors that might influence the amount of time spent on-line.

Computer Capacity

The capacity of the individual's computer (i.e., memory and speed) can inhibit the amount of time spent on-line. For example, large amounts of random access memory (RAM) memory are needed when navigating the Internet as huge amounts of data are stored in the individual's computer. If there is not enough memory, the computer will slow down or stop navigation. In addition, large amounts of read only memory (ROM)

memory are also needed to hold the software necessary for successful Internet usage. Thus:

Hypothesis H4a. The more that one's computer capacity is perceived as a limiting resource for on-line activities, the less time will be spent on-line.

On-line Accessibility

On-line accessibility can also inhibit allocation of time on-line. Traffic problems on the Internet will slow down or stop on-line activities. For example, as more and more individuals sign on the Internet, the transmission of information slows down. Thus:

Hypothesis H4b. The more that on-line accessibility is perceived as limited, the less time will be spent on-line.

The Value of Time On-Line

The economic approach to the allocation of time suggests that utility is derived from the good and the time used to consume the good (Becker, 1965). Most economists value this time as money. Although the economic approach has proved very successful, it may be problematic when examining individual behavior. In the pilot study (McMellon et al., 1996) individuals were asked to put a monetary value to the time they spent on-line. It proved a difficult assignment. Some of the respondents ignored the request altogether which suggested the task was either too hard or too personal. Given these types of problems and the criticisms that the assumptions behind the economic approach are faulty (Hirschman, 1987), this dissertation adopts the value of time that

psychology, sociology, and marketing researchers appear to use more than any other value, satisfaction (e.g., Dumazedier, 1968; Feldman and Hornik, 1981; Lauer, 1976; Kelly, 1972; Neulinger and Crandell, 1976).

There are many approaches to conceptualizing and measuring satisfaction. Hawes, Talarzyk, and Blackwell (1975) used 32 satisfaction statements (i.e., perceived felt benefits), finding many relationships with leisure activities. Using a more parsimonious approach, Feldman and Hornik (1981) suggested measuring two dimensions of satisfaction based on the work of Kaplan (1972) and Neulinger and Raps (1972). The two dimensions are (a) satisfaction based on associations with others during the activity and (b) satisfaction based on participating in the activity.

The work in psychology and marketing suggests that satisfaction may be multidimensional in nature and derived from the specific activity and the people they met (Donald and Havighurst, 1959; Riche, 1974). On-line activities may be similar. Keeping in mind that subjects respond better to parsimonious questioning, the Feldman-Hornik (1981) two dimensional approach will be:

Hypothesis H5a. The more satisfaction perceived by an individual for on-line activities, the more time will be spent on-line.

Hypothesis H5b. The more satisfaction perceived by individuals for the people they have met during their on-line activities, the more time will be spent on-line.

Segmentation of Mature Adults On-line

The mature adult population is heterogeneous (Blaylock and Smallwood, 1987;

Maddox, 1970). Evidence suggests they can be segmented in many different ways (Hanson, 1989). For example, in marketing, mature consumers have been segmented into age-gender categories (Sherman and Schiffman, 1984), lifestyles (French and Fox, 1985), psychographics (Davis and French, 1989), and value orientations (Schiffman and Sherman, 1991). Of special interest was the segmentation by an individual's use of technology (Fox, Roscoe, Jr., and Feigenbaum, 1984). They found fashion, gadget orientation, bargains, and keep-in-touch segments in the use of telephone technology.

The pilot study (McMellon et al., 1996) also uncovered potential segments. All of the informants were users of the Internet. In discussions with the informants, individuals manifested a strong interest, in fact, a love of technology. Aptly enough, we called them, "Technology Lovers." Based on these findings and the authors' personal experience, technology lovers appeared to spend more time on-line than technology users who saw computing as just another tool. Technology lovers also appeared to have a younger cognitive age, a higher need for cognition, and higher satisfaction with their computer activities. Therefore,

Hypothesis H6. On-line users can be segmented by their involvement with technology into significantly different groups in terms of personal characteristics and time spent on-line.

Summary

Twenty hypotheses have been presented in this chapter. Nineteen examine variables that might influence the amount of time an individual spends on-line. The last

hypothesis examines segmentation of mature on-line consumers by their involvement with technology. Testing of all hypotheses will be with data gathered from potential respondents initially contacted via the Internet. These respondents agreed by contacting the researcher, filling out a survey, and returning it. The next chapter discusses the method followed in carrying out the research.

CHAPTER 5

METHOD

The goal of this dissertation is to examine the personal characteristics that influence the on-line allocation of time of mature consumers. Thus, the target sampling frame consists only of those mature consumers who participate in on-line activities (e.g., e-mailing or paying bills). The method used to gather data was unique in that respondents were solicited on-line to participate in the study, then mailed a questionnaire by regular mail. Respondents then returned the questionnaire using regular mail. All additional communication was conducted on-line using e-mail.

This chapter discusses the methods involved in examining this sample, a description of the sample, the procedures for recruiting respondents, and the process for fielding and tracking the questionnaire. A review of the literature could find no method similar to the one used here although parts of the method have been used in the past and were well received (e.g., mailing a questionnaire to respondents). The lack of literature on this method is not too surprising because of the newness of the Internet. Thus, a part of the method was developed from the writer's personal experience on the Internet. This experience includes a two-year project of on-line depth interviewing (McMellon, Schiffman and Sherman, 1996) and over 50 hours of participation in an on-line chat group.

Sample

The sample frame consists of all mature adults aged 55 and older who are active on the Internet. This includes the "mature adult" aged 55-64, the "young elderly" aged 65-74, and the "old elderly" aged 75 and older (Sherman and Schiffman, 1984). Acquiring a random sample of respondents from this sample frame of on-line users proved impossible. A random sampling of the general population was too costly because on-line users constitute approximately 30% of the total population and mature on-line users approximately 6% of the on-line community (SurveyNet, 1996). In addition, the on-line services (i.e., America Online, CompuServe, and Prodigy) and the independent local access providers contacted refused to make their lists available for research purposes because of the confidential nature of the research questions which they deemed proprietary. The other readily available sources of on-line users were the various computer magazines used by a segment of this population. These magazine lists seemed inappropriate, as they appeared to be biased toward the more computer literate user. Given these types of sampling problems, other researchers have resorted to using specific groups such as academic communities (e.g., Kiesler and Sproull, 1986) or on-line surveys where respondents must visit the web site (e.g., GVU, 1996).

When it appears that it may be impossible to create a list of the total population for random sampling of the group a researcher wishes to examine, Fowler Jr. (1988) suggested a multistage approach, which was adopted for this study. The multistage approach used in this study combines the members of various on-line groups of mature consumers (i.e., SeniorNet, AARP, and Retirement Plus) found on the commercial servers into one sample that should approach a representation of mature consumers using

on-line services. The e-mail addresses of individuals who were members of these various on-line groups were aggregated into a single e-mailing list that was used in the solicitation of individuals to participate in the study.

The goal was to find e-mail lists of mature on-line users that were representative of all on-line users. A search of the on-line services eventually uncovered three e-mailing lists: (a) a list of 3,487 e-mail addresses of members of SeniorNet, (b) a list of 979 on-line members of CompuServe's American Association of Retired Persons (AARP), and (c) a list of 455 on-line members of CompuServe's retirement issues forum. The total amount of on-line users that were solicited by e-mail to participate was 4,921.

Description of sample groups

SeniorNet is a broad based group of over 20,000 computer-using adults aged 55 to 102 in the United States and Canada. It was started as a research project by Dr. Mary Furlong of San Francisco University in 1986 and incorporated as a nonprofit organization in 1990. Its mission is to create a community of mature computer users. SeniorNet continually recruits new users into their group. This approach suggests a wide range of computer literacy among their current members. They now have over 85 learning centers throughout the United States (Schwarz and Taeuffer, 1993). Not all members participate in on-line activities but of those who do, many are members of SeniorNet On-line which is a special forum on America Online. Their mission and method of recruitment suggest that their membership represents a spectrum of mature adults who participate on-line.

The AARP is a private, not for profit organization for older Americans. It is the largest and oldest organization of this type with over 33 million members. Membership

is available to anyone over the age of 50, retired or still working. The AARP forum on-line is available on CompuServe for any AARP member who is a CompuServe user and who chooses to join. There is little published information available about their on-line users. The general membership of CompuServe is 84% male, 37% are over the age of 45, average household income is $84,500, 73% have at least a four year college degree, 72% are married, and the majority feel that technology is fun (CompuServe, 1996).

The Retirement + Forum, also on CompuServe, is open to all ages with a focus on present and future retirees and those who care for or wish to talk with older people. Like most forums or groups, it contains a library, a message center, and a conference room for on-line chats. It was founded in 1991 and is managed by the Setting Priorities for Retirement (SPRY) Foundation in Washington, D.C.

Analysis of sample

The sample consists of adults 55 years and older who are active on the Internet. Total questionnaires received were 286, of which 243 were from adults 55 years or older. In this section a profile of the sample consisting of those 55 years or older is presented. In addition, because the sample consists of three groups of mature consumers aggregated together, the differences among these groups is also examined. The three groups (i.e., AOL's SeniorNet and two CompuServe groups: AARP and Retirement Plus) are examined for mean differences among all key independent and demographic variables using SPSS 4.1 MANOVA (Tabachnick and Fidell, 1989). In addition, the aggregated sample profile is compared with available published data on Internet consumers.

MANOVA was performed between the SeniorNet and AARP groups, the

SeniorNet and Retirement Plus, the AARP and Retirement Plus, and AOL and CompuServe. Forty-nine variables were entered into the analysis. For the SeniorNet and AARP groups (n = 112), the Wilk's lambda criteria was exact F(49, 62) = 1.03, p = .456. Four of the 49 variables could not shown to be similar: (a) one of the two computer literacy variables p = .005; (b) love of technology p = .010; (c) involved with technology p = .009; and (d) age p = .006. For the SeniorNet and Retirement Plus groups (n = 114), the Wilk's lambda criteria was approximate F(98, 126) = 1.93, p = .175. All 49 variables appear to be similar between the groups using univariate F tests (2, 111). For the two CompuServe groups, AARP and Retirement Plus (n = 19), multivariate MANOVA could not be performed because of group size. Univariate F tests (1,17) showed two variables could not be shown to be similar: (a) stamina p = .014 and (b) getting out of the house p = .017. Finally, the AARP and Retirement Plus groups (n = 114) were combined to form a representative CompuServe group and compared to the AOL group; the Wilk's lambda criteria was exact F(49, 64) = 1.10, p = .355. One of the two computer literacy measures could not be shown to be similar, p = .009.

This MANOVA analysis suggests that the combined groups are relatively similar in nature and that their aggregation is acceptable. To further examine the sample, the demographic profile of the sample was compared to published demographic profiles of on-line users. Comparison of these samples can be helpful in that it allows a better sense of the potential differences between on-line users of commercial servers such as AOL and the other types of internet access, such as educational institutions or direct access services. The GVU 50+ WWW User Survey (i.e., Graphics, Visualization, & Usability) collects data when a respondent visits their Internet web page and answers questions. As

shown in Table 5-1, the GVU sample tends to be more male, 73% versus 60%. Martial status appears similar except that the GVU sample has less in the widow/widower category. Income and educational levels appear similar except the GVU sample appears to have fewer at the Ph.D. level. Of special interest to this study is the number of years spent on-line; the GVU sample has a larger percentage of users who have been on-line less than a year. This may reflect the number of years AOL and CompuServe have been available.

Recruitment Procedures

Because of the many technical difficulties of sending a questionnaire on-line to respondents (i.e., incompatibility of server formats, non-transferability of all word processing codes, and the inability of less computer literate on-line consumers to download and upload the survey), a more practical approach was taken. First, respondents were recruited by an e-mail message to send their home mailing addresses to the researcher, who would mail them the questionnaire. If the respondent agreed to participate, the questionnaire and cover letter (see Appendices A and B) were sent by regular mail. The process of solicitation of respondents willing to participate in the research involved the following steps:

A. An e-mail mailing list was developed from addresses collected on-line.

B. A number of test mailings of the solicitation letter were made by the researcher from the research address to America Online and CompuServe addresses. Replies from AOL and CompuServe to the research address were also tested. All of these tests were successfully completed.

TABLE 5-1
COMPARISON OF DEMOGRAPHIC PROFILES

Variable	Dissertation 55+	GVU 50+	GVU 19+	SurveyNet	Com.Net
Gender					
Male	60.1%	72.9%	68.6%	72.9%	69%
Female	39.5	27.1	31.4	27.0	31
Martial Status					
Single	3.3%	7.6%	36.7%		
Married	67.9	71.8	45.7		41.1
Divorced/Separated	12.8	14.8	7.0		
Widow/widower	11.9	2.3	.6		
Significant Other	3.7	4.0	8.4		
Number of Years On-line					
Less than One Year	14.4%	48.3%	36.1%		
1-3 Years	51.2	38.9	42.4		
4-6 Years	16.9	8.8	14.3		
Over 7 years	17.1	4.1	7.1		
Education					
High School Grad	6.1%	7.0%	12.4%	6.4%	
Some College	24.3	24.0	29.5	32.6	
College Graduate	10.7	25.7	29.9	31.2	
College Degree+	69.1	58.5	48.7	54.4	
Some Graduate Work	16.5				
Masters Degree	22.2	24.7	15.3	18.4	
Some Ph. D. Work	7.4				
Ph. D. Completed	12.3	8.0	3.5	4.8	

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TABLE 5-1 (cont.)
COMPARISON OF DEMOGRAPHIC PROFILES

Variable	Dissertation 55+	GVU 50+	GVU 19+	SurveyNet	Com.Net
Income					
Under $20,000	3.7%	2.9%	9.9%		
$20,000 to 29,999	13.6	7.1	9.2		
$30,000 to 39,999	18.5	9.8	11.4		
$40,000 to 49,999	13.6	12.0	11.6		
$50,000+	46.2	55.1	41.1		
$50,000 to 59,999	7.8				
$60,000 to 69,999	10.3				
$70,000 to 79,999	6.2				
$80,000 to 89,999	5.8				
$90,000 to 99,999	2.5				
Over $100,000	13.6	16.7	10.9		
Average HH Income	$50-59M		$63M		$59M
Average Age	67.4	57.0	34.9		
Primary Occupation Now/Before Retirement					
Technological	14.0%	16.9%	27.3%		27.8%
Business	52.8	45.9	33.2	61.5%	19.6
Educational	22.1	11.4	25.2		29.6
Other	11.1	25.8	14.3		13.0

C. An initial e-mail solicitation letter (see Appendix D) was sent to all 4,921 addresses. This was accomplished by e-mailing the letter to four to seven addresses at a time. The number of solicitation letters per single e-mailing was dependent on the length of their addresses because the software used (i.e., VM e-mail) limited the total number of characters in the mailing address. In addition, most e-mail systems show the e-mail addresses of all addressees in

every letter. Thus, if too many e-mail addresses were listed at the top of the e-mail letter, the impact of the solicitation letter might be lessened because of the impression left that the letter was not a personal correspondence between researcher and potential subject but a mass mailing of some type. The numerical results are depicted in Table 5-2. Details of this method are described below.

1. Delivery of the e-mail is verified electronically within seconds. Undeliverable mail is also returned within seconds of mailing.

2. Many of the initial e-mail messages were returned as undeliverable, approximately 20% for America Online, 24% for SeniorNet, and 15% for Retirement Plus. These undeliverable e-mail messages were checked against the original e-mail list for errors in addressing by the researcher. The message was immediately re-mailed if an error in the original mailing address was detected.

3. If the spelling of the address on the undeliverable e-mail was correct, the addressee was declared undeliverable and removed from the list. The final total number of e-mail addresses was compiled by subtracting the number of undeliverable (1,003) from the total number (4,921). Possible reasons for the undeliverable status are as follows: the original address as copied from on-line was incorrect, users had dropped their on-line service but had not yet been removed from the list, their mailbox was full (e.g., CompuServe uses this designation for some undeliverables), or they may have changed their on-line address.

4. A test of a second solicitation e-mail letter (see Appendix E) to those who did not respond to the first one produced a number of complaints from respondents. As Mehta and Sivadas (1995) pointed out, it appears that unsolicited e-mail such as a questionnaire may irrate people. In our case, although it was not a questionnaire, the appearance of a second message when the first was ignored was enough to provoke some individuals to write asking to be removed from the mailing list. In another case, one respondent wrote of illness as the reason for not responding. This approach had to be abandoned, unfortunately cutting off an interesting approach to examining non-response bias.

TABLE 5-2
RESULTS OF SAMPLING PROCEDURE

Procedure	AOL	AARP	Retire+	Total
Total People E-mailed	3487	979	455	4921
Remove from List	17	5	0	22
Full mailbox	N/A	16	12	28
Reported Undeliverable	682	215	56	953
Total Undelivered	699	236	68	1003
Total Delivered	2778(.80)	743(.76)	387(.85)	3918(.80)
Regular Acceptance	255	72	25	347
E-mail Acceptance	15	1	0	16
Fax Acceptance	0	1	0	1
Total Acceptance	270(.10)	74(.10)	25(.06)	369(.09)
Returned as Undeliverable	0	2	0	2
Total Returned Questionnaires	215	51	20	286
Non-usable Questionnaires	2	0	0	2
Total Usable Questionnaires	217(.80)	51(.69)	20(.80)	288(.78)

D. The next step involved the sample responding to the solicitation letter. A total of approximately 9% responded positively from America Online, 6% from SeniorNet, and 6% from the Retirement Plus Forum. There is a discussion of response rates following this section.

E. The questionnaire, a cover letter, and a stamped return envelope were mailed to those willing to participate within one week of their initial response. A second e-mail was sent the day the questionnaire was mailed thanking them for their involvement and prompting them to e-mail the researcher if they had any

questions (see Appendix F). There were no questions from the respondents as they filled out their questionnaires. Two were returned as addressee unknown.

F. The questionnaire was then returned to the researcher using the enclosed stamped self-addressed envelop. Approximately 80% returned the questionnaire. A number of the respondents e-mailed to state they had completed the questionnaire and had returned it by mail.

G. A follow-up e-mail was sent to all participants thanking them for their involvement and reminding those who had not yet completed the survey to make the effort to complete and return it to the researcher (see Appendix G). Follow-up letters have been shown to aid in increasing response rate (Fox, Crask, and Kim, 1988; Kanuk and Berenson, 1975; Yu and Cooper, 1983).

The method used in this dissertation offered the researcher a unique opportunity to interact with the subjects on a more intimate level from the very beginning of the process. Ordinarily, the researcher mails out a questionnaire to an anonymous list of people on a mailing list. The only contact with respondents is from the returned questionnaire. This, of course, offers the researcher a certain level of objectivity. Yet, not having contact with one's sample also closes off an avenue of understanding. In the method described for this study, tracking of respondents is strong: (a) the researcher asks the subject to participate; (b) subjects are thanked for participating when they accept; (c) the researcher knows each respondent by e-mail address, home address, and name; and (d) respondents are free to e-mail the researcher if they have any questions when filling out the questionnaire. In addition, a dialog began between the researcher and many of the respondents via e-mail

(e.g., some respondents commented in response to the solicitation letter; others responded upon completion of the questionnaire). This closer contact with respondents allowed the researcher to develop a better understanding of what the sample feels and thinks about the survey and the research subject in general. For reasons not completely understood, respondents believed they were free to comment via e-mail to the researcher from the moment of first contact. It may be that perceived anonymity or the ease of communication facilitates these responses. See McMellon (1997) for more discussion of this subject.

The questionnaire was mailed via regular mail because the author's experience (McMellon, Schiffman, and Sherman, 1996) suggested that those respondents not sufficiently computer literate would have many difficulties in downloading and uploading the questionnaire. In addition, there appeared to be some electronic transmission problems, in that the questionnaire did not always upload and download in the same format as originally designed (i.e., word processing codes were not always translated in the manner expected). Also, scale questions proved more difficult, even for those computer literate respondents, in that it proved difficult to answer scale questions in the acceptable manner (i.e., where to place the "X" corresponding to the scale value). For all these reasons, the author chose the method of mailing the survey via regular mail as it appeared to lessen or eliminate the above potential problems. This problem was partially confirmed in a mini-test of 15 respondents who insisted they would only participate if the questionnaire was e-mailed to them. Only three returned their e-mailed questionnaires, one via e-mail and two via regular mail. All three returned questionnaires were different in format from what was sent out. The 12 unresponsive test subjects were sent a second

e-mail asking them what happened. Five responded with a variety of answers (e.g., "I didn't have compatible software" or "I am sorry--too many questions, I don't have the time to do it"). The others never responded.

Response Rates

There appears to be no accepted range for the response rate of an e-mail solicitation or questionnaire. Small scale studies using academicians as respondents produced rates of over 50% (Bachmann, Elfrink, and Vazzana, 1996; Mehta and Sivadas, 1995) while larger non-academic respondent studies had a rate of 6% (Tse, Tse, Yin, Ting, Yi, Yee, and Hong, 1995). In addition, one commercial direct mail firm guarantees only a 3% response rate (e.g., Quantum Communications, 1997).

The 9% response rate for acceptances and the 80% response rate for returned questionnaires for this research were calculated using the Wiseman and Billington (1984) formula of dividing usable responses by the total number of eligible responses. Low response rates from e-mail may be the result of (a) respondents unfamiliarity with new technology (Tse, et al., 1995); (b) they do not read their mail, just deleting it in their mailbox; (c) the e-mail was never delivered even though the system said it was; or (d) they just did not want to respond to the solicitation. A fifth reason for not answering the solicitation e-mail may be paranoia. A number of respondents sent e-mail replies that suggested a high level of fear that the e-mail solicitation to participate in the study was either a disguised commercial message or a confidence game. For example, one respondent who was willing to participate wrote, "...do hope you are honest person...and this is not a scam...will trust you are...." Interestingly, many

respondents wrote positive and negative messages in addition to giving their home mailing addresses. Positive messages varied from stating that they were former City University of New York students themselves to those who began to tell their life stories (e.g., "I've been using the Internet on four direct TCP/IP connections plus AOL and CompuServe and Delphi"). Negative responses from respondents in this research proved interesting. As Faria and Dickinson (1992) have pointed out, the more junk e-mail increases on the Internet, the more responses from individuals may become impolite. A few respondents for this research, who chose not to participate, replied using language not normally seen in a dissertation. E-mail is interactive. Thus, it is easy for the individual to respond to the researcher in either a positive or negative manner or to completely ignore the message.

Measures and Instrument Development

A 12-page questionnaire (see Appendix A) with a one-page cover letter (see Appendix B) was developed. The questionnaire consisted of 11 sections asking a total of 131 questions on the following subjects: (a) general on-line access and usage activities; (b) cognitive age; (c) specific on-line activities and satisfactions gained; (d) situational variables such as available time to go on-line or amount of computer memory; (e) social life and physical condition; (f) locus of control, need for cognition, and attitudes toward computers scales; (g) limiting factors such as time and money; (h) a temporal orientation scale; (i) on-line activities such as purchase behavior; (j) demographic questions; and (k) open-ended questions on the effects of on-line activities on their lives.

The Cover Letter

The cover letter included a number of elements known to aid in increasing response rates. The letter was printed on Baruch College stationary to clearly identify the research source as a university. The letter contained egoistic (i.e., answering the questionnaire will help you), altruistic (i.e., your answers will help others), and help-the-sponsor types of appeals. A monetary incentive appeal (i.e. a $250.00 lottery) was also used. The lottery was necessary because of the nature of our method (i.e., e-mail solicitation) in that money can not be sent over the Internet. In addition, the letter contained a comment assuring confidentiality of the respondent's answers. All of these elements have been suggested by the meta-analysis work of Church (1993); Faria and Dickinson (1992); Fox, Crask, and Kim (1988); Kanuk and Berenson (1975); and Yu and Cooper (1983).

The Questionnaire

The 12-page questionnaire consisted of previously developed psychology and marketing scales, and questions developed by the author. In addition, demographic questions were also asked. These scales and questions were used to examine the variables suggested as potentially influential in the allocation of time on-line. These variables are: (a) time, money, mobility, health, and information, (b) technological involvement, (c) locus of control, need for cognition, time orientation, cognitive age, and attitudes toward computers, (d) computer capacity and on-line accessability, (e) satisfaction, and (f) gender, age, education, income, and age of interest in technology.

The scales used were attitudes toward computers (Dambrot et al., 1985), cognitive age (Barak and Schiffman, 1981), time orientation (Gjesme, 1979), need for cognition

(Cacioppo, Petty, and Kao, 1984), and locus of control (Kren, 1992). The previously developed questions were mobility (Lumpkin and Hunt, 1989; Rahtz, Sirgy, and Meadow, 1989) and healthiness (Lumpkin and Hunt, 1989).

In addition, questions were developed to examine some aspects of the continuity theory of aging (Atchley, 1989; Kaufman 1987), the individual resources of time and money (Becker, 1965), stamina (Mabry, 1970), mobility (McMellon, Schiffman, and Sherman, 1996), information (Lane, Kaufman, and Goscenski, 1995), occupational background (Meissner, 1971; Kando and Summers, 1971; Jay, 1989), computer capacity and on-line accessibility (McMellon, Schiffman, and Sherman, 1996), satisfaction (Feldman and Hornik, 1981), and on-line segmentation (McMellon, Schiffman, and Sherman, 1996).

Time and Money. Two time and money questions were developed using a seven point Likert-type summated rating scale. All were specific to on-line activities. The first set of questions were (a) "I have the time to go on-line as much as I would like to;" and (b) "I have the money to go on-line as much as I would like to." A second set of questions asked if "My time" or "My money" were limiting on-line activities.

Mobility. Six separate seven-point Likert-type questions were used for examining the influence of mobility on the allocation of time on-line. The questions were for restriction in life space (Lumpkin and Hunt, 1989) and limited activity (Rahtz, Sirgy, and Meadow, 1989). Some of the questions were modified slightly based on respondent comments from a pretest. The pretest will be discussed later in this chapter. The questions based on Lumpkin and Hunt (1989) were (a) "I'm not as socially active as I used to be;" (b) "I'm not as active as I used to be because I have no transportation;" and

(c) "I don't have as many friends or acquaintances as I used to have." The questions based on Rahtz, Sirgy, and Meadow (1989) were (a) "I stay home most of the time," and (b) I would rather stay home than go out with friends." An additional question was developed to examine perceived mobility: "I get out of the house as much as I should."

Stamina. Nine separate seven-point Likert-type questions were used in the survey. Lumpkin and Hunt (1989) had developed three of the questions and the author developed two sets of three questions. The Lumpkin and Hunt (1989) healthiness questions were (a) "Compared to others my age, I take less medicine;" (b) "Compared to others my age, I think I'm in better health;" and (c) "I really don't have any physical problems." The questions developed by the author were more situation specific: (a) "I am not hindered by any physical limitations in staying on-line as much as I would like to (for example, being too tired or unable to type because of arthritis);" (b) "My attention span does not limit me from staying on-line as much as I want to;" and (c) "My concentration level limits me from staying on-line as much as I want to." A second set of questions were brief and asked if (a) "My physical stamina," (b) "My health," and (c) "My attention span" were limiting on-line activities.

Information. Two questions were developed to examine computer literacy among the respondents. The first asked directly, "I am computer literate enough to participate in all of the on-line activities I wish to." The second asked if "My computer literacy" was a limiting factor.

Technological Involvement. A series of questions were developed examining the respondents basic attitudinal perceptions of technology and their general involvement with technology. These questions were, (a) "I love technology;" (b) "I have been

involved with technology either at work or home for most of my adult life;" and (c) "Technology is good for society."

Locus of control refers to one's belief that the results of behavior are either controlled by internal forces or external forces. Rotter (1966) developed a 29-question biserial choice scale for examining locus of control. This approach seemed unwieldy for the questionnaire which was already quite large. Lumpkin (1986) developed a brief scale for the study of the elderly. It consisted of three internal and three external locus of control items (see the questionnaire in Appendix A for the wording of the questions). Lumpkin (1986) reported a coefficient Alpha of .68.

Need for cognition is the tendency to enjoy and do more thinking (Cacioppo and Petty, 1982). Cacioppo and Petty's (1982) original 34-item scale was reduced to 18 by Cacioppo, Petty, and Kao (1984). The 18-item scale appeared to be an acceptable replacement for the larger scale. The authors reported a single dominate factor and a Cronbach Alpha of .90. See the questionnaire in Appendix A for the wording of the questions.

Future time orientation refers to one's temporal perspective, that is, how one thinks about the future. A scale developed by Gjesme (1979) contains four dimensions: (a) involvement, (b) anticipation, (c) occupation, and (d) speed. Cronbach's Alpha was reported at .62. See the questionnaire in Appendix A for the wording of the questions.

Cognitive age (Barak and Schiffman, 1981) refers to self perception of age. The questions include a feel-age, look-age, do-age, and interest-age rating. The score for each question is subtracted from the individual's chronological age to create a cognitive age rating. See the questionnaire in Appendix A for the wording of the questions.

Attitudes toward computers refers to an individual's thinking about computers. Many scales have been developed over the years. Dambrot et al. (1985) developed a 20-item scale which was chosen for this questionnaire because it was developed for a more general audience, and no scale could be found that was directed towards mature adults. See the questionnaire in Appendix A for the wording of the questions. The authors reported a Cronbach Alpha of .84.

Computer capacity. The pilot study results (McMellon, Schiffman and Sherman, 1996) suggested that an individual's computer capacity (i.e., memory and modem speed) and on-line accessability (i.e. traffic problems) may be influential in limiting time allocation. Two sets of questions were developed for each area. The first set was (a) "I have enough memory in my computer to participate in all of the on-line activities I wish to;" (b) "My computer/modem is fast enough for me to participate in many of the on-line activities I wish to;" (c) "On-line traffic problems slow me down from participating in many of the on-line activities I wish to." The second set about limitations. They were (a) "My computer's memory," (b) "My computer's speed," and (c) "My ease of on-line access or navigation (traffic problems)."

Satisfaction was also measured in a variety of ways. Respondents were asked to rate their satisfaction on a seven-point scale from "little or no satisfaction" to "a great deal of satisfaction" for each of their specific on-line activities, for their total time on-line, and for satisfaction with the people they have met on-line.

Demographics. Respondents were asked a variety of demographic questions which included gender, education, income, age, and age of first interest in technology. See the questionnaire in Appendix A for the wording of the questions.

Dependent Variables

The measurement of time among mature consumers can be difficult because of rounding errors (Hornik and Cherian, 1994), the variety of time perceptions because of individual situations (Rakowski, 1985), and underestimation (Guy, Rittenburg, and Hawes, 1994). Although it is generally believed that these biases will distribute evenly across all respondents, time was measured in the questionnaire in a number of different ways (Hornik, 1984b). First, respondents were asked to estimate the number of hours per week they spent on-line by the access service that they used. A second approach asked them to estimate hours per week for each specific on-line activity (e.g., e-mailing friends). There were 12 specific activities. Respondent answers could be totaled or examined individually or in subsets. At the end of the questionnaire, respondents were again asked to estimate total time spent on-line in an average week. They were also asked to state how long they have been on-line in number of years.

The dependent variables used in this study are based on 12 specific on-line activities, the total time spent on-line per week, and the total number of years of experience the individual has accumulated on-line. These variables are: (a) surfing, (b) entertainment, (c) e-mailing to friends, (d) e-mailing to children, (e) checking stories, (f) reading message boards, (g) chatting, (h) information searching, (i) educational activities, (j) paying bills, (k) window shopping, (l) financial activities, (m) total time spent on-line per week, and (n) total number of years of experience on-line.

Questionnaire Pretests

Pretest I. A convenience sample of five adult males, four adult females, and five

adult mature males (i.e., 55+) was selected for a pretest of the questionnaire. The location of the pretest was a small New England summer resort. The permanent homes of the subjects were scattered throughout New England. All were current users of an on-line service. The pretest was conducted by first explaining the purpose of the pretest, which was to assure that the questionnaire was readable and easily answerable. Each subject was then given the questionnaire to complete in the presence of the author. Subjects were encouraged to comment on questions and were asked throughout the interview if the questions "made sense" and were "understandable." Upon completion of the interview, subjects were prompted again for comments or questions. The pretest was conducted over a seven-day period and appeared relatively productive, in that a number of changes in wording became apparent both for questions generated specifically for this questionnaire and for previously developed scales. For example, the phrase "physical strength" was interpreted by subjects as "muscular" while the intention of the question was "stamina." This particular question was rewritten to reflect this finding.

Pretest II. A second pretest was performed on the revised questionnaire. A convenience sample of five adults was administered the questionnaire in the presence of the author. A second group of five adults was asked to take the questionnaire home, fill it out, and take notes if any questions were unclear or ambivalent. Both groups completed the questionnaire with a few comments.

Scale Reliability

Four previously developed scales were used in this study: (a) locus of control (Lumpkin, 1986); (b) need for cognition (Cacioppo, Petty, and Kao, 1984); (c) time

orientation (Gjesme, 1979); and (d) attitudes toward computers (Dambrot et al., 1985). Each of the scales were examined using SPSS 4.1 RELIABILITY. The reliability procedure reports a variety of coefficients, including alpha (Cronbach, 1951), Spearman-Brown, Guttman, and split-half coefficients. If the original authors reported results of the factor analysis of their scale, it was duplicated in this research. Factor analysis was also used if the coefficient alpha was low. While only Cronbach's (1951) Alpha is discussed, all reliability results are shown in Table 5-3.

TABLE 5-3
RELIABILITY TEST COEFFICIENTS

Variable	n	Coefficient Alpha	Guttman Split Half	Alpha Part 1	Alpha Part 2
Locus of Control	237	.1511	-.2538	.5707	.4158
Need for Cognition	228	.8876	.7285	.8166	.7763
Future Orientation	236	.6109	.2597	.6549	.3304
Attitudes toward Computers	229	.5437	-.2900	.5991	.7657

Locus of Control. Lumpkin (1986) developed a six-item scale that was administered to mature consumers. Three items represented internal locus of control and three represented external locus of control. A coefficient alpha of .68 was reported. The same six-item scale was used in this research. Factor analysis with varimax rotation

extracted two factors, with items loading as predicted. The factors accounted for 52.7% of the cumulated variance. The plotted scree test (see Appendix G) depicted two factors above the elbow. Although the scale factored as predicted, the coefficient alpha was only .1511. All six items were examined for individual respondent abnormalities and for normality of distribution. Three items appeared normal in distribution, while two appeared somewhat flat and one peaked. Examination of the correlation matrix showed one item (i.e., "Getting a good job depends mainly on being in the right place at the right time") was not behaving as expected.

Need for Cognition. Cacioppo, Petty, and Kao (1984) developed a short form of their "need for cognition" scale using 18 items. They reported a Cronbach's alpha of .90. They also factored their items, extracting one dominate factor. The factor analysis with varimax rotation used for this research also extracted one dominate factor, accounting for 35.5% of the variance. The next factor accounted for 8.1% of the variance. The plotted scree test (see Appendix H) also depicted a clearly defined elbow after the first factor. The coefficient alpha was .8876.

Future Time Orientation. Gjesme (1979) developed a 14-item future time orientation scale that, when factored, consisted of four factors. They were described as involvement, anticipation, occupation, and speed. Gjesme (1979) reported a coefficient alpha of .62. Factor analysis with varimax rotation extracted four factors matching exactly with Gjesme's items, accounting for 58.6% of the variability. The plotted scree test (see Appendix I) depicted two factors high above the elbow and two close to the elbow. The two that were high above the elbow were interpreted as the involvement and the anticipation with the future factors. The Cronbach's alpha was .6109.

Attitudes Toward Computers. Dambrot et al. (1985) developed the 20-item scale reporting coefficient alphas of .79 and .84. The coefficient alpha for this study was .5437. The plotted scree test (see Appendix J) depicted four factors above the elbow and two at the elbow. Re-examination of the scale questions suggested that the changing nature of computers in our society might require the removal of some of the items as being outdated. This may account for the moderate coefficient alpha score.

Data Reduction

Because little research has been published in the area of on-line activities, a number of questions were developed that dealt directly with on-line activities in addition to the personal characteristic type variables thought to influence activities. These on-line variables were examined with the limitations of time, money, speed, computer memory, availability of access, attention span, and concentration that the on-line user might experience. The questionnaire contained 15 questions representing seven potential variables. These 15 questions had the potential for reduction to a smaller number. Thus, principal component analysis was used to reduce the 15 questions to a smaller number of factors (Hair Jr., Anderson, Tatham, and Black, 1992; Tabachnick and Fidell, 1989).

The initial analysis (SPSS 4.1 FACTOR) contained 15 potential independent variables. The procedure, using Varimax rotation, extracted six factors with an Eigenvalue of greater than one. Results of this analysis suggested that all of the factors had meaning. The six factors conformed to expectations with one exception; computer speed and memory loaded together. This factor can be explained as a computer capacity factor. The significance of the six factors is supported in that they all had

Eigenvalues greater than one and the plotted scree tests (see Appendix K) showed all factors above the elbow. The final factor loadings, item names, and factor meanings are depicted in Table 5-4.

TABLE 5-4
RESULTS OF FACTOR ANALYSIS

Variable Name	Factor Meaning	Factor Loading
1. Mspeed		.80227
Mmemory	Computer	.79951
Imodem	Capacity	.77917
Imemory		.76490
2. Mmoney	Money	.90091
Imoney	Limitation	.87659
3. Iconcen	Focus and	.62506
Matten	Attention	.79525
Iatten		.71230
4. Icomplit	Computer	.84748
Mcomplit	Literacy	.83816
5. Itime	Time	.88906
Mtime	Limitation	.83562
6. Itraffic	Accessibility	.83217
Mtraffic		.64629

Summary

In this chapter a unique method of sampling has been described. The uniqueness of this sampling method has been dictated by the need to examine a segment of the population that is involved in a consumer behavior that is somewhat new. Because of

this newness, little has been published on this method. The author devised techniques that were effective in accomplishing the goal of identifying and persuading this segment to participate in this study.

The questionnaire described in this chapter, developed to examine the allocation of time on-line of mature consumers, created the possibility of 24 independent variables (i.e., 19 hypotheses and 5 demographic variables) and 14 dependent variables for time allocation. In addition, scale reliability and data reduction techniques have been presented. Two of the scales performed as expected (i.e., need for cognition and time orientation) and two of the scales did not perform as expected (i.e., locus of control and attitudes toward computers). The data reduction technique proved useful in simplifying the number of independent variables. It also identified one consolidated variable: computer capacity.

In the next chapter, these variables will be analyzed and the results interpreted.

CHAPTER 6

RESEARCH RESULTS AND INTERPRETATION OF FINDINGS

In this chapter the questionnaire data are analyzed and interpreted. Nineteen hypotheses are tested using 14 dependent variables (e.g., surfing) and the 24 independent variables (i.e., the 19 hypothesized variables and 5 demographic variables). The last section of this chapter reports on a test of an additional hypothesis which examines a segmentation scheme for the mature on-line user.

Nineteen hypotheses were developed to examine the influential variables for the allocation of time on-line. The dependent variables were the 12 specific on-line activities (e.g., e-mailing to friends), the total time spent on-line per week, and the total number of years of experience spent on-line. The independent variables included (a) the personal resources of time, money, mobility, stamina, and information; (b) the individual's involvement with technology; (c) locus of control, the need for cognition, time orientation, cognitive age, and attitudes toward computers; (d) computer capacity and on-line access; (e) satisfaction for each specific activity and satisfaction with people met on-line; and (f) the five demographic variables (i.e., age, gender, income, education, and age of interest in technology).

To examine these hypotheses, a multivariate regression approach was utilized. Because the variables—with the exception of the six data-reduced variables—were not

orthogonal, SPSS 4.1 STEPWISE REGRESSION was used with both forward and backward methods of variable entry. As an aid to developing models of time allocation, the stepwise regression approach has been recommended (Hair Jr., Anderson, Tatham, and Black, 1992). The forward method starts with an empty equation and enters the variables one at a time. Once in the equation, the variable stays in the equation. Backward selection enters all the variables into the equation and then removes them if they do not contribute (Tabacjnick and Fidell 1989). The results of both the forward and the backward methods are presented with comparison of adjusted R^2 as one method of evaluation.

Surfing On-line

Surfing is defined as the on-line activity where the individual explores various web sites on the Internet without any strongly defined goal. The individual "surfs" from site to site, clicking on links of momentary interest. Surfing may be one of the more leisure-oriented on-line activities because it is less obligatory and more discretionary (Kelly, 1972). As shown in Tables 6-1A and 6-1B, satisfaction, time limitations, cognitive age for younger interests, and gender were influential in this activity (Adj. $R^2 = 239$, $F(4,183) = 15.665$, $p = .0000$).

Satisfaction was shown to be a key influential variable ($\beta = .396$, $t = 6.135$, $p = .0000$). Past researchers have also linked satisfaction to time allocation (Donald and Havighurst, 1959; Kaplan, 1972; Neulinger and Raps, 1972; Riche, 1975). The causal link may be that satisfaction is how individuals value their time (Hornik 1981). Because surfing appears to be a non-obligatory activity, satisfaction becomes the value of the time

TABLE 6-1A
RESULTS OF MULTIVARIATE REGRESSION ANALYSIS
FOR SURFING ON-LINE (FORWARD METHOD OF ENTRY)

Independent Variable	B	beta	T statistic	Sig. of T
Satisfaction	47.985	.395	6.135	.0000
Time Limitation	37.036	.144	2.228	.0271
Cog Age "Interests"	4.928	.178	2.746	.0066
Gender*	-67.127	-.129	-1.981	.0491
Constant	-71.414		-1.564	.1195

$R^2 = .255$ Adj. $R^2 = .239$ Multiple R = .505
F(4, 183) = 15.665 Sig. of F = .0000
*Indicator variable Male = 0

TABLE 6-1B
RESULTS OF MULTIVARIATE REGRESSION ANALYSIS
FOR SURFING ON-LINE (BACKWARD METHOD OF ENTRY)

Independent Variable	B	beta	T statistic	Sig. of T
Satisfaction	47.985	.396	6.135	.0000
Time Limitation	37.036	.144	2.228	.0271
Cog Age "Interests"	4.928	.178	2.746	.0066
Gender*	-67.127	-.129	-1.981	.0491
Constant	-71.414		-1.564	.1195

$R^2 = .255$ Adj. $R^2 = .239$ Multiple R = .505
F(4, 183) = 15.665 Sig. of F = .0000
*Indicator Variable Male = 0

and the more the satisfaction, the more time is allocated to that activity.

Perceived time limits was also shown to be influential but to a lesser extent than satisfaction ($\beta = .144$, $t = 2.228$, $p = .0271$). Many mature individuals have fewer time demands as they age (Menefee, 1982). Conversely, the pilot study suggested that

some mature individuals had busy schedules and continued to have strong demands on their time (McMellon et al., 1996). It appears that those individuals who feel less time constraints are surfing more than those who do have time constraints.

Cognitive age for younger "interests" was influential on surfing on-line, but to a lesser extent than satisfaction ($\beta = .178$, $t = 2.746$, $p = .0066$). Cognitive age has also been linked to innovativeness (Blau, 1973) and fashion and self-confidence (Wilkes, 1992). Internet usage can be interpreted as innovative and fashionable behavior in that it is still a relatively new activity. Research has also shown that some mature adults like to keep up with technology (Carmone Jr. et al., 1983; Furlong, 1987).

The results on gender suggested that surfers tend to be male ($t = -1.981$, $p = .0491$). Because gender was entered into the equation as an indicator variable, no comment should be made as to its importance. The tendency for surfers to be male may be a result of the earlier development of the Internet which was heavily dominated by males. This male/female ratio is leveling as the Internet continues to diffuse throughout the population. An alternate explanation is that males use the Internet as an escape or diversion (Dixon, 1993).

In either case, mature individuals who are not limited by the constraint of time, who have younger interests, and who are satisfied with surfing are spending more time surfing the Internet than others. Thus, hypotheses H1a, H3g, and H5a were supported for this activity. Gender may also be influential.

Entertainment On-line

Entertainment on-line is defined as playing games or viewing graphics. As shown

in Tables 6-2A and 6-2B, satisfaction was positively related and perceived computer literacy was negatively related to entertainment (Adj. $R^2 = .350$, $F(2,185) = 51.318$, $p = .0000$). Satisfaction was the key influential variable ($\beta = .573$, $t = 9.718$, $p = .0000$) with computer literacy less influential ($\beta = -.153$, $t = -2.589$, $p = .0104$).

TABLE 6-2A
RESULTS OF MULTIVARIATE REGRESSION ANALYSIS
FOR ENTERTAINMENT ON-LINE (FORWARD METHOD OF ENTRY)

Independent Variable	B	beta	T statistic	Sig. of T
Satisfaction	42.352	.573	9.718	.0000
Computer Literacy	-28.864	-.153	-2.589	.0104
Constant	-2.230		-.171	.8644

$R^2 = .357$ Adj. $R^2 = .350$ Multiple R = .597
$F(2, 185) = 51.318$ Sig. of F = .0000

TABLE 6-2B
RESULTS OF MULTIVARIATE REGRESSION ANALYSIS
FOR ENTERTAINMENT ON-LINE (BACKWARD METHOD OF ENTRY)

Independent Variable	B	beta	T statistic	Sig. of T
Satisfaction	42.352	.573	9.718	.0000
Computer Literacy	-28.864	-.153	-2.589	.0104
Constant	-2.230		-.171	.8644

$R^2 = .357$ Adj. $R^2 = .350$ Multiple R = .597
$F(2, 185) = 51.318$ Sig. of F = .0000

The negative results for computer literacy were surprising because, in the author's experience, playing games and viewing graphics require a high level of computer skill. The results were opposite what was predicted. The Pearson product-moment correlation was also negative (-.1438). One explanation for the negative relationship between computer literacy and entertainment activities is that those individuals participating in this activity may be new to the Internet or may have limited their activities over the years in such a manner as not to become computer literate through experience. An alternate explanation is that the respondent may have interpreted this question more broadly, determining that "entertainment" was the reason they were on the Internet. Thus, new users, who are generally less computer literate may be logging on for the entertainment of the Internet. Mature individuals, who are satisfied with the activity and who are spending more time on-line entertaining themselves more than others, may be new to the Internet and may not have found the other, more expansive, areas of Internet activities. Hypotheses H1e and H5a are supported for this activity. A relationship with computer literacy was also found, but in the direction opposite of what was hypothesized.

E-mailing To Friends

E-mailing to friends appears to be more of a social activity than surfing which is a solitary activity. As shown in Tables 6-3A and 6-3B, satisfaction, cognitive age "do" and "look," and mobility were related to e-mailing to friends (Adj. $R^2 = .105$, $F(4,185) = 6.553$, $p = .0001$). Satisfaction continued to be an influential variable ($\beta = .286$, $t = 3.888$, $p = .0001$).

Cognitive age for doing younger things was found to be influential ($\beta = .170$,

t = 2.387, p = .0180). E-mailing over the Internet may be construed as a younger activity. Thus, mature adults may perceive e-mailing as "doing" a younger thing. If they also think they look younger (β = . 135, t = 1.901, p = .0589), it may motivate them to continue to pursue social contacts they might otherwise allow to languish. With this

TABLE 6-3A
RESULTS OF MULTIVARIATE REGRESSION ANALYSIS
FOR E-MAILING TO FRIENDS ON-LINE (FORWARD METHOD OF ENTRY)

Independent Variable	B	beta	T statistic	Sig. of T
Satisfaction	30.813	.267	3.836	.0002
Cog Age "Do"	5.905	.197	2.823	.0053
Constant	-88.878		-1.459	.1463

R^2 = .105 Adj. R^2 = .095 Multiple R = .324
F(2, 185) = 10.822 Sig. of F = .0000

TABLE 6-3B
RESULTS OF MULTIVARIATE REGRESSION ANALYSIS
FOR E-MAILING TO FRIENDS ON-LINE (BACKWARD METHOD OF ENTRY)

Independent Variable	B	beta	T statistic	Sig. of T
Satisfaction	30.889	.268	3.888	.0001
Cog Age "Do"	5.096	.170	2.387	.0180
Cog Age "Look"	5.856	.135	1.901	.0589
Mobility	-22.532	-.125	-1.815	.0712
Constant	-21.823		-.247	.8055

R^2 = .124 Adj. R^2 = .105 Multiple R = .352
F(4, 185) = 6.553 Sig. of F = .0001

activity, mature adults may be continuing an activity done when younger, that is, maintaining an active social life. As individuals age, their social life may diminish (Birren and Fisher, 1991). In addition, they may perceive this diminishment as not getting out of the house as much as they should, which would account for the negative mobility relationship ($\beta = -.125$, $t = -1.815$, $p = .0712$). E-mailing to friends is one strategy to offset this diminished mobility. Thus, e-mailing to old friends or making new ones as they did when they were younger may be a behavior to maintain their former level of social interaction. Hypotheses H1d, H3e, H3f, and H5a are supported.

E-mailing To Children

E-mailing to children is more of a family duty than a social or leisure activity. As shown in Tables 6-4A and 6-4B, satisfaction, age, and cognitive age for feeling younger were also influential (Adj. $R^2 = .139$, $F(3,186) = 9.982$, $p = .0000$). E-mailing is a convenient method of communication. It may also be perceived as a "younger" activity (McMellon et al., 1996) which would account for the results suggesting that cognitive age for feeling younger was influential ($\beta = .152$, $t = 2.171$, $p = .0312$). Thus, mature adults who feel younger and who are satisfied with this activity, will spend more time than those individual's who do not feel as young or are not satisfied with this method of communication. In addition, age may also play a minor role ($\beta = -.130$, $t = -1.857$, $p = .0649$). The results suggest that as individuals age, the less time they spend e-mailing children. The lessening of e-mailing with age may be the result of their children growing up. It might also be because of the deterioration of age and the lessening of stamina for older adults. Hypotheses H3d and H5a were supported. Age may also be influential.

TABLE 6-4A
RESULTS OF MULTIVARIATE REGRESSION ANALYSIS
FOR E-MAILING TO CHILDREN (FORWARD METHOD OF ENTRY)

Independent Variable	B	beta	T statistic	Sig. of T
Satisfaction	19.011	.329	4.755	.0000
Constant	12.724		.687	.4931

$R^2 = .108$ Adj. $R^2 = .104$ Multiple R = .329
F(1, 186) = 22.614 Sig. of F = .0000

TABLE 6-4B
RESULTS OF MULTIVARIATE REGRESSION ANALYSIS
FOR E-MAILING TO CHILDREN (BACKWARD METHOD OF ENTRY)

Independent Variable	B	beta	T statistic	Sig. of T
Age	-3.729	-.130	-1.857	.0649
Satisfaction	21.231	.368	5.259	.0000
Cognitive Age "Feel"	2.980	.152	2.171	.0312
Constant	206.491	1.565		.1192

$R^2 = .139$ Adj. $R^2 = .125$ Multiple R = .372
F(3, 186) = 9.982 Sig. of F = .0000

Checking Stories

As shown in Tables 6-5A and 6-5B, checking stories on-line (e.g., magazines and newspapers) was found to be related positively to satisfaction and negatively to accessibility (Adj. $R^2 = .191$. $F(2,185) = 21.819$, $p = .0000$). Satisfaction was shown to be the key influential variable ($\beta = .394$, $t = 5.932$, $p = .0000$) along with accessibility to a

TABLE 6-5A
RESULTS OF MULTIVARIATE REGRESSION ANALYSIS
FOR CHECKING STORIES (FORWARD METHOD OF ENTRY)

Independent Variable	B	beta	T statistic	Sig. of T
Satisfaction	19.654	.394	5.932	.0000
Accessibility	-21.666	-.158	-2.381	.0183
Constant	.340		.028	.9778

$R^2 = .191$ Adj. $R^2 = .182$ Multiple R = .437
F(2, 185) = 21.819 Sig. of F = .0000

TABLE 6-5B
RESULTS OF MULTIVARIATE REGRESSION ANALYSIS
FOR CHECKING STORIES (BACKWARD METHOD OF ENTRY)

Independent Variable	B	beta	T statistic	Sig. of T
Accessibility	-21.666	-.158	-2.381	.0183
Satisfaction	19.654	.391	5.932	.0000
Constant	.340		.028	.9778

$R^2 = .191$ Adj. $R^2 = .182$ Multiple R = .437
F(2, 185) = 21.818 Sig. of F = .0000

lesser extent ($\beta = -.158$, $t = -2.381$, $p = .0183$). Negative accessibility suggests that the individuals' on-line activities are not easily limited by busy signals or slow transmission of data because of too many people on-line. Mature individuals who spend more time checking stories appear not to be as constrained by access problems as much as those who spend less time checking stories. One reason for this is that those individuals may consider it an important activity. As such, they are motivated to persist in the face of

access problems to satisfy their need to check stories. Apparently, for other mature adults, access problems are enough to deter them from this behavior. Hypotheses H4b, and H5a were supported for this activity.

Reading Message Boards

Message boards are places on the Internet where interested parties discuss various topics by leaving messages for others to read. Individuals read these messages and then comment or leave new messages on the topic under discussion. As shown in Tables 6-6A and 6-6B, satisfaction, mental stamina limitations, and mobility were related to reading message boards (Adj. $R^2 = .367$, $F(3,184) = 35.585$, $p = .0000$). Once again, satisfaction was a key influential variable ($\beta = .563$, $t = 9.481$, $p = .0000$). The negative relationship with mobility ($\beta = -.120$, $t = -2.031$, $p = .0437$) suggests that those who are spending time

TABLE 6-6A
RESULTS OF MULTIVARIATE REGRESSION ANALYSIS
FOR READING MESSAGE BOARDS (FORWARD METHOD OF ENTRY)

Independent Variable	B	beta	T statistic	Sig. of T
Satisfaction	35.654	.587	9.892	.0000
Constant	-.467		-.037	.9701

$R^2 = .345$ Adj. $R^2 = .341$ Multiple R = .587
$F(1, 186) = 97.861$ Sig. of F = .0000

TABLE 6-6B
RESULTS OF MULTIVARIATE REGRESSION ANALYSIS
FOR READING MESSAGE BOARDS (BACKWARD METHOD OF ENTRY)

Independent Variable	B	beta	T statistic	Sig. of T
Mobility	-12.656	-.120	-2.031	.0437
Satisfaction	34.196	.563	9.481	.0000
Mental Stamina	16.827	.104	1.747	.0822
Constant	68.705		1.915	.0571

$R^2 = .367$ Adj. $R^2 = .357$ Multiple R = .606
F(3, 184) = 35.585 Sig. of F = .0000

reading and leaving messages on message boards think they do not go out of the house as much as they should. One explanation for this is that they are housebound for some reason (e.g., care giver). An alternate explanation is that they are so satisfied with their activities on-line that they participate in them more than they think they should and, as such, perceive that they do not go out as much as they should. Lastly, mental stamina was related to message reading ($\beta = .104$, $t = 1.747$, $p = .0822$). Message reading is a somewhat tedious task in that much text has to be read. Thus, those individuals who can focus their attention for long periods of time reading text and are satisfied with the activity are spending more time on-line with this activity than those who are less satisfied or can not focus their attention on reading as much text. Hypotheses H1c, H1d, and H5a are supported for reading message boards.

Chatting On-line

Chatting on-line is a real-time social activity. It is an activity that occurs while

the individual is on-line with others. Individuals interact in either group or one-on-one conversations. Chatting is a text-driven task where one person types a statement and all others logged on see it on their screens as it is typed. Individuals respond and a conversation develops. Many of these groups meet on a regular basis in what is commonly called "cyberspace." As shown in Tables 6-7A and 6-7B, satisfaction,

TABLE 6-7A
RESULTS OF MULTIVARIATE REGRESSION ANALYSIS
FOR CHATTING ON-LINE (FORWARD METHOD OF ENTRY)

Independent Variable	B	beta	T statistic	Sig. of T
Satisfaction	38.048	.518	8.389	.0000
Cog Age "Look"	3.500	.142	2.293	.0230
Constant	-40.332		-2.015	.0453

R^2 = .296 Adj. R^2 = .288 Multiple R = .544
F(2, 185) = 38.909 Sig. of F = .0000

TABLE 6-7B
RESULTS OF MULTIVARIATE REGRESSION ANALYSIS
FOR CHATTING ON-LINE (BACKWARD METHOD OF ENTRY)

Independent Variable	B	beta	T statistic	Sig. of T
Satisfaction	37.845	.515	8.380	.0000
Cog Age "Look"	3.509	.142	2.310	.0220
Income	-5.851	-.102	-1.659	.0989
Constant	-10.333		-.384	.7014

R^2 = .306 Adj. R^2 = .295 Multiple R = .554
F(3, 184) = 27.102 Sig. of F = .0000

the perception of looking younger than one's, age and income were related to chatting (Adj. $R^2 = .295$, $F(3,184) = 27.102$, $p = .0000$). Satisfaction was a key influential variable in chatting ($\beta = .515$, $t = 8.380$, $p = .0000$). The perception of looking younger was also related ($\beta = .142$, $t = 2.310$, $p = .0220$) to chatting on-line. This perception may motivate the individual to be more socially active. Interestingly, income was negatively related to chatting ($\beta = -.102$, $t = -1.659$, $p = .0989$) suggesting that those with less money may be using the Internet as a strategy for socializing because they cannot afford to go out or travel as much as those with higher incomes. Thus, mature adults who have a perception that they are younger looking, who may not have extra discretionary income to spend on outside socializing, and who are satisfied with the activity will chat on-line more than others. Hypotheses H3d and H5a were supported for the specific activity of chatting on-line. Income may also be influential.

Information Searching On-line

Information searching is defined as non-product related information searches (e.g., weather or travel information). If individuals desire non-product related information on various topics, they may use the Internet as one of the sources they search in their need to add to their knowledge base. The Internet is a vast storehouse that the individual can search. As shown in Tables 6-8A and 6-8B, satisfaction, cognitive age for younger interests, and the need for cognition were influential (Adj. $R = .159$, $F(3,184) = 12.798$, $p = .0000$. Satisfaction was a key influential variable in information searching ($\beta = .332$, $t = 4.896$, $p = .0000$). Information searching on the Internet can be construed as a younger activity which may explain why cognitive age for younger interests was shown

to be related ($\beta = .181$, $t = 2.684$, $p = .0079$). Mature adults with younger interests and a desire to search for information might perceive going on-line as one of the activities to pursue in their search for younger activities. Other researchers have also linked information seeking to cognitive age (Stephens, 1991). The results of this study appear to add support to these findings. In addition, the need for cognition played a role in on-line information searching ($\beta = .123$, $t = 1.807$, $p = .0724$). The need for cognition has also

TABLE 6-8A
RESULTS OF MULTIVARIATE REGRESSION ANALYSIS
FOR INFORMATION SEARCHING (FORWARD METHOD OF ENTRY)

Independent Variable	B	beta	T statistic	Sig. of T
Satisfaction	13.772	.349	5.168	.0000
Cog Age "Interests"	2.292	.197	2.919	.0040
Constant	-31.857		-1.738	.0839

$R^2 = .158$ Adj. $R^2 = .149$ Multiple R = .398
$F(2, 185) = 17.351$ Sig. of F = .0000

TABLE 6-8B
RESULTS OF MULTIVARIATE REGRESSION ANALYSIS
FOR INFORMATION SEARCHING (BACKWARD METHOD OF ENTRY)

Independent Variable	B	beta	T statistic	Sig. of T
Satisfaction	13.096	.332	4.896	.0000
Cog Age "Interest"	2.111	.181	2.684	.0079
Need for Cognition	.945	.123	1.807	.0724
Constant	-114.760		-2.325	.0212

$R^2 = .173$ Adj. $R^2 = .159$ Multiple R = .415
$F(3, 184) = 12.798$ Sig. of F = .0000

been linked with external information search (Verplanken et al. 1992). Thus, the mature adult with younger interests and a tendency toward external information searches will be spending more time on-line searching for information than others. Hypotheses H3b, H3g, and H5a were supported for information searching on-line.

Educational Activities On-line

Educational activities include seeking information for school reports and other school related tasks. As shown in Tables 6-9A and 6-9B, satisfaction, cognitive age for younger interests, and chronological age were influential (Adj. $R^2 = .433$, $F(3,184) = 48.615$, $p = .0000$). Satisfaction was shown as a key influential variable ($\beta = .638$, $t = 11.535$, $p = .0000$). Educational activities can be interpreted as a younger activity. Thus, mature adults with younger interests might become more involved in educational activities which may explain the relationship with cognitive age for younger interests ($\beta = .135$, $t = 2.398$, $p = .0175$). In addition, the results of this analysis suggest that the

TABLE 6-9A
RESULTS OF MULTIVARIATE REGRESSION ANALYSIS
FOR EDUCATIONAL ACTIVITIES (FORWARD METHOD OF ENTRY)

Independent Variable	B	beta	T statistic	Sig. of T
Satisfaction	25.242	.649	11.706	.0000
Cog Age "Interests"	.777	.113	2.045	.0423
Constant	-14.145		-1.736	.0842

$R^2 = .432$ Adj. $R^2 = .426$ Multiple R = .657
$F(2, 187) = 71.185$ Sig. of F = .0000

TABLE 6-9B
RESULTS OF MULTIVARIATE REGRESSION ANALYSIS
FOR EDUCATIONAL ACTIVITIES (BACKWARD METHOD OF ENTRY)

Independent Variable	B	beta	T statistic	Sig. of T
Satisfaction	24.842	.638	11.535	.0000
Cog Age "Interests"	.926	.135	2.398	.0175
Age	-.986	-.104	-1.839	.0675
Constant	49.465		1.392	.1655

$R^2 = .442$ Adj. $R^2 = .433$ Multiple R = .665
F(3, 184) = 48.615 Sig. of F = .0000

younger in age ($\beta = -.04$, $t = -1.839$, $p = .0675$) are more involved in educational activities. Age, as an influential factor, can work in three ways. Firstly, younger mature adults may have a greater interest in education than older mature adults. Secondly, older mature adults just may not have the energy to become involved in educational activities. Thirdly, the mature adults who are going on-line for educational activities may be going on-line for their grandchildren. As the mature adults age, their grandchildren grow up and no longer need their help. It seems reasonable that the younger mature adult who has educational needs, who is interested in the Internet, and who is satisfied with those activities will allocate more time to this activity than others who do not have the same level of educational needs or interests. Hypotheses H3g and H5a were supported for this activity. Age may also be influential.

Paying Bills On-line

Paying bills is a necessary household task. Paying them on-line is a time saving

task because it is faster than the normal procedure of paying bills. As shown in Tables 6-10A and 6-10B, satisfaction, time limitations, mental stamina, and cognitive age for younger looking were related to paying bills on-line (Adj. $R^2 = .377$, $F(4,183) = 29.237$, $p = .0000$). Satisfaction was a key variable ($\beta = .584$, $t = 9.890$, $p = .0000$). Perceived time limitation was also related ($\beta = .154$, $t = 2.647$, $p = .0088$) suggesting that time may be a

TABLE 6-10A
RESULTS OF MULTIVARIATE REGRESSION ANALYSIS
FOR PAYING BILLS (FORWARD METHOD OF ENTRY)

Independent Variable	B	beta	T statistic	Sig. of T
Satisfaction	19.051	.603	10.231	.0000
Time Limitation	8.279	.157	2.665	.0084
Constant	.010		.031	.9750

$R^2 = .366$ Adj. $R^2 = .359$ Multiple R = .605
$F(2, 185) = 53.356$ Sig. of F = .0000

TABLE 6-10B
RESULTS OF MULTIVARIATE REGRESSION ANALYSIS
FOR PAYING BILLS (BACKWARD METHOD OF ENTRY)

Independent Variable	B	beta	T statistic	Sig. of T
Satisfaction	18.448	.584	9.890	.0000
Cog Age "Look"	-.960	-.116	-1.992	.0479
Time Limitation	8.114	.154	2.647	.0088
Mental Stamina	-5.573	-.107	-1.847	.0664
Constant	10.963		1.721	.0869

$R^2 = .390$ Adj. $R^2 = .377$ Multiple R = .624
$F(4, 183) = 29.237$ Sig. of F = .0000

scarcer resource for many individuals and that they may lead a more fast-paced life than others. If they do, then going on-line to pay bills would appear to be a reasonable behavior to save time. In addition, mental stamina (β = -.107, t = -1.847, p = .0664) and cognitive age for looking younger (β = -.116, T = -1.992, P = .0479) had negative relationships which were opposite than hypothesized. The Pearson product-moment correlations are .0967 and -.1870 respectively. The positive correlation for stamina suggests it may be acting as a suppressor variable in this equation (Tabachnick and Fidell, 1989) and, as such, may be enhancing the importance of the independent variables. Thus, mature adults who are pressed for time and who are impatient may find satisfaction in the time-saving aspects of paying bills on-line more than others. Hypotheses H1a and H3e were supported for this activity.

Window Shopping On-line

Window shopping is defined as viewing advertising or seeking product related information. As shown in Tables 6-11A and 6-11B, satisfaction and feeling younger than

TABLE 6-11A
RESULTS OF MULTIVARIATE REGRESSION ANALYSIS
FOR WINDOW SHOPPING (FORWARD METHOD OF ENTRY)

Independent Variable	B	beta	T statistic	Sig. of T
Satisfaction	11.798	.584	9.803	.0000
Constant	1.628		.634	.5267

R^2 = .341 Adj. R^2 = .337 Multiple R = .584
F(1, 186) = 96.102 Sig. of F = .0000

TABLE 6-11B
RESULTS OF MULTIVARIATE REGRESSION ANALYSIS
FOR WINDOW SHOPPING (BACKWARD METHOD OF ENTRY)

Independent Variable	B	beta	T statistic	Sig. of T
Satisfaction	11.964	.592	9.988	.0000
Cog age "feel"	.453	.115	1.933	.0547
Constant	-6.024		-1.280	.2022

$R^2 = .354$ Adj. $R^2 = .347$ Multiple R = .595
F(2, 185) = 50.627 Sig. of F = .0000

one's chronological age were influential (Adj. $R^2 = .347$, $F(2,185) = 50.627$, $p = .0000$). Satisfaction is shown to be key variable ($\beta = .592$, $t = 9.988$, $p = .0000$). Cognitive age for feeling younger was also shown to be influential but to a lesser extent ($\beta = .115$, $t = 1.933$, $p = .0547$). Cognitive age has been linked to fashion interest (Wilks 1992) and information seeking (Stephens 1991). One explanation for the results shown here is that window shopping can be construed as an information search for fashion. Thus, the mature adult who feels younger may be willing to window shop to seek out product information on-line. Hypotheses H3d and H5a were supported for this activity.

Financial Activities On-line

Financial activities on-line consist of such tasks as checking stock prices or investigating the financial condition of firms. As shown in Tables 6-12A and 6-12B, satisfaction and cognitive age for looking younger were influential (Adj. $R^2 = .161$, $F(2,185) = 19.004$, $p = .0000$). Satisfaction was shown to be a key influential variable

(β = .388, t = 5.783, p = .0000). Cognitive age for looking younger was also influential but to a lesser extent (β = .116, t = 1.736, p = .0843). This finding may be a statistical artifact because of the difficulties of explanation. The one possible explanation for this result that was developed is that mature adults, who perceive themselves as younger looking, are interested in their financial future enough to be willing to become involved

TABLE 6-12A
RESULTS OF MULTIVARIATE REGRESSION ANALYSIS
FOR FINANCIAL ACTIVITIES (FORWARD METHOD OF ENTRY)

Independent Variable	B	beta	T statistic	Sig. of T
Satisfaction	33.493	.396	5.884	.0000
Constant	-3.054		-.160	.8732

R^2 = .157 Adj. R^2 = .152 Multiple R = .396
F(1, 186) = 34.620 Sig. of F = .0000

TABLE 6-12B
RESULTS OF MULTIVARIATE REGRESSION ANALYSIS
FOR FINANCIAL ACTIVITIES (BACKWARD METHOD OF ENTRY)

Independent Variable	B	beta	T statistic	Sig. of T
Satisfaction	32.817	.388	5.783	.0000
Cog Age "Look"	4.286	.116	1.736	.0843
Constant	-49.655		-1.510	.1328

R^2 = .170 Adj. R^2 = .161 Multiple R = .413
F(2, 185) = 19.004 Sig. of F = .0000

with financial matters. There are a number of alternative methods the individual can

resort to when seeking financial information. They can stop by their broker's office, they can go to the library, or they can talk with friends. Thus, the mature adult who finds satisfaction with financial activities on-line will spend more time on the Internet than those who do not. Hypothesis H3e and H5a were supported for this activity.

Total Time Spent On-line Per Week

As shown in Tables 6-13A and 6-13B, total time spent on-line per week was found to have relationships with satisfaction, cognitive age for younger interests, mobility, and four of the demographic variables: income, age, gender, and education (Adj. $R^2 = .292$, $F(7,111) = 7.950$, $p = .0000$). In the case of total time spent on-line per week, the combination of these variables proved interesting. Age, education, and mobility were negatively related while income, cognitive age for younger interests, and satisfaction were positively related.

Gender was entered into the model as an indicator variable ($\beta = -.192$, $t = -2.165$, $p = .0325$). Thus, it is only appropriate to say that it appears as through males spend more time on-line per week than females. Examination of their actual reported times also suggests that males spend more time on-line: males spend 8.17 hours per week on-line and females spend 7.02 hours per week on-line.

Age was negatively related to total time ($\beta = -.195$, $t = -2.240$, $p = .0271$). One possible explanation for this is that as the individual ages, physical deterioration limits their ability to stay on-line. Another explanation is that, because the Internet is so new, some of the older respondents are still neophytes and as such do not spend much time on-line. Education was negatively related to total time ($\beta = -.173$, $t = -1.945$, $p = .0544$).

TABLE 6-13A
RESULTS OF MULTIVARIATE REGRESSION ANALYSIS
FOR TOTAL TIME SPENT PER WEEK (FORWARD METHOD OF ENTRY)

Independent Variable	B	beta	T statistic	Sig. of T
Satisfaction	248.328	.346	4.225	.0000
Mobility	-135.130	-.283	-3.522	.0006
Cog Age "Interests"	20.512	.264	3.244	.0015
Income	62.440	.236	2.843	.0053
Constant	-545.421		-1.260	.2103

$R^2 = .274$ Adj. $R^2 = .249$ Multiple R = .524
F(4, 144) = 10.771 Sig. of F = .0000

TABLE 6-13B
RESULTS OF MULTIVARIATE REGRESSION ANALYSIS
FOR TOTAL TIME SPENT PER WEEK (BACKWARD METHOD OF ENTRY)

Independent Variable	B	beta	T statistic	Sig. of T
Age	-22.185	-.195	-2.240	.0271
Mobility	-109.897	-.231	-2.883	.0047
Education	-73.102	-.173	-1.945	.0544
Gender	-296.075	-.192	-2.165	.0325
Income	51.568	.195	2.116	.0366
Cog Age "Interest"	24.697	.318	3.922	.0002
Satisfaction	268.349	.374	4.618	.0000
Constant	1195.031		1.571	.1190

$R^2 = .334$ Adj. $R^2 = .292$ Multiple R = .578
F(7, 111) = 7.950 Sig. of F = .0000
*Indicator Variable Male = 0

This was somewhat surprising because most reports of users on the Internet suggest that they are a highly educated group. Indeed, the sample for this dissertation had an average

educational level above college graduate. The negative relationship of education can be explained in that those with more education might have many other things to do besides spending time on the Internet. Therefore, they may read a book instead of surfing the Internet.

Income was positively related to total time ($\beta = .95$, $t = 2.116$, $p = .0366$). This seems reasonable in that the individual must have the discretionary income to afford the on-line charges. It has been suggested that money is a limitation on mature individuals using the Internet (Enders, 1995; Faris, 1983). Thus, only those individuals who have the money can buy the computer equipment necessary and can afford the service charges to spend time on-line.

Mobility (McMellon et al., 1996) was related to total time ($\beta = -.231$, $t = -2.883$, $p = .0047$). Two notions might explain this relationship. Individuals who are spending time on-line might feel guilty about it and, as such, might rate "getting out of the house as much as they should" lower than others. The second explanation suggests that those individuals who may not get out enough because of some cause (e.g, care giving duties) may turn to the Internet as a surrogate for the outside world.

Cognitive age for younger interests (Barak and Schiffman, 1981) was positively related to total time ($\beta = .318$, $t = 3,922$, $p = .0002$). Cognitive age has been linked to innovativeness (Blau, 1973), fashion interest (Wilkes, 1992), new product trial and information seeking (Stephens, 1991), and self-confidence (Schiffman and Sherman, 1991; Wilkes, 1992). Research has also suggested that mature adults go on-line to stay current (Chin, 1984). Thus, the mature adult who has younger interests (e.g. fashion) or wants to stay current (e.g., try new products) ventures (i.e., self-confidence) into the

Internet (i.e., information highway).

Satisfaction with total time was also found to be a key influential variable but not as dominant as it is for many of the specific activity results ($\beta = .374$, $t = 4.618$, $p = .0000$). Feldman and Hornik (1981) have suggested that the two basic values of time allocation are the satisfaction the individual produces doing the activity and the satisfaction with the people met while doing the activity. The results show a relationship for satisfaction with the actual activity but not with the people met on-line. Satisfaction with the people met on-line appears to have no influence on how much time they spend on-line. Conversely, individuals appear to be very satisfied with their on-line activities, both for specific activities and for the total amount of time the individuals spend on-line per week. Satisfied enough, it appears, that it influences the amount of time they spend on-line.

Thus mature adults, who are not too old or too educated, who think they do not get out of the house as much as they should, who are interested in younger things, who are satisfied with going on-line, and who have the money to afford it, spend more time on-line per week than those who are influenced by these variables to a lesser extent. Hypotheses H1d, H3g, H5a, and age, education, income, and gender were supported for total time spent on-line per week.

Total Number of Years of Experience On-line

Total number of years of experience on-line appears to have a different set of influential variables than total time spent on-line per week. Interestingly, satisfaction for on-line activities or the people met was not related to total years. Satisfaction levels

appear to run high for all on-line users whether they have been on for six weeks or six years. As shown in Tables 6-14A and 6-14B, age of interest in technology (McMellon et al., 1996), computer literacy (Lane et al., 1995; McMellon et al., 1996), education (e.g., Hawes, 1977), locus of control (Rotter, 1966), and cognitive-age for doing and interests (Barak and Schiffman, 1981) were found to have a relationship with the total number of years of experience spent on-line (Adj. $R^2 = 319$, $F(6,112) = 10.229$, $p = .0000$).

Age of interest in technology (McMellon et al., 1996) was found to be negatively related to total number of years ($\beta = -.178$, -2.286, $p = .0241$). This suggests that those individuals who became interested in technology at an earlier age also logged on to the Internet at an earlier stage in its growth. This is a reasonable finding because the Internet can be perceived as an important technological innovation. The continuity approach of aging (Atchley, 1989; Kaufman, 1987) suggests that maturing individuals develop strategies to maintain their internal and external structures by finding familiar (i.e.,

TABLE 6-14A
RESULTS OF MULTIVARIATE REGRESSION ANALYSIS
FOR OF YEARS OF EXPERIENCE (FORWARD METHOD OF ENTRY)

Independent Variable	B	beta	T statistic	Sig. of T
Computer Literacy	186.988	.446	5.610	.0000
Education	62.575	.297	3.706	.0003
Locus of Control	-17.809	-.159	-2.001	.0478
Constant	508.260		1.892	.0610

$R^2 = .287$ Adj. $R^2 = .269$ Multiple R = .536
$F(3, 115) = 15.458$ Sig. of F = .0000

TABLE 6-14B
RESULTS OF MULTIVARIATE REGRESSION ANALYSIS
FOR YEARS OF EXPERIENCE (BACKWARD METHOD OF ENTRY)

Independent Variable	B	beta	T statistic	Sig. of T
Interest in Tech.	-39.448	-.178	- 2.286	.0241
Cog Age "Do"	-8.577	-.212	- 2.221	.0284
Education	57.688	.274	3.491	.0007
Computer Literacy	170.688	.408	5.216	.0000
Locus of Control	-16.920	-.151	- 1.968	.0515
Cog Age "Interests"	9.744	.252	2.625	.0099
Constant	597.811		2.156	.0332

$R^2 = .354$ Adj. $R^2 = .319$ Multiple R = .595
F(6, 112) = 10.229 Sig. of F = .0000

continuity) activities that they can participate in as they age. Logging on to the Internet may be an example of this type of strategy. Mature adults upon learning about the new technology of the Internet were among the first of their peers to log on.

Computer literacy (Lane et al., 1995; McMellon et al., 1996) was shown to be the key predictor variable ($\beta = .408$, $t = 5.216$, $p = .0000$). Computer literacy appears to be a necessary informational resource enabling the individual to perform certain complex tasks on the Internet. One explanation for the relationship with the number of years is that the more individuals stay on-line, the more experienced they become. This experience may translate to advances in computer literacy.

Education was also found to be a key influential variable ($\beta = 274$, $t = 3.49$, $p = .0007$). This positive relationship suggests that those individuals with higher educations were logging onto the Internet earlier than those with lesser educations. This is

understandable because the Internet diffused through the academic community before it emerged onto the general public. This relationship might also be explained by the enormous growth of the Internet in the past few years which probably bought in many people of lesser educational levels. An alternate explanation is that the resources of the Internet are more attractive to individuals with higher educational levels. Thus, to satisfy needs, those individuals with higher educational levels use the Internet more because the information or the entertainment they desire can be found on the Internet.

Locus of control (Rotter, 1966) was found to be negatively related ($\beta = -.151$, $t = -1.968$, $p = .0515$) suggesting that those individuals with a stronger external locus of control have logged on to the Internet before those with a stronger internal locus of control. Locus of control may be important to mature adults because as individuals age, there is a perceived loss of control (Reid et al., 1977; Rodin, 1986). Research has shown that mature adults are generally more external than internal in locus of control (Lumpkin, 1986). Jay (1989) also found a relationship between individuals with an external locus of control and attitudes toward computers. Mature adults with a tendency toward external locus of control may be using the Internet as a method to regain some of their sense of internal locus of control which has been lost over time. Thus, they would have logged on sooner than those mature adults with a stronger internal locus of control.

Cognitive age for doing and for interests (Barak and Schiffman, 1981) was found to be related to total number of years. Cognitive age for doing was negatively related ($\beta = -.212$, $t = -2.221$, $p = .0284$) which was opposite of what was hypothesized. The Pearson product-moment correlation was .0146 suggesting the variables is acting as a suppressor variable. Cognitive age for interests was positively related ($\beta = .252$, $t =$

2.625, p = .0099). The positive relationship with cognitive age for interests suggests that individuals may have been logging on for many years in their pursuit of their younger interests from what is on the Internet or from the Internet itself.

Thus, the mature adult who had an early interest in technology, who is computer literate, who is educated, whose perception of themselves is that of an individual who has younger interests, and who is trying to maintain some level of control in their lives has logged on to the Internet at an earlier date than their peers with lower levels of these influential factors. Hypotheses H1e, H3a, H3g were supported for total number of years of experience on-line. Education and age of interest in technology were also influential.

Summary of On-line Activities

In summary, although a picture of the on-line mature user has emerged with this research, there is no stereotype. As shown in Table 6-15, the results of this study show that mature individuals go on-line for many different reasons and gravitate towards different specific activities that appear to satisfy their needs. Many relationships have been found, both with specific activities and with the more aggregate measures of total weekly time and the total number of years of experience spent on-line. Satisfaction appears to be the most important of the factors that influence the allocation of time. This may be the result of the Internet being mainly a leisure activity. As such, there are many alternativeactivities for the mature adult to pursue if not satisfied. It has also been suggested that the mature consumer is active on the Internet to fill a variety of needs (Dixon, 1993; Furlong, 1987). The results presented appear to support this notion. In an effort to better understand the mature on-line user, segmentation was also examined.

TABLE 6-15
SUMMARY OF HYPOTHESES SUPPORT

Hypothesis	Activities Supporting Hypothesis
H1a. Perceived time limitation	Surfing time (+) Paying bills time (+)
H1b. Perceived money limitation	None
H1c. Perceived stamina limitation	Reading messages time (+)
H1d. Perceived mobility limitation	Reading messages time (-) E-mailing friends (-) Total time per week (-)
H1e. Level of computer literacy	Entertainment time (-) Years of experience on-line (+)
Age	E-mailing children time (-) Educational time (-) Total time per week (-)
Gender	Surfing time (-) Total time per week (-)
Income	Chatting time (-) Total time per week (+)
Education	Total time per week (-) Years of experience on-line (+)
Age of interest in technology	Years of experience on-line (-)
H3a. Locus of control	Years of experience on-line (-)
H3b. Need for cognition	Information search time (+)
H3c. Future time orientation	None
H2. Involvement with technology	None

(cont. On the next page)

TABLE 6-15 (cont.)
SUMMARY OF HYPOTHESES SUPPORT

Hypothesis	Activities Supporting Hypothesis
H3d. Cognitive age "Feel"	E-mailing children time (+) Window shopping time (+)
H3e. Cognitive age "Look"	E-mailing friends time (+) Financial time (+) Chatting time (+)
H3f. Cognitive age "Do"	E-mailing friends time (+)
H3g. Cognitive age "Interests"	Surfing time (+) Educational time (+) Information search time (+) Total time per week (+) Years of experience on-line (+)
H3h. Attitudes toward computers	None
H4a. Computer capabilities	None
H4b. Accessibility	Checking stories time (-)
H5a. Satisfaction with activity	Surfing time (+) Entertainment time (+) E-mailing friends time (+) E-mailing children time (+) Checking stories time (+) Reading messages time (+) Chatting time (+) Information search time (+) Educational time (+) Paying bills time (+) Window shopping time (+) Financial activities time (+) Total time per week (+)
H5b. Satisfaction with people	None

Segmentation of Mature Adults On-Line

An additional hypothesis was proposed examining a segmentation scheme for on-line mature individuals based on their involvement in technology. Segmentation of the sample was suggested by the pilot study (McMellon et al., 1996) and by earlier segmentation studies (e.g., Davis and French, 1989; French and Fox, 1985). One of the more interesting variables that emerged from the pilot study was involvement with technology. Respondents appeared to either love or just use the Internet and technology in general. To examine this notion, segmentation for this study was operationalized by dividing the involvement in technology responses into two groups. Each group consisted of approximately 40% of the sample. Group 1, with lower scores, was named the "technology user" group, while Group 2, with higher scores, was named the "technology lover" group. A buffer group of approximately 15% of the sample was also created for individuals with scores in between "lovers" and "users" to separate the two groups for easier identification. SPSS 4.1 STEPWISE DISCRIMINANT was used to examine and analyze the two groups. Twenty-eight variables were entered into the discriminant analysis procedure.

Discriminant analysis is used to estimate the relationship between dependent categorical variables (i.e., technology lovers and technology users) and a specified number of independent variables (Hair Jr., et al., 1992). The interpretation of these results helped in describing the two groups and in understanding their overall behavior on the Internet. The Wilkes criteria was used as the method of entry. Total N of 243 cases were processed. One hundred and forty-one were excluded because 18 had missing or out-of-range group codes, 101 had at least one missing discriminating variable, and 22

had both. The high level of missing entries was because of 60 respondents who did not answer the question regarding satisfaction with the people met on the Internet. An extra analysis was run without this variable. The results did not appear to be significantly different suggesting that this variable did not play a key role. The total n used in the analysis was 102. The significance of prediction for the discriminant function (Chi-squared = 97.705) calculated for the two groups was significantly different at p = .0000. The Eigenvalue was 2.094 and the Canonical correlation was .823. The adequacy of classification, as reflected in the percentage of correctly classified cases, was 80.12%. The classification, n = 220, results are shown in Table 6-16.

TABLE 6-16
DISCRIMINANT ANALYSIS CLASSIFICATION RESULTS

Actual group	# of cases	Predicted group membership	
		Group 1 "Users"	Group2 "Lovers"
Group1 "Users"	81	65 80.2%	16 19.8%
Group2 "Lovers"	80	16 20.0%	64 80.0%

Percent of "grouped" cases correctly classified: 80.12%

Hair Jr., Anderson, Tatham, and Black (1992) have suggested that interpretation of the results should be based on determining the relative importance of each independent variable that discriminates among the groups. Standardized weights, discriminant loadings, and F values can be used for interpretation used to determine ranking. Loadings are considered more important than weights. Once order of importance has been

determined, the means for each grouped variable can be examined.

As shown in Table 6-17 by their order of entry, 28 variables were included in the stepwise solution. Using the standardized weights, the loadings, and the univariate F to evaluate, 14 variables appear to be of interest for interpretation. These variables were, in

TABLE 6-17
RESULTS OF DISCRIMINANT ANALYSIS

Predictor variable	Standardized Weights	Correlation (Loadings)	Univariate F F(1, 100)	Sig. of F
1. Age of interest in technology	-.8393	-.3422	24.52	.0000
2. Computer literacy	.4537	.2633	14.52	.0002
3. Window shopping satisfaction	.7535	.2273	10.83	.0014
4. Total time per week satisfaction	NI	.1892	6.19	.0145
5. Money limitations	.5663	.2182	9.97	.0021
6. E-mailing to children satisfaction	-.3518	-.1392	4.06	.0467
7. Checking Stories time	1.0179	.1753	6.43	.0128
8. Attitudes toward computers	.4850	.0267	0.15	.7002
9. Surfing satisfaction	NI	.2224	9.12	.0032
10. Window shopping time	-.4074	.1319	3.64	.0592
11. Educational time	-.8462	.0371	0.29	.5925
12. Years of experience on-line	-.2217	.1547	5.01	.0274
13. Checking stories satisfaction	-.6826	.1648	5.69	.0190
14. Educational satisfaction	.5009	.0023	0.11E-02	.9741
15. Seeking information time	NI	.1049	1.98	.1629
16. Cognitive age 'feeling"	-.5845	-.0284	0.17	.6819
17. Access limitations	.3868	.1242	3.23	.0753
18. Computer capacity	.2426	.1114	2.55	.1133
19. Entertainment satisfaction	-.3261	.0304	0.19	.6612
20. Income	-.2628	.1114	2.60	.1102
21. Need for Cognition	.3848	.2138	9.57	.0026
22. Reading messages satisfaction	.5330	.0627	0.82	.3665
23. Reading messages time	-.4815	-.0053	0.58E-02	.9392
24. Attention limitations	-.3894	.0276	0.17	.6835
25. Time orientation	.3540	-.0338	0.24	.6260
26. Age	-.2115	-.0789	1.30	.2568
27. Cognitive age "look"	.2391	-.0444	0.41	.5213
28. Cognitive age "do"	.2442	.0632	0.84	.3625

NI: not included in the stepwise solution

the order of their importance, (a) age of interest in technology, (b) computer literacy, (c) window shopping satisfaction, (d) surfing satisfaction, (e) money limitations, (f) the need for cognition, (g) satisfaction with total time spent on-line per week (h) checking stories time, (i) checking stories satisfaction, (j) total number of years spent on-line, (k) e-mailing children satisfaction, (l) window shopping time, (m) access limitations, and (n) income.

A second stepwise discriminant analysis was performed using the 14 variables that appeared to be key in the classification of the two groups. Total N of 243 cases were processed. Sixty-eight were excluded because 33 had missing or out-of-range group codes, 28 had at least one missing discriminating variable, and 7 had both. The total n used in the analysis was 175. The significance of prediction for the discriminant function (Chi-squared = 90.443) calculated for the two groups was significantly different at p = .0000. The Eigenvalue was .708 and the Canonical correlation was .644. The adequacy of classification, as reflected in the percentage of correctly classified cases, was 79.78%. The classification, n = 228, results are shown in Table 6-18.

TABLE 6-18
DISCRIMINANT ANALYSIS CLASSIFICATION RESULTS

Actual Group	# of Cases	Predicted Group Membership	
		Group 1 "Users"	Group2 "Lovers"
Group1 "Users"	90	71 78.9%	19 21.1%
Group2 "Lovers"	93	23 24.7%	70 75.3%

Percent of "grouped" cases correctly classified: 79.78%

Although 14 variables were entered into the procedure, only six were entered into the discriminant solution. The results of the second discriminant analysis are shown in Table 6-19.

To further understand the differences between the technology lover and the

TABLE 6-19
RESULTS OF SECOND DISCRIMINANT ANALYSIS

Predictor Variable	Standardized Weights	Correlation (Loadings)	Univariate F F(1, 100)	Sig. of F
Age of interest in technology	-.605	-.606	44.900	.0000
Computer literacy	.496	.594	43.140	.0000
Need for cognition	.154	.407	6.905	.0094
Checking stories satisfaction	.208	.352	20.260	.0000
Total time per week satisfaction	.337	.289	10.240	.0016
Years of experience on-line	NI	.274	14.020	.0002
Money limitations	.342	.237	6.905	.0094
Income	NI	.186	5.452	.0207
Surfing satisfaction	NI	.181	9.540	.0023
Window shopping time	NI	.177	2.543	.1126
Checking stories time	NI	.145	6.345	.0127
Window shopping satisfaction	NI	.155	6.539	.0114
Access limitations	.167	.054	.363	.5475
E-mailing to children	-.125	-.122	1.821	.1790

NI: not included in the stepwise solution

technology user, the relative error for each group variable is presented. The relative error is computed by dividing the mean vectors of each variable entered into the discriminant analysis by their individual standard deviations. The results are shown in Table 6-20.

An examination of the relative errors suggests that the technology lover has been interested in technology from an earlier age, is more computer literate, is generally more

satisfied with specific activities, spends more time at specific activities, has a stronger need for cognition, and has a higher income, but feels that the lack of money limits the amount of time spent on-line. Apparently, technology lovers would stay on-line longer if they could afford it. The mature adult who has a stronger interest in technology (i.e., a technology lover) has been on-line longer than those with a lesser interest in technology.

TABLE 6-20
GROUP RELATIVE ERRORS

Variables	Relative Errors Lover	User
Age of interest in technology	1.794	2.499
Computer literacy	.544	-.449
Need for cognition	7.515	6.158
Checking stories satisfaction	1.251	.784
Years of experience on-line	1.016	.938
Surfing satisfaction	2.119	2.177
Money limitations	1.487	-.246
Income	1.968	1.746
Window shopping time	.408	.276
Total time per week satisfaction	5.953	4.558
Checking stories time	2.562	.376
Window shopping satisfaction	.599	.358
Access limitations	-.019	-.111
E-mailing to children satisfaction	.902	1.113

One explanation for this is the continuity theory of aging (Atchley, 1989; Kaufman, 1987) which suggests that as individuals age, they develop strategies to continue to satisfy their needs. Thus, the individual with an early interest in technology and a stronger need for cognition will have logged on earlier in the development of the Internet

than those individuals with a lesser need for cognition and a lesser interest in technology.

The technology lover is also more computer literate than the technology user. There are two possible explanations. Firstly, the individuals' strong interest in technology and higher need for cognition might motivate them to learn more about how to operate a computer and navigate the Internet. Secondly, these individuals have been on-line for a longer time than technology users. This time can be translated into experience. Thus, the more experienced the individual becomes on the Internet, the more computer literate.

The technology lover and the technology user who have chosen to log on to the Internet appear to range along a continuum from the uninterested casual user to the die-hard technology lover who would spend even more time on-line if they could afford it. The average time spent on-line per week by the technology user and the technology lover is 6.21 hours (sd = 6.20) and 9.53 hours (sd = 9.29) respectively. The difference between the two groups is more than three hours. The average number of years of experience spent on-line by the technology user is 2.63 (sd = 2.93) while the average number of years of experience spent on-line by the technology lover is 4.66 (sd = 4.67), almost twice as long.

There were a number of personal characteristics identified in the literature review and the pilot study (McMellon et al., 1996) which aided in describing these segments. Now quantitative support has been added.

Summary

The purpose of this dissertation was to examine the personal differences that

motivate, constrain, or coincide with the mature consumer's allocation and consumption of time spent on the Internet. These personal differences encompass the four categories suggested by the Feldman-Hornik (1981) typology: (a) individual resources, (b) personal attributes, (c) subjective values expressed as preferences, and (d) situational factors. To better understand these personal differences, 19 individual difference hypotheses and a potential scheme for segmentation of the mature on-line user were examined. The findings support the notion that personal characteristics influence the amount of time mature consumers spend on-line. This influence is apparent in specific activities, total weekly time on-line, and the number of years spent on-line.

CHAPTER 7

SUMMARY, IMPLICATIONS, LIMITATIONS, FUTURE RESEARCH, AND CONCLUSIONS

In this chapter, a summary of the dissertation is presented which includes sections on theoretical background, hypotheses development, method, data analysis, research results and interpretation of findings, and contributions. Next, the managerial and public policy implications of the study are discussed. Lastly, limitations, direction of future research, and conclusions are presented.

Theoretical Background

Two theoretical approaches underlie this dissertation. The continuity approach of aging (Atchley, 1989; Kaufman, 1987) and the allocation of time (Feldman and Hornik, 1981). The continuity approach of aging (Atchley, 1989; Kaufman, 1987) suggests that maturing individuals develop strategies to "...preserve and maintain existing internal and external structures and that they prefer to accomplish this objective by using continuity (i.e., applying familiar strategies in familiar arenas of life)" (Atchley, 1989, p. 183). Participating on the Internet may be a good strategic exemplar of mature adults striving for continuity of both internal (e.g., the need for cognition) and external (e.g., mobility) structures. The support for this lies in the relationships of such variables as the need for cognition, cognitive age, and satisfaction with the various on-line activities. Satisfaction

with the activity appears to play a key role for mature adults. As individuals age, their lives are slowly restricted because of physical, mental, and social deterioration.

For internal continuity, the mature individual will attempt to maintain self- identity. Those aspects of personality that might be reinforced by participating on the Internet are explored by the individual. Feedback from this experience communicates to the individual the success or failure of the experience. In the case of the Internet, the need for cognition, the four dimensions of cognitive age, locus of control and high levels of satisfaction were found to be related to the allocation of time on-line for various activities. This suggests the possibility of positive feedback to those individuals, which reinforces the self.

For external continuity, relationships between mobility and time spent on-line along with the high levels of satisfaction suggest individuals may be going on-line as a surrogate for going outside the home for a social life. External continuity is maintained through "the satisfactions people get from exercising the mastery and value of experience and practice in preventing and minimizing the deleterious effects of physical and psychological aging " (Atchley, 1989, p. 188).

A number of the relationships found in this research suggest continuity strategies. For example, e-mailing friends and chatting on-line, both social activities, were found to be related to the individual's perception of looking younger. The aging individual who realizes physical deterioration, but may perceive themselves as looking younger and, as such, in need of a social life, may be using the Internet as a strategy to maintain younger external social structures.

In addition, the relationship of the individual's perceived age of first interest in

technology with the total number of years of experience spent on-line may be an indicator of the individual's desire to maintain structures. There is a relationship between the earlier involvement of individuals in technology and what they do in later life. It manifests itself when they adopt the Internet earlier than those who did not have an interest in technology at an early age.

The second theoretical approach that underlies the approach of this study is the framework for time allocation (Feldman and Hornik, 1981) which suggests four categories of personal characteristics that may be influential to time allocation. Support for this notion was also found in this study. Relationships were found between the independent variables from each of the Feldman and Hornik (1981) categories of personal characteristics and the allocation of time for various on-line activities examined in this study (e.g., mobility and e-mailing to friends; the need for cognition and information search).

Hypotheses Development

A review of the relevant literature and the pilot study (McMellon et al., 1996) suggested the hypotheses that examined the many independent and dependent variables concerning the allocation of time on-line. The relationships in these hypotheses examined their potential influences on the allocation of time on-line. The independent variables examined were the mature consumer's perceived limitations of (a) time, (b) money, (c) physical (i.e., energy) and mental (i.e., focus and attention) stamina, (d) both the social aspect and one's own perception of being out of one's home, (e) computer literacy, (f) involvement in technology, (g) locus of control, (h) the need for

cognition, (i) time orientation, (j) cognitive age, (k) attitudes toward computers, (l) computer capabilities, (m) on-line accessibility, (n) satisfaction with the activity, (o) satisfaction with the people met on-line, and (p) segmentation resulting from involvement with technology.

The dependent variables used to measure the allocation of time were developed from the author's personal experience on-line. They included 12 specific activities, the total time spent on-line per week, and the total number of years spent on-line. The 12 specific on-line activities were, (a) surfing, (b) entertainment, (c) e-mailing friends, (d) e-mailing children, (e) checking stories, (f) reading messages, (g) chatting, (h) information search, (i) educational, (j) paying bills, (k) window shopping, and (l) financial activities.

Method

The sample used for this study consisted of mature consumers 55 years and older who are active on-line. Participants were recruited from the commercial on-line services and were members of groups on AOL and CompuServe. Comparison with other published sources of the sample's demographic characteristics suggested that they were representative of mature adults who use commercial Internet servers. Because of the difficulties of developing a random sample, a unique method of recruitment was utilized to develop the sample. Respondents were recruited on-line. An e-mail recruitment letter was sent out to approximately 5,000 mature adults asking them to send their home address to the researcher who would, in turn, send them the survey. All other communication was conducted on-line.

A 12-page questionnaire and a one-page cover letter were pretested for clarity and ease of answering. It was then mailed to all who had agreed to participate. The questionnaire consisted of 11 sections asking a total of 131 questions on the following subjects: (a) general on-line access and usage activities; (b) cognitive age; (c) specific on-line activities and satisfactions gained; (d) situational variables such as available time to go on-line and amount of computer memory; (e) social life and physical condition; (f) locus of control, the need for cognition, and attitudes toward computers; (g) limiting factors such as time and money; (h) temporal orientation; (i) on-line activities such as purchase behavior; (j) demographic questions; (k) open ended questions on the effects of on-line activities on their lives. In addition, there was a place for them to put their name and address if they wished to participate in a lottery.

Scale Reliability and Data Reduction

Before testing the hypotheses, four previously developed scales were examined for reliability. The locus of control scale (Lumpkin, 1986) had a reported Cronback's (1951) alpha of .68, yet this study had a .15 alpha. Closer examination of the data suggested that one of the six items was not behaving as expected. Locus of control was found to be negatively related to the total number of years the individual had spent on-line which was explained. It also supported earlier research that older individuals tended to be more external in their locus of control (Reid et al., 1977). The need for cognition scale (Cacioppo, Petty, and Kao, 1984) had a reported alpha of .90. The alpha for this study was .89. The scale items behaved as predicted when factored. The need for cognition was found to be related to information searching, which was explained in that

information searching was a form of cognitive activity. No reason could be found to suggest that the need for cognition scale behaved in any other manner than expected. The attitudes toward computers scale (Dambrot et al., 1985) had a reported alpha of .84. This study's alpha was .54. The data for this scale were reexamined and nothing out of the ordinary was found, but a reexamination of the questions suggested that some might be out of date given the changing nature of computers in our society. Although relationships with time allocation for various on-line activities and computer attitudes were expected for this scale, none were found. Everyone, it appeared, had positive attitudes. Gjesme's (1979) time orientation scale had a reported alpha of .62. The alpha for this study was .61. Although relationships with time allocation for various on-line activities were expected with this scale, none were found.

Data reduction was performed on 15 potential variables using principal components analysis. This procedure was necessary because of the exploratory nature of some of the questions. Little research has been published in this area. The 15 variables were successfully reduced to 6 factors: (a) computer capacity, (b) money limitations, (c) mental stamina (d) computer literacy, (e) time limitations, and (f) accessability. Many of these factors were found to be related to allocation of time on-line (e.g., time limitations and surfing). Only money limitations and computer capacity were found to have no relationship. The pairing of these two factors is explained because it appears that mature adults with sufficient amounts of money buy the computer that they need.

Research Results and Interpretation of Findings

Fifteen hypotheses and five demographic variables were proposed in this study as

potentially influential in the allocation of time on-line. Stepwise regression was used to examine these variables in their potential relationships with the specific on-line activities of surfing, entertainment, e-mailing to friends, e-mailing to children, participating in chat groups, reading message boards, searching for information, educational activities, paying bills, window shopping, financial activities, checking stories, the total time spent per week, and the total number of years of experience spent on-line.

Surfing time on-line was found to be related to satisfaction, perceived time limitations, cognitive age for younger interests, and gender (Adj. $R^2 = .239$). These influences on surfing, which may be the most leisure-oriented activity (i.e., least obligatory), suggested that without the constraint of time, individuals have the time to satisfy their younger interests by logging on the Internet. That the individuals tend to be male may be an artifact of the earlier development of the Internet when more males than females were on-line. The gender difference may also be influenced by other factors.

Entertainment activities on-line (e.g., playing games or viewing graphics) were found to be positively related to satisfaction and negatively related to computer literacy (Adj. $R^2 = .350$). The negative relationship with computer literacy may be the result of new individuals logging on, enticed by the desire to play games or view graphics. Because these individuals are new to the Internet, they may not be highly computer literate. This notion was reinforced by the later finding that total number of years an individual spends on-line was positively related to computer literacy. It may be that when individuals log on to the Internet, they first participate in entertainment-type activities before developing more computer skills and moving on to other activities.

E-mailing to friends was found to be positively related to satisfaction, cognitive age

for doing and looking younger and negatively related to perceived mobility (Adj. R^2 = .105). Individuals who think of themselves as younger looking may want social relationships, yet physical deterioration may limit their mobility outside of the house. If mature adults are not getting out of the house as much as they should, they may be using e-mail as a method of continuing their former level of social life with friends. In addition, the Internet can be perceived as a younger activity, thus communicating via the Internet allows these same individuals to think that they are doing younger things. Only 10% of the variance was explained by these variables suggesting that other influential factors, such as how many people live in the house with the individual, may play a role.

E-mailing to children was found to be related positively to satisfaction and cognitive age for feeling younger and related negatively to chronological age (Adj. R^2 = .125). As individuals age, their children grow up and the need to communicate with children or grandchildren may diminish. This lessening of communication with children does not seem to be the result of physical deterioration because chronological age was not related to e-mailing friends. Feeling younger may be the result of communicating with younger people. Only 12% of the variance was explained by these variables suggesting that other influential factors, such as the number of children and age of children may also play a role.

Checking stories (e.g., magazines and newspapers) on-line was found to be positively related to satisfaction and negatively related to accessability (Adj. R^2 = .182). Accessibility was operationalized as traffic problems (i.e., busy signals or slow transmission). Checking stories, while of interest to some individuals, appears not to be so important to individuals that they are willing to wait for slow data transmission or to

call back when the phone is busy. This may be the result of alternative sources for the stories. Individuals may be using television, radio, newspapers, and magazines as alternatives to going on-line for this information.

Reading message boards was found to be positively related to satisfaction and mental stamina and negatively related to mobility (Adj. $R^2 = .357$). There are thousands of message boards on the Internet, each with a different topic. Individuals who participate on these message boards have an interest in the topic. Thus, it is not too surprising that positive satisfaction plays a key role in this activity because they are participating in an activity in which they have an interest. Negative mobility also plays a role suggesting that individuals who are limited in mobility are using the Internet as a means of cyberspace mobility. Lastly, mental stamina is a limiting factor in this activity. Reading message boards is a text-related task and there is much to read in small text appearing on their computer screens. Those individuals who have trouble focusing or maintaining their attention will participate less in this activity.

Chatting on-line was found to be related to satisfaction, income, and cognitive age for looking younger (Adj. $R^2 = .295$). Chatting on-line is a social activity. Thus, the individual who has a perception of themselves as looking younger may be more socially active. This research also found a relationship between the perception of looking younger and e-mailing friends, which is also a social activity. Thus, social activities on-line may be influenced by the individual's perception of themselves. In addition, income was negatively related to chatting. This suggests that those with less money may be using the Internet as a method for socializing to circumvent the expenses of going out into the real world.

Information searching (e.g., weather, travel or other non-product related information) on-line was found to be related to satisfaction, the need for cognition, and cognitive age for younger interests (Adj. $R^2 = 159$). The individual with a stronger need for cognition appears to use the Internet as one source to satisfy this need. Participation in Internet information searches either contributes to their perception that they have younger interests or their younger interests are what drives them to search for information on the Internet.

Educational activities on-line were found to be positively related to satisfaction and cognitive age for younger interests, and negatively related to chronological age (Adj. $R^2 = .433$). Those individuals who are younger chronologically and have even younger interests appear to participate in educational activities. These individuals may go on-line to educate themselves or to help their children or grandchildren. In either case, they are satisfied with their activities.

Paying bills on-line was found to be positively related to satisfaction and time limitations and negatively related to mental stamina and cognitive age for younger looking (Adj. $R^2 = .377$). The influential variables describe a type of individual who pays their bills on-line. These individuals perceive time as a scarcer resource than others suggesting that they might be seeking methods to save time. These individuals do not perceive themselves as younger looking, suggesting that they might be of a more practical nature than others. These individuals feel that their mental stamina does not limit them from participating in activities on-line. Thus, they are satisfied with paying bills on-line and will spend more time at it than others.

Window shopping on-line was found to be related to satisfaction and cognitive age

of feeling younger (Adj. $R^2 = .347$). If window shopping can be construed as a type of information searching in a fashion sense, then those individuals who participate in window shopping more than others may feel they are younger than their chronological age because of the activity itself. That is, fashionable on-line activities are younger activities. Thus, if they participate, they must be younger.

Financial activities were found to be related to satisfaction and cognitive age for younger looking (Adj. $R^2 = .161$). Because there are many alternative financial approaches available to the individual, satisfaction plays a key role. Unfortunately, a satisfactory explanation for cognitive age for younger looking could not be developed. This, along with the low adjusted R^2, suggest other variables might also be influential.

Total time per week spent on-line was found to be positively related to satisfaction, income, and cognitive age for younger interests and negatively related to gender, mobility, education, and age (Adj. $R^2 = .292$). Total time spent on-line reflects the individual's general interest in the Internet and its various activities. The Internet can be construed as a younger activity; thus, the individual with enough money (i.e., higher income) can pursue those activities. Mobility was negatively related suggesting that those individuals perceive that they are not getting out of the house as much as they should either because of the real limitations of their lives as they age or because they believe they spending too much time on the Internet and not going out enough. Education was negatively related suggesting that those individuals who are highly educated do not spend as much time on the Internet as those with lesser education. Perhaps because better-educated individuals have other interests or activities which limit their time on-line. Age is also negatively related suggesting that as the individual ages,

they lose interest in or cannot physically commit to the Internet for long periods of time. Lastly, the gender results suggest that males spend more time on-line than females. The description that emerges of heavy users of the Internet is that of college-educated individuals, with good incomes and interests in younger things. These individuals may lessen their participation as they get older. This description may change with time because the Internet is a dynamic phenomenon that continues to change in both structure and in participants.

Total number of years of experience spent on-line was found to be positively related to computer literacy, education, and cognitive age for younger interests and negatively related to age of interest in technology, cognitive age for doing younger things, and locus of control (Adj. $R^2 = .319$). Satisfaction was not related suggesting that individuals who are new to the Internet have similar levels of satisfaction as those who have been on for a longer time. Apparently, satisfaction does not increase over time. Conversely, computer literacy does increase over time for the Internet user and is positively related to total number of years on-line. This may be the result of on-line experience or outside learning. The age that individuals first became interested in technology is also related to total number of years spent on-line. These two findings seem reasonable because those individuals with an interest in technology from an earlier age would have been interested in the Internet as it emerged in the 1980s and would have logged on earlier than those without this interest. Their level of education might also have made them aware of the Internet before others. Additionally, an interest in technology might have led them to be interested in learning how to use the computer. Thus, they would also develop a higher level of computer literacy. The negative

relationship for cognitive age for doing younger things and the positive relationship for cognitive age for younger interests suggested an interesting paradox: How could individuals with younger interests feel that they were not doing younger things especially when logged on to the Internet which is thought of as a younger activity? One explanation for this is that over time individuals realize that the Internet is not exclusively a younger activity: it is an activity for all ages. Thus, they perceive their activities on-line as an activity for their age. The paradox is resolved as they pursue their younger interests on a medium which is no longer perceived exclusively as a younger activity. Lastly, locus of control has a negative relationship with total time on-line. Individuals who are more external in their perceived locus of control have logged on earlier. This was explained using the continuity theory (Atchley, 1989; Kaufman, 1987). Individuals develop strategies to reinforce their slowly eroding perception of internal locus of control. This dissertation suggested that mature adults participation on the Internet can be a strategy to gain some of their lost control because participation in the Internet is an activity where the user controls the speed, direction, and most of the outcomes.

In summary, the individual findings from the multivariate analysis for each of the dependent time variables and the interrelationships of some of the influential variables have aided in explaining the allocation of time on-line. In addition, the difference in the number of influential variables for specific activities and the number of influential variables for the more aggregate measures of total time per week and total number of years spent on-line suggest a focused motivation for specific activities. Lastly, the key role of satisfaction suggests that individuals have alternative choices for many of their on-line activities. If satisfaction drops, so will the allocation of time on-line.

Six independent variables were found not to be influential in the allocation of time on-line. Perceived money limitations and computer capabilities were not influential suggesting that those with enough money were buying what they needed in a computer. This finding might be expected because the educational and income levels of the sample were higher than national averages. Other variables with no relationships were involvement with technology, attitudes toward computers, future time orientation, and satisfaction with people met on-line. Interestingly, approximately 25% of the individuals who participated in this study had not met anybody on-line suggesting that much of the activities on-line by mature adults is solitary in nature.

Fourteen independent variables were found to have relationships with the allocation of time on-line. Perceived time limitation was linked to surfing and paying bills on-line. Both of these activities can be equated to time resource notions because surfing suggests that the individual has excess time and paying bills on-line suggests that the individual may be in need of time-saving procedures. Perceived mental stamina was linked positively to reading messages because reading messages requires a lot of text reading on-line and negatively to paying bills because those who pay bills on-line tend to be pressed for time and may also lose patience or attention easily.

Perceived mobility limitation was linked to reading messages, e-mailing friends, and total time per week spent on-line. Individuals who spent more time at these activities had the perception that they were not going out of the house as much as they should. The two specific on-line activities require a significant allocation of time (i.e., e-mailing friends is the most time consuming and reading messages is the fourth largest) while total time per week is a reflection of all the time spent on-line. Individuals who spend more

time on these activities either cannot leave the house for a specific reason (e.g., care giver or disability) or they are beginning to realize that their activities on-line are keeping them in the house for more time than they should be.

The level of computer literacy was linked positively to total number of years on-line and negatively to entertainment time. The individual's level of computer literacy appears to progress with both time on-line and with the type of activities participated in while on-line. Entertainment may be a relatively low level involvement activity, thus requiring low levels of literacy. However, individuals progress over time on-line, gaining in both experience and computer literacy, they may move on to other activities.

The individual's chronological age was linked to e-mailing to children, educational activity time, and total time spent on-line per week. The influence of age on total time spent per week can be explained by the limitations of the individual's actual physical deterioration because it limits mobility, suggesting individuals are extending their mobility in "cyberspace." In addition, the mobility variable examined in this study was also linked to the total time per week. Chronological age may be "U" shaped in its influence on e-mailing children and educational activities. As mature individuals age, their children or grandchildren grow up and there is less communication. Educational activities might also be linked to children in that the individual may be helping children with homework. An alternate explanation is that when individuals retire, they become interested in continuing education, but as they age, this interest diminishes.

Gender was linked to surfing and the total time spent on-line per week. This finding may be the result of males logging on earlier than females as the Internet developed and may not be indicative of any real gender difference. Males may have

more experience with the Internet; thus, they spend more time surfing and more time in general on-line than women. Alternate explanations may be genetic in nature. As the Internet matures, it will be interesting to note if these findings change.

Income was linked positively to total time per week and negatively to chatting time. The positive link may be the result of having enough money to afford going on-line longer although there were no money limitations in the findings. The negative relationship between income and chatting may be explained in that those individuals with less money are using the Internet as a surrogate for going out to socialize which might be more expensive.

Education was linked negatively to the total time spent on-line per week and positively to the total number of years of experience spent on-line. These findings suggest that those individuals with high levels of education (e.g., there were 30 Ph.Ds in the sample) either are too busy or have other options; thus, they spend less time on-line even though they have been using the Internet for more years.

Age of first interest in technology was linked to the total number of years of experience spent on-line. This finding was understandable in that those individuals who had an earlier interest in technology became interested in the Internet as it emerged in the 1980s. Locus of control was linked negatively to the total number of years on-line. This was also understandable because previous research has shown that aging individuals diminish in internal locus of control and increase in external locus of control. Logging on to the Internet was posited as a strategy used by aging individuals to regain some of their lost control.

The need for cognition was linked to information search time spent on-line. This

too was a reasonable finding in that those with a higher need for cognition were using the Internet to satisfy their need to increase their thinking experiences. Cognitive age proved an influential but complicated factor. Its four dimensions (i.e., feel, look, do, and interests) were examined separately. Cognitive age for feeling was linked to e-mailing to children and window shopping on-line. Those individuals who feel younger may spend more time window shopping and e-mailing to children because logging on is perceived as a younger activity. They may also feel younger simply through contact with children or products on the Internet. Cognitive age for looking younger was linked positively to e-mailing to friends, financial, and chatting time. E-mailing to friends and chatting are social activities on-line. Individuals who spend more time at these activities and think they look younger may feel they need to have a social life. The positive link to spending time on financial activities and the negative link to paying bills are more enigmatic. One explanation for the positive link may be that looking younger could translate to living longer, and thus, these individuals might be willing to spend more time on future investments.

Cognitive age for doing younger things was linked positively to e-mailing friends and to the total number of years spent on-line. The Internet can be construed as a younger activity, thus mature individuals who are on the Internet perceive of themselves as doing younger activities. Cognitive age for younger interests was linked to surfing, educational activities, information searches, total time spent on-line per week, and total number of years of experience spent on-line. These findings appear to support many of the other cognitive age findings. If the individual has younger interests, then the Internet may be one of them. Alternatively, what is on the Internet allows individuals to seek out

their younger interests even though the debilitating effects of aging may be limiting their more physical activities.

Accessibility was linked to checking stories on-line. Individuals who have an interest in checking stories also have alternative places to acquire this type of information (e.g., newspapers or television); thus, when accessibility is a problem, they might be trying these other sources.

Lastly, satisfaction with the activity itself was linked to every activity measured. Participation on-line is not a necessity, it is more a leisure activity. As such, it is more self-determined (Kaplan, 1972; Kelly, 1972; Laver, 1981). In addition, there are alternate methods for achieving goals. For example, paying bills on-line can be accomplished by writing and mailing a check. Because there is little obligation and alternative choices, satisfaction plays a key role. A higher level of satisfaction with the activity is needed for higher levels of allocation of time.

Segmentation was also examined for mature adults who are logged on to the Internet using their involvement with technology as the delineating variable. Two groups, "technology lovers" and "technology users," were successfully segmented. Technology lovers are individuals who have been interested in technology earlier in life than technology users. Technology lovers tend to be more computer literate, have a stronger need for cognition, are more satisfied with most activities, and spend more time on-line than technology users. In addition, if technology lovers had more money, they most likely would purchase more computer equipment and spend more time on-line. It is also interesting to note that neither age nor gender are significant in these groups suggesting that stereotypes in cyberspace are not so easily supported.

Contributions

The significance of this study is in its examination of mature adults and their relationships with a new medium, the Internet. This examination has contributed to the continuity theory (Atchley, 1989; Kaufman, 1987), to the framework for the allocation of time (Feldman and Hornik, 1981), to the statistical descriptions of mature adults on-line, to the methodology of Internet research, to the study of the interactions of personal characteristics variables, and to the information available for managers and public policy developers.

For the continuity approach to aging (Atchley, 1989; Kaufman, 1987), this study has suggested that some mature adults have successfully developed strategies to maintain their internal and external structures. For example, those individuals who have been involved with technology when younger were among the first to go on-line as the Internet emerged. In another example, those individuals who are less mobile may be using the Internet to continue earlier levels of their social lives by e-mailing friends or chatting with others on-line.

For the framework for the allocation of time (Feldman and Hornik, 1981), this study has shown that many of the personal characteristics of mature adults are related to their allocation of both specific activity time and aggregated time spent on-line. This study was able to develop models for the allocation of time on-line with varying degrees of predictability (i.e., Adj. R^2s ranging from .105 to .433).

For the statistical descriptions of mature adults on-line, this study has contributed more demographic information than previously published. For example, this study shows 10 segments of income, which is twice as many as any other published report.

For methodology, the unique approach to developing the sample and the method of communicating with respondents offered the researcher another approach to examining hard-to-reach groups. Finding a sample of mature adults who are on-line proved difficult. In addition, the use of an extensive survey on-line is extremely difficult. This study developed a method to overcome these difficulties.

Lastly, the implications of this study offer managers and public policy developers background information and new opportunities to develop programs that can be more effective than what is currently being done. These will be discussed in the next section.

Implications

This study adds to our general understanding of mature consumers' adaptation of new technologies and more specifically to their allocation of time on-line. Many personal characteristics have been identified that appear to be influential in their on-line behavior. These relationships suggest possible implications for the areas of marketing and promotional management, and public policy.

Managerial

For marketing managers, knowledge that (a) time, stamina, accessibility, and mobility limitations; (b) age, gender, income, education, and age of interest in technology; (c) need for cognition, locus of control, cognitive age , computer literacy; and (d) satisfaction influence the on-line user gives them the opportunity to direct their new product development and promotional activities in a more efficient manner.

For new product development, the findings of this study concerning total number of

years spent with on-line activities suggest that some mature consumers may be exhibiting innovative behavior (Rogers, 1983). Innovative behavior, in this case, is defined by the number of years ago that the consumer first went on-line. Knowledge of these individuals' personal characteristics can assist in new product development. For example, developing products that require some aspect of puzzle solving may attract those with a stronger need for cognition. Products that offer a sense of accomplishment would be attractive to those individuals with a reduced locus of control. Games and entertainment for mature adults could be developed for those individuals with younger interests. Interestingly, this researcher could not find one piece of software targeted toward older adults.

For promotional strategy, knowledge of the personal characteristics that influence on-line behavior and an understanding of how mature adults segment can guide development of advertising. For example, depicting satisfied users successfully e-mailing friends—the number one activity of mature adults—via the Internet would attract those with younger cognitive age scores and those who perceive themselves as not getting out of the house as much as they should. The stereotype of the mature consumer, unwilling to change or adopt new technologies, is not supported with this study. Thus, advertisers should avoid negative images. They should not fear depicting mature consumers interested in younger activities. In addition, depicting them as computer illiterates might be damaging.

For media strategy, knowledge of personal characteristics and segmentation possibilities can guide development of more efficient media plans. For example, segmenting the technology "lover" from the "user" suggests that the choice of magazines

might skew towards the "buff" type Internet magazines (e.g., *Net Guide*) versus the more traditional mature magazines (e.g., *Modern Maturity*).

Public Policy

Knowledge of the personal characteristics and on-line behaviors of mature citizens can be utilized by those interested in public policy. Use of the Internet by mature citizens may improve their quality of life by engaging them in youthful activities and satisfying their needs. Thus, government funding programs that promote Internet usage may contribute to increasing quality of life. As the population ages and the mature segment grows in numbers, we may need more programs to ease their transition into older age groups. There has also been evidence that using the computer and Internet increases physical and mental health by adding variety and mental and physical challenges (Frydenberg, 1988). Monk (1988) suggested that the risk of isolation and loneliness is increasing because the population will have (a) a higher life-expectancy, (b) more people over the age of 75, (c) women outliving men, and (d) more mature adults living alone. These factors are predicted to lessen the health of individuals and eventually lead to a deterioration of their quality of life. Monk (1988) recommended more electronic communication with mature citizens beyond what services are already available. In addition, he suggested computer games as a method of maintaining or improving mental and physical health because the types of challenges computer games offer strengthen both the body and the mind. This dissertation has shown that mature individuals are capable of participating in many types of Internet activities. The physical and mental challenges of becoming computer literate and utilizing various Internet activities suggests the

Internet can be one method of improving quality of life.

Limitations

The limitations of this study include the method of sample recruitment and the use of previously developed scales. Because of the difficulties of random sampling of mature on-line users, a unique method of sampling was developed. Although successful in finding mature on-line users, the method used in this study allows for the possibility of sample bias. There were indications that mature on-line users were a nervous and slightly paranoid group because of fears of confidence games and privacy issues. Thus, those who did respond to the recruitment letter might be an overly confident group, not as afraid as those who did not participate. In addition, the sample was only composed of those mature adults who subscribe to either AOL or CompuServe. It excluded all those adults who utilize other methods to access the Internet.

A second area that may limit the usefulness of this study was the use of two scales which did not produce reliability scores comparable to their original reported scores. Locus of control (Lumpkin, 1986) reported an alpha of .68 while this study reported an alpha of .15. Attitudes toward computers (Dambrot et al., 1985) reported alphas between .79 and .84, while this study reported an alpha of .54. No relationships were found with attitudes toward computers, but locus of control was found to be related to the total number of years spent on-line. Although the findings were explained, the low reliability may limit the results.

Future Research

Because of the newness of the Internet and its dynamic nature, the Internet offers many opportunities for future research. The next stage of research stemming directly from this study should be the examination of mature adults who are not engaged in on-line activities. A second stage would expand the examination to the total population. It is important that we understand any differences that might emerge from this type of expanded study so that managerial and public policy decisions could be made in a more intelligent manner.

The heterogeneous mature of the sample, because it was drawn from the population, may have influenced the low levels of adjusted R^2 for many of the relationships. Efforts in the future should work toward collecting data for more homogeneous samples so that detailed analysis of relationships can be achieved.

Personal characteristics, other than those examined in this study, should also be included in future research. There were indications in the pilot study (McMellon et al., 1996) that a need for variety and a need for communication were also influential. New attitudes toward computers and locus of control scales might reveal relationships not captured in the current study.

More qualitative research is needed to explore on-line users for other personal characteristics and behavior patterns. Any new findings should be included in future empirical work. For example, Turkel (1995) has speculated on how the individual users established identity through their interaction with their computer. This critical area needs further examination.

The implications of "just" going on-line have not been adequately examined.

Monk's (1988) discussion of the implications of computer use where health and loneliness are improved needs further examination. News stories have mentioned the positive such as improvements in quality of life and negative aspects such as computer addiction. Unfortunately, little research has been published on the subject of involvement with computers or the cyber-community.

Lastly, an examination of the other aspects of segmentation is needed. Gender, age, and retirement versus working are examples of segmentation variables that might lead to a better understanding of on-line users.

Conclusions

This chapter has summarized the theoretical background of this study, the hypotheses, the method, the data analysis, the research findings, the contributions, the managerial and public policy implications, the limitations, and the directions for future research. One conclusion from this discussion is that it is possible to examine Internet users. The findings of such an examination can be helpful in furthering our understanding of consumer behavior.

APPENDIX A

THE QUESTIONNAIRE

BARUCH COLLEGE
ON-LINE USERS SURVEY

Please take your time and answer all questions to the best of your ability. Remember, there are no right or wrong answers on this survey. Thank you.

Section I. To begin with, I would like to establish the ways you gain access to the internet and your other on-line activities.

1a. Please check all of the services you currently use:

_____America Online (AOL)
_____CompuServe
_____Prodigy
_____Local access provider
_____Educational access
_____Microsoft network
_____Other (Please specify)
_____

1b. Which of the services do you use the most? (Check one)

_____AOL
_____CompuServe
_____Prodigy
_____Local access provider
_____Educational access
_____Microsoft network
_____Other (Please specify)
_____

1c. Approximately how many hours in an average week are you on-line for each service you checked above in question 1a. As part of your answer include any time you spend using off-line software (for example, when you download and read e-mail off-line).

AOL..... Hrs. ____ Mins____
CompuServe.. Hrs. ____ Mins____
Prodigy..... Hrs. ____ Mins____
Local server... Hrs. ____ Mins____
Educational access.... Hrs. ____ Mins____
Microsoft network.... Hrs. ____ Mins____
Others (Specify)..... Hrs. ____ Mins____
_____

Section II. People often think of themselves as being an age other than their chronological age. Please place an "X" on the line that best reveals the age group you really belong to: teens, twenties, thirties, forties, fifties, sixties, seventies, or eighties. Please do this with each of the four statements below.

	Teens	20's	30's	40's	50's	60's	70's	80's
I feel as though I am in my.....	___	___	___	___	___	___	___	___
I look as though I am in my.....	___	___	___	___	___	___	___	___
I do most things as though I were in my.....	___	___	___	___	___	___	___	___
My interests are mostly those of people in their.....	___	___	___	___	___	___	___	___

Section III. I would like you to stop and think for a moment about your various work related and non-work related on-line activities. Many are listed below. I would like you to tell me approximately how much time you spend on each activity in an average week. Include any time you might spend with off-line software (for example, when you download and read e-mail off-line). I am also asking you to estimate the amount of satisfaction you receive from participating in each activity by circling the number that best represents your level of satisfaction. Of course, I understand that if you do not participate in the activity, you will not have a satisfaction level.

On-line activity	Time per week	Little or no satisfaction			Moderate satisfaction		A great deal of satisfaction	
1. All work related on-line activities	Hrs. ___ Mins. ___	1	2	3	4	5	6	7
Note: The rest of these questions are for your non-work related on-line activities.								
2. Exploring ("surfing") sites	Hrs. ___ Mins. ___	1	2	3	4	5	6	7
3. Entertainment (e.g., playing games or viewing graphics)	Hrs. ___ Mins. ___	1	2	3	4	5	6	7
4. E-mailing friends or people of similar interests	Hrs. ___ Mins. ___	1	2	3	4	5	6	7
5. E-mailing-to children or grandchildren	Hrs. ___ Mins. ___	1	2	3	4	5	6	7
6. Checking stories in on-line magazines, newspapers, etc.	Hrs. ___ Mins. ___	1	2	3	4	5	6	7
7. Reading message boards	Hrs. ___ Mins. ___	1	2	3	4	5	6	7
8. Participating in group chats	Hrs. ___ Mins. ___	1	2	3	4	5	6	7
9. Searching for non-product related information (e.g., weather or travel info)	Hrs. ___ Mins. ___	1	2	3	4	5	6	7

On-line activity	Time per week	Little or no satisfaction			Moderate satisfaction		A great deal of satisfaction	
10. Educational activities (e.g., seeking information for school reports)	Hrs. ___ Mins. ___	1	2	3	4	5	6	7
11. Paying bills on-line	Hrs. ___ Mins. ___	1	2	3	4	5	6	7
12. Window shopping on-line, looking at advertising, product information searches	Hrs. ___ Mins. ___	1	2	3	4	5	6	7
13. Financial services (e.g., checking stock prices or company information)	Hrs. ___ Mins. ___	1	2	3	4	5	6	7
14. Other (Specify)_____	Hrs. ___ Mins. ___	1	2	3	4	5	6	7
15. Other (Specify) _____	Hrs. ___ Mins. ___	1	2	3	4	5	6	7
16. Other (Specify) _____	Hrs. ___ Mins. ___	1	2	3	4	5	6	7

Section IV. This section contains a variety of questions about your experiences with on-line and off-line activities. Please indicate how strongly you "agree" or "disagree" with the following statements by circling the number that corresponds with your opinions or feelings.

	Strongly disagree			Neutral		Strongly agree	
1. I have the time to go on-line as much as I would like to	1	2	3	4	5	6	7
2. I get out of the house as much as I should	1	2	3	4	5	6	7
3. I am computer literate enough to participate in all of the on-line activities I wish to	1	2	3	4	5	6	7
4. I love technology	1	2	3	4	5	6	7
5. I have been involved with technology either at work or home for most of my adult life	1	2	3	4	5	6	7

	Strongly disagree			Neutral			Strongly agree
6. Technology is good for society	1	2	3	4	5	6	7
7. I have the money to go on-line as much as I would like to	1	2	3	4	5	6	7
8. I have enough memory in my computer to participate in all of the on-line activities I wish to	1	2	3	4	5	6	7
9. My computer/modem is fast enough for me to participate in all of the on-line activities I wish to	1	2	3	4	5	6	7
10. On-line traffic problems slow me down from participating in many of the on-line activities I wish to	1	2	3	4	5	6	7
11. I am not hindered by any physical limitations in staying on-line as much as I would like to (for example, being too tired or unable to type due to arthritis)	1	2	3	4	5	6	7
12. My attention span does not limit me from staying on-line as much as I want to	1	2	3	4	5	6	7
13. My concentration level limits me from staying on-line as much as I want to	1	2	3	4	5	6	7

Section V. This section asks questions about your social life and physical condition. Please indicate how strongly you "agree" or "disagree" with the following statements by circling the number that corresponds with your opinions or feelings.

	Strongly disagree			Neutral			Strongly agree
1. I'm not as socially active as I used to be	1	2	3	4	5	6	7
2. I'm not as active as I used to be because I have no transportation	1	2	3	4	5	6	7
3. I don't have as many friends or acquaintances as I used to have	1	2	3	4	5	6	7
4. I stay home most of the time	1	2	3	4	5	6	7
5. I would rather stay home than go out with friends	1	2	3	4	5	6	7
6. Compared to other people my age who I know, I think I take less medicine	1	2	3	4	5	6	7
7. Compared to other people my age who I know, I think I am in better health	1	2	3	4	5	6	7

	Strongly disagree			Neutral			Strongly agree
8. I really don't have any physical problems	1	2	3	4	5	6	7

Section VI. This section contains questions about yourself and attitudes towards various things. We would like you to indicate how strongly you "agree" or "disagree" with the following statements by circling the number that corresponds with your opinions or feelings.

	Strongly disagree			Neutral			Strongly agree
1. What happens to me is my own doing	1	2	3	4	5	6	7
2. Getting people to do the right things depends upon ability, luck has nothing to do with it	1	2	3	4	5	6	7
3. When I make plans, I am almost certain I can make them work	1	2	3	4	5	6	7
4. Many of the unhappy things in people's lives are partly due to bad luck	1	2	3	4	5	6	7
5. Getting a good job depends mainly on being in the right place at the right time	1	2	3	4	5	6	7
6. Many times I feel that I have little influence over the things that happen to me	1	2	3	4	5	6	7
7. I prefer complex to simple problems	1	2	3	4	5	6	7
8. I like to have the responsibility of handling a situation that requires a lot of thinking	1	2	3	4	5	6	7
9. Thinking is not my idea of fun	1	2	3	4	5	6	7
10. I would rather do something that requires little thought than something that is sure to challenge my thinking abilities	1	2	3	4	5	6	7
11. I try to anticipate and avoid situations where there is little chance I will have to think in depth about something	1	2	3	4	5	6	7
12. I find satisfaction in deliberating hard and for long hours	1	2	3	4	5	6	7
13. I only think as hard as I have to	1	2	3	4	5	6	7

	Strongly disagree			Neutral			Strongly agree
14. I prefer to think about small, daily projects to long-term ones	1	2	3	4	5	6	7
15. I like tasks that require little thought once I've learned them	1	2	3	4	5	6	7
16. The idea of relying on my thinking to make my way to the top appeals to me	1	2	3	4	5	6	7
17. I really enjoy a task that involves coming up with new solutions to problems	1	2	3	4	5	6	7
18. Learning new ways to think doesn't excite me very much	1	2	3	4	5	6	7
19. I prefer my life to be filled with puzzles that I must solve	1	2	3	4	5	6	7
20. The notion of thinking abstractly is appealing to me	1	2	3	4	5	6	7
21. I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much thought	1	2	3	4	5	6	7
22. I feel relief rather than satisfaction after completing a task that required a lot of mental effort	1	2	3	4	5	6	7
23. It's enough that something gets the job done: I don't care how or why it works	1	2	3	4	5	6	7
24. I usually end up deliberating about issues even when they do not affect me personally	1	2	3	4	5	6	7
25. I think computers are fascinating	1	2	3	4	5	6	7
26. If I use a computer, I can save time and work	1	2	3	4	5	6	7
27. Computers can make learning more fun	1	2	3	4	5	6	7
28. Given a little time and training anybody could learn to use computers	1	2	3	4	5	6	7
29. Using a computer can be enjoyable	1	2	3	4	5	6	7
30. I look forward to computers taking over the routine tasks of my home and job	1	2	3	4	5	6	7

	Strongly disagree			Neutral			Strongly agree
31. If I had the money, I'd buy a new computer	1	2	3	4	5	6	7
32. I would rather have a computer instruct me than a teacher	1	2	3	4	5	6	7
33. Computers are superior to humans in processing data	1	2	3	4	5	6	7
34. I feel very negative about computers in general	1	2	3	4	5	6	7
35. Only computer specialists can use computers	1	2	3	4	5	6	7
36. Computers control too much of our world today	1	2	3	4	5	6	7
37. Computers are having a bad effect on my work/school and my life	1	2	3	4	5	6	7
38. Computers intimidate and threaten me	1	2	3	4	5	6	7
39. Even though computers are valuable and necessary, I still have a fear of them	1	2	3	4	5	6	7
40. All computer people talk in a strange and technical language	1	2	3	4	5	6	7
41. Government regulations should be established to control computers	1	2	3	4	5	6	7
42. Computers make mistakes	1	2	3	4	5	6	7
43. Computers are so complicated I would rather do my work manually	1	2	3	4	5	6	7
44. Computers are being forced on us; we are having our decision processes replaced by them, making us lose control of our lives	1	2	3	4	5	6	7

Section VII. When it comes to on-line activities, you may be limited in some way from participating as much as you would want to. Your answers can be from a 1 which means "Not limiting" to a 7 which means "Very limiting." When marking your score think in terms of your computer and your on-line activities.

Limiting factor	Not limiting			Moderately limiting			Very limiting
1. My time	1	2	3	4	5	6	7
2. My money	1	2	3	4	5	6	7

Limiting factor	Not limiting			Moderately limiting		Very limiting	
3. My physical stamina	1	2	3	4	5	6	7
4. My health	1	2	3	4	5	6	7
5. My computer literacy	1	2	3	4	5	6	7
6. My computer's memory	1	2	3	4	5	6	7
7. My computer's speed	1	2	3	4	5	6	7
8. My ease of on-line access or navigation (traffic problems)	1	2	3	4	5	6	7
9. My attention span	1	2	3	4	5	6	7

Section VIII. This section asks questions on how you deal with time. Once again, circle the number that best represents your feelings.

	Is very true of me					Is not true at all of me	
1. I always seem to be doing things at the last moment	1	2	3	4	5	6	7
2. I have been thinking a lot about what I am going to do in the future	1	2	3	4	5	6	7
3. I find it hard to get things done without a deadline	1	2	3	4	5	6	7
4. I need to feel rushed before I can really get going	1	2	3	4	5	6	7
5. Half a year seems a long time	1	2	3	4	5	6	7
6. I think about the future only to a very small extent	1	2	3	4	5	6	7
7. I am most concerned about how I feel now in the present	1	2	3	4	5	6	7
8. I am not very concerned about things a little ahead in time	1	2	3	4	5	6	7
9. It's really no use worrying about the future, because what will be, will be	1	2	3	4	5	6	7

	Is very true of me						Is not true at all of me
10. I reflect a great deal about the future, and feel it is rapidly approaching.....	1	2	3	4	5	6	7
11. I often find myself looking for ways to kill time.....	1	2	3	4	5	6	7
12. The future seems very vague and uncertain to me.....	1	2	3	4	5	6	7
13. Usually I feel time is going too fast.....	1	2	3	4	5	6	7

14. What percent of your thinking do you estimate is spent in the:

Past ____%
Present ____%
Future ____%

Remember the total must add up to 100%.

Section IX. This section contains a variety of questions about you and your on-line activities.

1. Have you every bought any products on-line? ____Yes ____No

2. If you have bought products on-line, can you estimate about how many products you have purchased?_____

2a. If you have bought products on-line, what kinds of products have you bought?

_____

_____

2b. If you have not bought products on-line, then why not?

_____

_____

5. To the best of your memory, how long has it been since you first started going on-line?

Years ____
Months ____
Weeks ____

6. Please estimate the total time you spend on-line in an average week. Hrs. ___

Mins. ___

7. How much satisfaction do you receive from the total time you spend on-line?

Little or no satisfaction		Moderate satisfaction			A great deal of satisfaction	
1	2	3	4	5	6	7

8. How much satisfaction do you receive from the people you have met on-line. Do not answer if you have not have not met anybody.

Little or no satisfaction			Moderate satisfaction		A great deal of satisfaction	
1	2	3	4	5	6	7

9. Check off which of the following statements best describes you:

____ Most of my thinking is about events in the future.
____ Most of my thinking is about events in the past.
____ Most of my thinking is about present events, not those of the past or the future

---

Section X. The following set of questions will help us build an overall picture of who answers this survey. Place and "X" on the appropriate line. Please let us reassure you that all answers are strictly confidential.

1. What is your gender? Male____ Female____

2. What is your present marital status?
_____Single
_____Married
_____Divorced/separated
_____Widow/Widower
_____Living with significant other

3. How many children do you have? ____

4. How many people are living in the house besides yourself? _____

5. To the best of your memory, how long have you had an active interest in technology?

Childhood (6-12) _____
Teens (13-19) _____
Young adult (20-30) _____
Adult (30-50) _____
Older adult (50-60) _____
Mature adult (60+) _____

6. Which category best describes the highest school grade you have completed?

0-8 years	____	College grad	____
Some high school	____	Masters degree	____
High school grad	____	Some Ph.D. Work	____
Some college	____	Ph.D. Completed	____
Some graduate work	____		

7. Which group best describes your income (from all sources) for this year?

under $20,000 ____	$60,000-69,999____
$20,000-29,000____	$70,000-79,999____
$30,000-39,999____	$80,000-89,999____
$40,000-49,999____	$90,000-99,999____
$50,000-59,999____	over $100,000 ____

8. How old were you on your last birthday? _____

9. Which of the following best describes your primary employment status? (check one)

_____Self-employed
_____Currently employed
_____Unemployed
_____Retired
_____Other (Please specify)

10. Which of the following best describes your primary occupation now or before you retired? (check one)

Technological	____
Business	____
Educational	____
Sales	____
Service	____
Physical laborer	____
Student	____
Skilled technician	____
Other (specify)	____

_____

Section XI. Please take a moment to help me out in one more area. The ideas, feelings, and thoughts of people who go on-line (like you) are very important. Write as much as you want. Use the back of this page if you need the room. Thanks.

1. Would you please tell me in some detail how your on-line activities have changed your life and those around you.

2. In what ways has going on-line added to or made your life better?

3. In what ways has going on-line subtracted or made your life worse?

4. Would you like to discuss this and other issues with me via e-mail? If "yes," you will receive an e-mail from me in few weeks. If "no," thank you again for filling out this survey.

Yes _____
No _____

THANK YOU FOR YOUR PARTICIPATION

Please place your finished survey in the enclosed return envelope and mail it back to Baruch School of Business, Marketing Department, 17 Lexington Avenue, New York, NY 10010.

OPTIONAL

If you would like to enter your name in the drawing for $250.00. Please fill out the information below. Your name will only be used to contact you if you have won. Good luck!

Your name: _____

Your address: _____

_____

_____

APPENDIX B

THE COVER LETTER

Baruch College

Baruch College
The City University of New York
17 Lexington Avenue
New York, New York 10010

August, 1996

Dear Internet User:

Thank you for taking the time to answer my e-mail letter and to fill out this survey. As I stated in my e-mail to you, I need your help. I am a Ph.D. student at the Baruch College School of Business of The City University of New York. My dissertation concerns people like you who use on-line services like CompuServe and America Online, or who have Internet access through their school, business, a local provider, or some other source.

Since little is known about on-line users, your participation in this survey is very important. It does not matter how much or how little experience you have. The information you provide, when combined with all the other responses, will help create a comprehensive picture of the various types of on-line users which will lead to better computer-related products and services.

Although I wish I could personally thank everyone and give each of you a token of my appreciation, I just can't afford it. However, you can win $250.00 cash just by completing the survey and mailing it back to me. One winner will be randomly drawn from all of the completed surveys. I know this is not a lot of money but your chances of winning are much better than state lotteries (less than 1000 to 1 odds). Most important, your completing and mailing this survey back to me will help me finish my Ph.D. degree.

All individual responses are confidential. Only the combined findings will be reported. Please call me at my home (Tel. 718-768-3510) if you have any questions. Thank you for your assistance.

Sincerely,

Charles McMellon
Doctoral Student
Baruch School of Business

APPENDIX C

THE FIRST SOLICITATION LETTER

THE FIRST E-MAIL SOLICITATION LETTER

August, 1996

Dear Internet User:

I need your help. I am a Ph.D. student at the Baruch College School of Business of The City University of New York. My dissertation concerns people like you who use on-line services like CompuServe and America Online, or who have Internet access through their school, business, a local provider, or some other source.

Since little is known about on-line users, your participation in this survey is very important. **It does not matter how much or how little experience you have.** The information you provide, when combined with all the other responses, will help create a comprehensive picture of the various types of on-line users which will lead to better computer-related products and services.

Although I wish I could personally thank everyone and give each of you a token of my appreciation, I just can't afford it. However, you can **win $250.00 cash** just by completing the survey and mailing it back to me. One winner will be randomly drawn from all of the completed surveys. I know this is not a lot of money but your chances of winning are much better than state lotteries (less than 1000 to 1 odds). Most important, your completing and mailing this survey back to me will help me finish my Ph.D. degree.

If you will e-mail me your home address, I will mail you the questionnaire. Your home address will not be used for any other purpose.

My e-mail address is mcmbb@cunyvm.cuny.edu. The easiest way to send me your home address is to reply directly to this note with your address. You will receive the survey in about one week.

Sincerely,

Charles McMellon
Doctoral Student

APPENDIX D

THE SECOND SOLICITATION LETTER

THE SECOND E-MAIL SOLICITATION LETTER

Hi: I recently wrote you an e-mail asking you to participate in a survey that examines the type of people, like you, who spend time on-line. For some reason you did not reply. I thought I would write you again (this is the last time) to see if I could convince you to participate.

Some people wrote to saying they would like to help out but were concerned that I might not be who I said I was or that I might use their name and home address for some other (most likely commercial) purpose.

This seems difficult for me to deal with. But here's what I can do. Here is my name, address, and telephone number. Please call me directly if you have any questions (This may drive my wife crazy as she is home more than I am. She will, of course, verify that I am who I say I am).

And let me repeat again, your name and address will not be used for anything other than to mail you the survey.

Charles McMellon
432 7th Street
Brooklyn, New York 11215
Tel: 1-718-768-3510

I would not give you this information if I did not believe in the importance of this survey. Thus, I am asking you to e-mail me you home address so that I can mail you my survey.

Thank you.

P.S. The survey is not boring. There are lots of interesting questions in it.

APPENDIX E

THE FIRST E-MAIL THANK YOU LETTER

THE FIRST E-MAIL THANK YOU LETTER

Hello again. Thank you for your interest in my survey. I have mailed it to you today. If you do not receive it by next week, please e-mail me and I will send you a duplicate.

If you have any questions, please e-mail me a mcmbb@cunyvm.cuny.edu.
I will try to respond in a timely manner.

Once again, thank you for your help.
Charles McMellon

APPENDIX F

THE FINAL E-MAIL THANK YOU LETTER

THE FINAL E-MAIL THANK YOU LETTER

Hi:

I would line to thank you once again for agreeing to participate in my survey of on-line users.

A special thank you to all who filled it out and returned it to me. I can't begin to tell you how helpful you have been.

If you have not filled out the survey, please reconsider. I can use every completed survey. Besides it cost me $.788 to mail it to you :-).

I am setting a deadline of December 6th, 1996 for the completion of surveys so that I can hold the lottery. I will notify the winner via e-mail by December 13th (please note it is on a Friday!). I will mail the check out right after (and in time for the holidays).

If you expressed an interest in talking with me more, please be patient. Two events have slowed me down. First, I am "awash" in completed surveys which means I am working day and night to analyze your answers. Second, I have accepted a teaching job at Penn State. Nevertheless, I do want to talk with you more about technology, computing, and any other subject you may want to discuss.

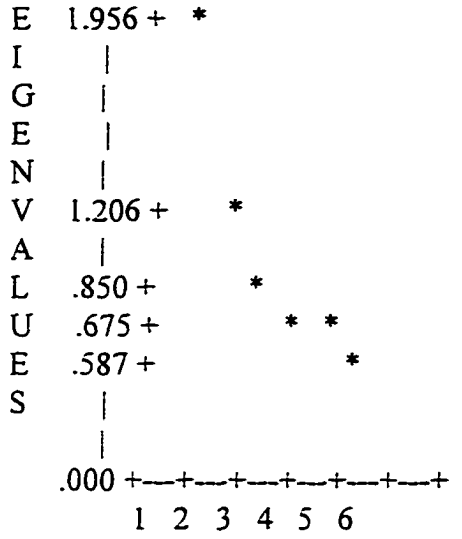
Once again, thanks.

Charles McMellon
Still a Ph.D. student but much closer to my degree because of your help.

APPENDIX G

SCREE TEST FOR LOCUS OF CONTROL

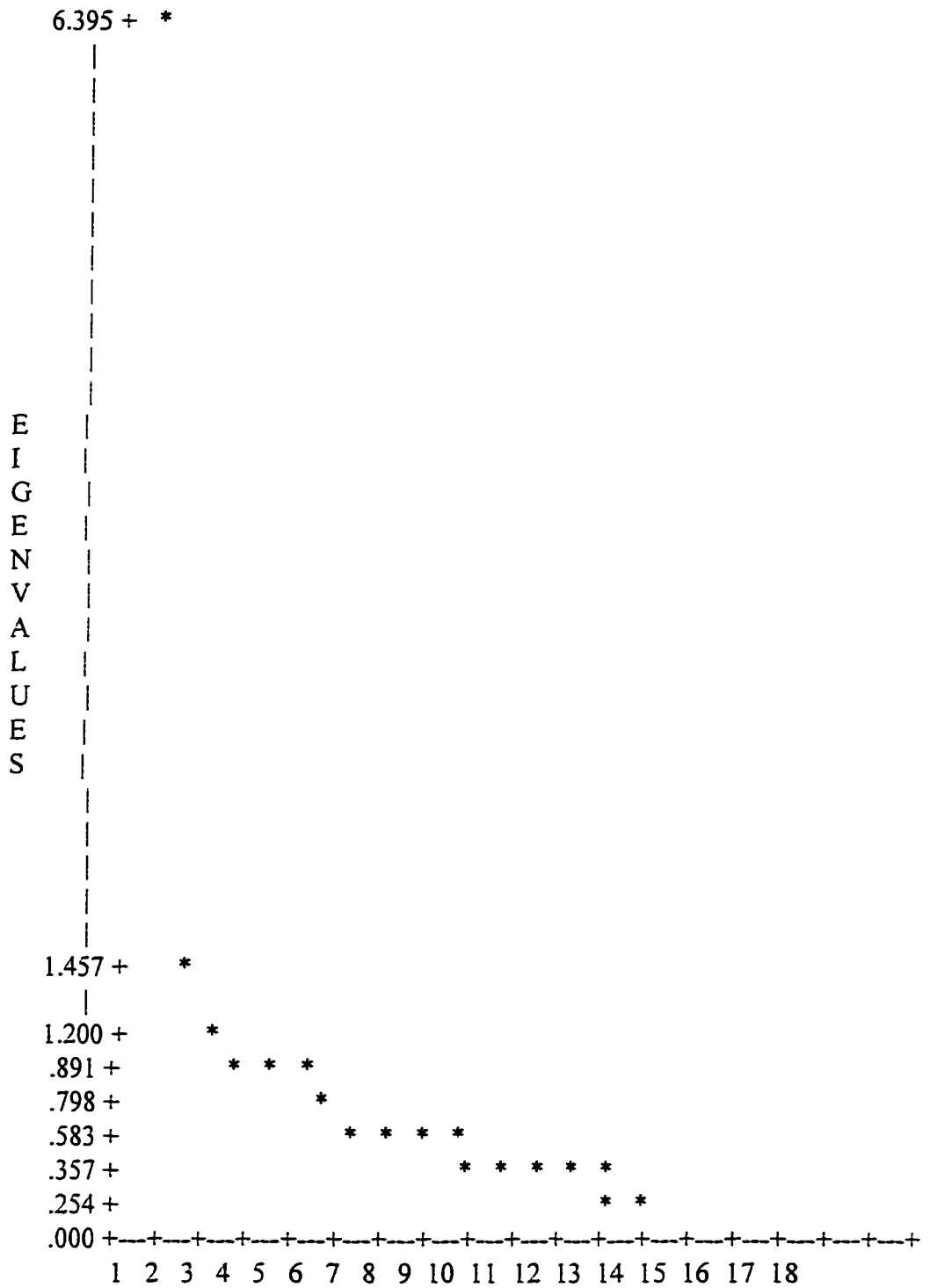
SCREE TEST FOR LOCUS OF CONTROL



APPENDIX H

SCREE TEST FOR NEED FOR COGNITION

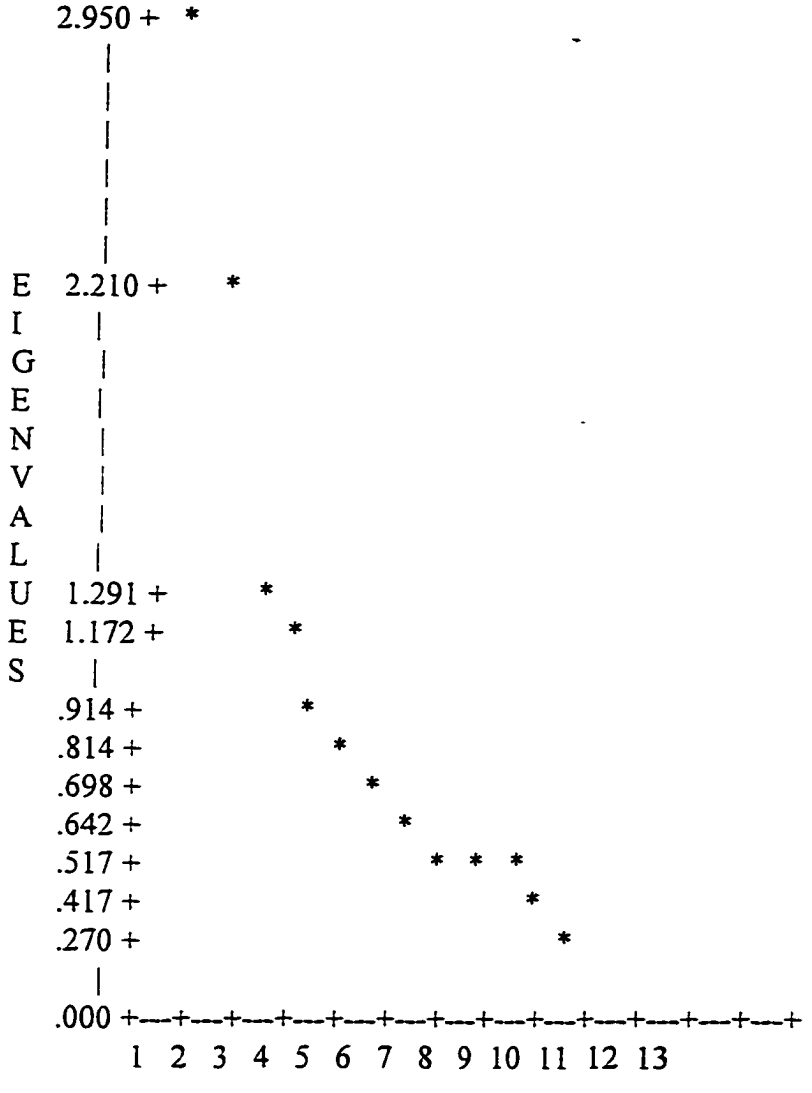
SCREE TEST FOR NEED FOR COGNITION



APPENDIX I

SCREE TEST FOR FUTURE TIME ORIENTATION

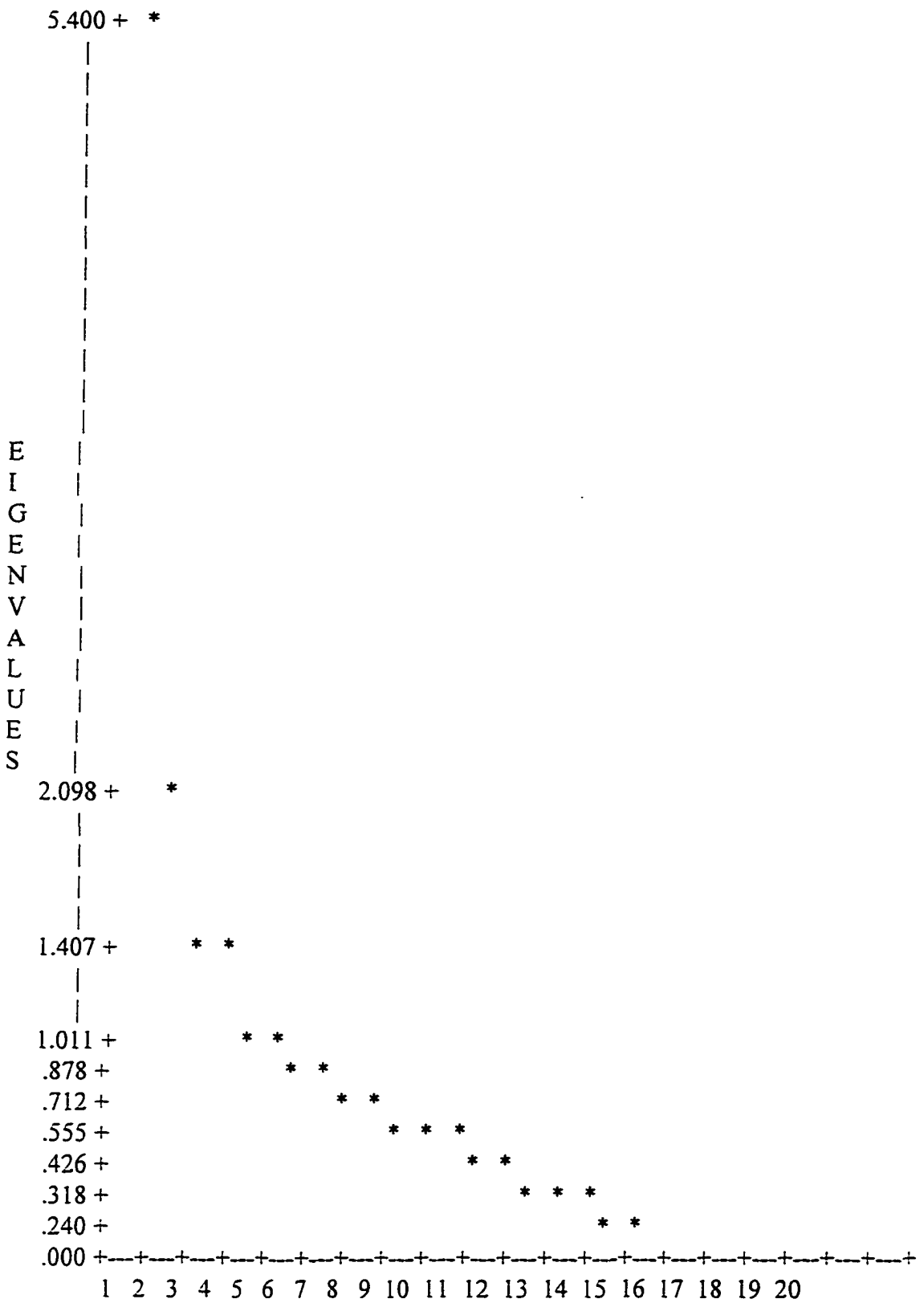
SCREE TEST FOR FUTURE TIME ORIENTATION



APPENDIX J

SCREE TEST FOR ATTITUDES TOWARD COMPUTERS

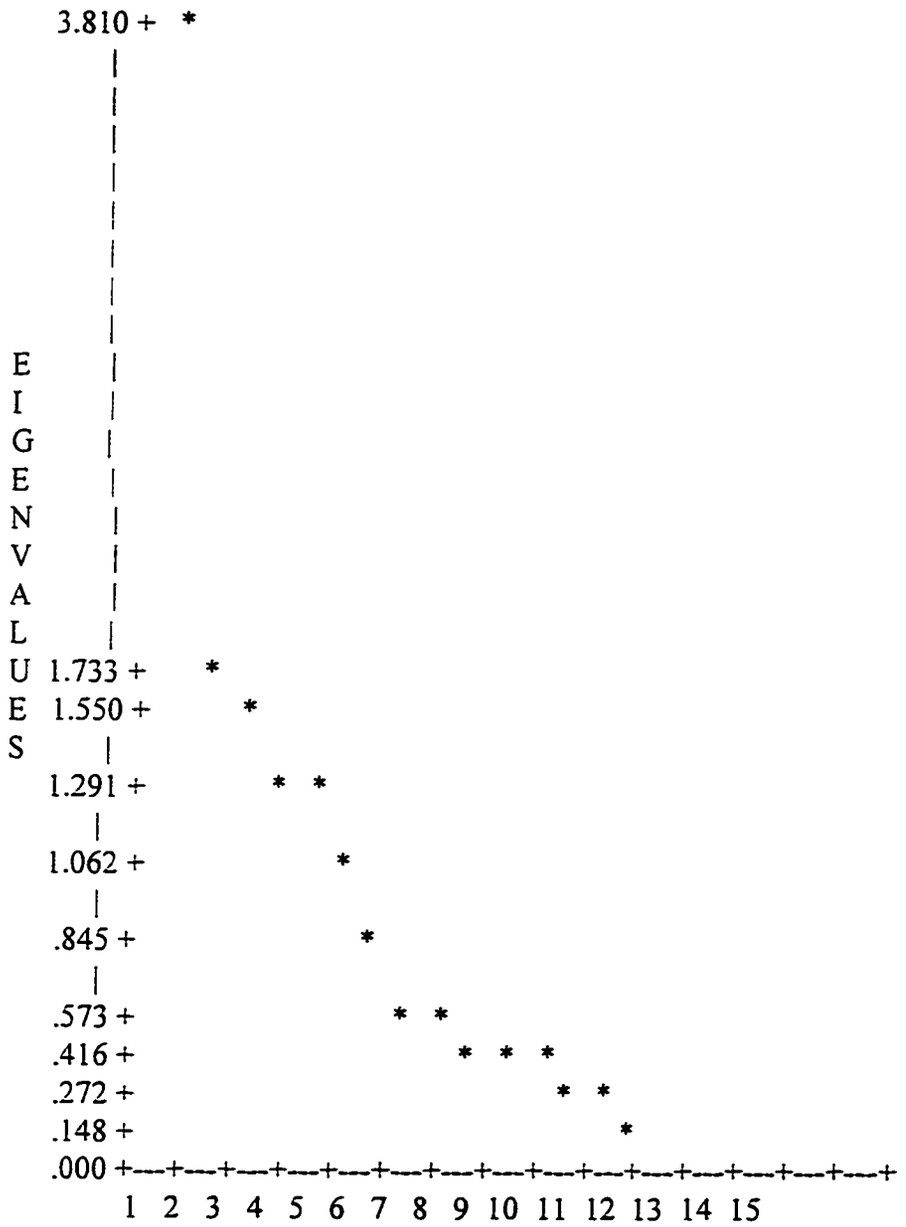
SCREE TEST FOR ATTITUDES TOWARD COMPUTERS



APPENDIX K

SCREE TEST FOR DATA REDUCTION

SCREE TEST FOR DATA REDUCTION



APPENDIX L

MEAN TIME FOR DEPENDENT VARIABLES

MEAN TIME FOR DEPENDENT VARIABLES

Variables	Mean Hours per week
Time Spent Surfing	1.7
Time Spent on Entertainment	1.0
Time Spent E-mailing Friends	2.1
Time Spent E-mailing Children	0.7
Time Spent Chatting	0.5
Time Spent Checking Stories	0.5
Time Spent Checking Messages	0.9
Time Spent Information Searching	0.5
Time Spent on Educational Activities	0.2
Time Spent Paying Bills	0.07
Time Spent Window Shopping	0.1
Time Spent on Financial Activities	0.6
Total Time Spent Per Week	7.8
Total Number of Years Spent On-line	3.7

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