DIRECT AND INDIRECT EFFECTS OF

COMPUTERS ON THE FAMILY:

A PRELIMINARY STUDY

By

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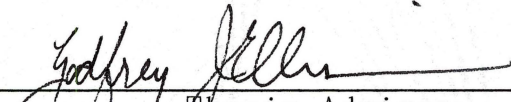University of Oklahoma
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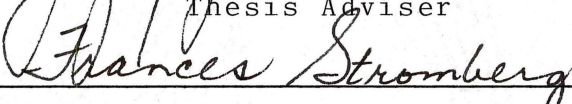DOCTOR OF PHILOSOPHY
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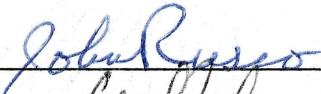
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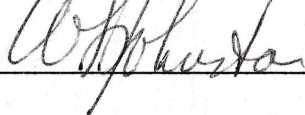Thesis Adviser

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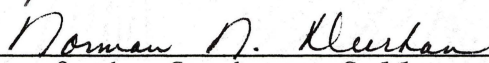Dean of the Graduate College

PREFACE

An evaluation of the direct and indirect effects of a
personal computer on the family system was completed in 1984.
These effects included the usage of the computer, possible
time displacement of other activities due to the computer,
and the effects of the computer on interpersonal relationships
within the family.

Choice and exchange theory was utilized to link the
research with a conceptual framework. The results of the
study, while largely inconclusive, suggested that the computer
did not interfere with the interpersonal relationships in the
family or the time that family members spent on recreational
activities, sports, reading, or television. In fact, the
research suggested that the exchanges between the computer and
the family would be rewarded by making more time available for
other activities, or by acting as a center for family
interactions.

I wish to express my appreciation to Dr. Godfrey Ellis,
whose suggestions, guidance, and encouragement throughout the
study make its completion possible. And, a special thanks is
extended to Dr. Francis Stromberg for her continuing efforts
as Department Head and committee member to encourage and guide
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CHAPTER I

INTRODUCTION

There have been three major periods of development for the modern family. The first period, emerging from a time of hunting and gathering, was the Agricultural Age, in which families worked outdoors with primitive equipment, produced crops, and the economy was based on agricultural activities. The second major period was the Industrial Age when the importance of agriculture diminished and it became secondary to the production of goods. During the Industrial Age, the population shifted from rural to urban areas, where more employment opportunities existed.

Society is now at the start of a third and new period of development that some writers are calling the "Information Age." The start of this era was linked with the first electronic computer, built in 1943. The computer was called ENIAC, an acronym for Electric Numerical Integrator and Calculator. Running on more than 18,000 vacuum tubes, it filled a large room at the University of Pennsylvania. Today, owing to the inventions of the transistor, the silicon chip, and microminiaturization, a personal computer in the home, occupying a small desk top, can out perform the giant computer of 20 years ago. This

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personal home computer can store more data than 16,000 human ✓
brains can remember. It runs at the speed of light
(Brechner, 1983).

Predictions by futurists show that home computers are
going to change the way families work, play, learn, shop,
entertain, and communicate with one another. Cetron and
O'Toole (1982, pp. 212-213) wrote, "Whatever else it's done,
the awesome growth in computer power has spawned a worldwide
industry. . . (that) will have touched and changed the lives
of most of the people living when the century ends."

Video game playing systems (actually "dedicated"
small-memory computers) produced the first computer-based
change in the home in the the form of entertainment. These
"computers" offered interactive games, which revolutionized
home entertainment. Such names as "Pac-Man," "Space
Invaders," and "Centipede," became familiar words to
millions of American households.

More sophisticated microcomputers became the next type
of computer for family usage. They not only played many of
the same video games, but also offered a multiplicity of
functions from word processing to telecomputing with
main-frame and other microcomputers hundreds of miles away.
Acceptance of the personal computer into the home has been
slower than the dedicated game computer, but family
ownership of a personal computer is projected to increase at
exponential rates during the remainder of this century
(Ewing, 1983).

Statement of the Problem

In 1966, the staff of the <u>Wall Street Journal</u> compiled information and predictions for living and working in the year 2000. Their data reflected fewer than 1000 computers in the United States in 1956. They predicted 30,000 by 1967 and 220,000 by 1985. A more current estimate reveals that, by 1985, instead of 220,000 computers there will be 20 million Americans owning their own personal computer system (Quinones, 1982).

Through gifts, grants, and planning, school systems throughout the United States have been exposing children, from grade one through high school, to computers and computer programing. Some college and universities have even required entering freshmen to purchase a personal computer along with their textbooks. The perceived need for personal home computers is perhaps exemplified by a Commodore computer advertisement that warns parents, "instead of saving for your kid's education, maybe you should be spending for it" (Popular Computing, May, 1982).

The current technological explosion has immersed the modern family in a virtual "electronic environment" (Ellis, 1983) with certain attendant stress. However, while the children in the family have become more computer literate at school, the majority of the parents have remained unacquainted with the computer and stand in awe of this new technological equipment and the revolution it represents.

One possible way of diminishing this dissonance between children's and parents' knowledge and use of computers, and one that many of the computer manufacturers are hoping will occur, is the purchase of a personal computer for the home.

As more families purchase personal computers, there is a growing concern about the effects of the computer on the family system. Bell (1983, p. 1), professor of social sciences at Harvard University stated: "We are in the midst of a 'technological revolution'. . . some observers believe this new revolution could ultimately have the same impact on our world as the Industrial Revolution, affecting how we work, where we live and the quality of our lives."

Several researchers have compared the emergence of computer technology with another recent technology which has had a major impact on the family, that of television (Condry & Keith, 1983). Not only did television provide new opportunities for the family in the form of entertainment, current events, and education, but it also created problems with the changing emphasis on reading, decreased personal interactions, and a host of other documented changes on individuals, families, and society. Research in the general field of television has been widespread. A National Institute of Mental Health (NIMH) report on television and behavior (1982, p. 7) related that: "television seems to have brought about changes in society and its institutions." Comstock (1982, p. 335) reviewed research on the value placed on television by American families and claimed that

"television's presence in the American home has brought many
changes to family life. . . they include new patterns of
interaction, the alteration of activities, and vicarious
socialization."

It appears that values in the family are changed by the
introduction of many new technologies. Taviss (1969) raised
the issue that technology brings about problems and creates
or adds tensions and changes in value systems. Mesthene
(1970, p. 50) suggested that "technology has a direct impact
on values by virtue of bringing about changes in our
available options." Significantly, a new technology appears
to change the values in a family by making more value
options available in the family unit and making certain
values more attainable. For example, television has been
credited with changing many of the family values by
presenting previously unimagined options, especially to
minority family groups; thus, a state of relative
deprivation is perceived. Could this same situation exist
with the introduction of the personal computer into the
family system?

Need for Research

An exhaustive literature and computer database search
revealed a paucity of published research into the effect of
the personal computer on the individual and the family.
Information regarding the demographic characteristics of
computer owners was somewhat more available. Most common

were lay articles advising on the use and purchase of home computers.

Research into the effects of the computer on the family can be justified for several reasons, other than just filling a gap in the literature. Condry and Keith (1983) suggested that the introduction of the computer parallels that of television and will have a more profound effect on the family due to its open-ended and interactive capabilities. They stated that "some kind of research must be done immediately in order to understand the influence of a new device as it is being introduced" (pp. 93-94). Additional justifications for research include: 1) the exponential rate of acceptance and purchase of computers for home usage, 2) the exposure of children to computers outside the home, 3) the increasing demands for computer literacy in the market place, and 4) the fact that any technology produces change and change must be understood and monitored.

Purpose of the Study

The purpose of the present study was to examine the effect of technology on the family system by the introduction of a personal computer into the home. Addressed were these problems: 1) the time ratio of computer and non-computer related activities, 2) the changes in interpersonal relationships occurring in the family system with the introduction of the personal computer, and 3) the emphasis on particular values in families that own

computer systems.

Effects of the computer on the family were examined in eight propositions:

P1:   There is a negative relationship between the amount of time spent on the home computer and the amount of time spent on non-computer activities (except television).

P2:   There is a negative relationship between the time utilized on the home computer and the time utilized for viewing television.

P3:   There is a positive relationship between the concurrence of home computer ownership and cohesion of the family.

√   P4:   There is a negative relationship between the concurrence of home computer ownership and general conflict in the family.

P5:   There is a negative relationship between the amount of time spent on the home computer and the cohesion of the family.

√   P6:   There is a positive relationship between the amount of time spent on the home computer and general conflict in the family.

P7:   There is a positive relationship between the value of achievement in the family and the extent to which the computer is used for educational applications.

P8:   There is a positive relationship between the amount of time spent on the computer and the length of time of computer ownership.

The rationale of these propositions will be explained in more detail in Chapter II.

Overview of the Dissertation

The ideas presented in this introduction will be expanded and clarified in the following chapters. A synopsis of the following chapters will place this material

in the proper perspective.

Chapter II begins with a literature review on the computer's technological effects: changes in family relationships and changes in family values. Also included is a profile of home computer owners. Within these topics, the propositions are formulated and discussed. The last section of the chapter presents an overview of Exchange Theory in relationship to the propositions developed.

The methodology of this research study is presented in Chapter III. This chapter discusses the development of the questionnaire, administration of the pilot study, further refinement of the research tool, and selection of the sample. Also included in this chapter are the statistical procedures utilized in the analysis of the data and the limitations of the sampling technique.

Chapter IV presents the findings of this study. In the first section, frequency distributions present a socio-demographic profile of the computer owners. The second section presents statistics that test the propositions.

Chapter V, the final and summary chapter of this dissertation, presents the overall findings of the research project, their implications, as well as recommendations for research in this area.

CHAPTER II

REVIEW OF LITERATURE

The purpose of this chapter is to provide the rationale
for the assumptions and propositions being tested in the
study. The rationale is based on a review of the literature
dealing with the introduction of personal computers in the
family and the related area of the effects of television on
the family.

The first section of Chapter II explores the
consequences of the diffusion of technology across society
and will present the direct and indirect effects of the
introduction of computer technology in the home. A second
area of exploration reviews changes in family relationships
occurring with computer ownership. A review of research
that has been conducted on consumer appeal and a profile of
home computer users is presented in the final section.

Effects of Technology

Technology has made such inroads into family life that
it would be difficult to find an area that remains
unaffected. However, the relationship between the use of
technology and the direction in which the technology
develops is not simple. A pioneering work by Maccoby

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(1964), dealing with the effects of television on the family, has clarified this bidirectional relationship. She distinguished between two distinct types of effects: "indirect" effects and "direct" effects.

The Nature of Indirect and Direct Effects

A major effect of any new technology is the time displacement that the technology affords in the total pattern of an individual's activity. A question is asked of what is being given up for this new technology. Lepper (1982) reported that the indirect effects are not only the time usages that are displaced by the introduction of new technology, but also the resultant consequences of that time displacement. Finally, of course, the time displacement of other activities may not be completely due to the new technology itself, but varies according to the inherent properties of the technology, such as its consumer appeal and its specific content.

Maccoby (1964) was the first to point out that the direct effects of technology could be either immediate or long-range. Immediate factors include the emotional responses of individuals to the content of the technology and the resulting effects of these emotional reactions on the individuals. Long-range effects of technology relate to the learning of the content that is provided and the cognitive and personality changes that take place within the

learner who utilized the technology.

Television, the first technology to be widely investigated, has had numerous indirect and direct effects on the family (Pearl, Bouthilet, & Lazar, 1982). An investigation into these effects and how they might relate to the introduction of the personal computer into the home, may be instructive and helpful.

Indirect and Direct Effects
of Television

The largest indirect effect of television was the displacement of time formerly devoted to other activities such as attending social gatherings, listening to the radio, reading books and magazines, conversing with others, travelling related to leisure, attending movies, engaging in religious activities, and performing household tasks. Television viewing has so displaced other activities that it now ranks third, behind sleep and work, as a primary activity (Comstock, Chaffee, Katzman, McCombs, & Roberts, 1978).

Condry and Keith (1983), supporting Maccoby's earlier research, wrote that the most heavily researched direct effect (the emotional response to television) was related to the violence that was portrayed in disproportionate levels to that which occurred in real life. Another direct effect on the television viewer in the area of learning has been significant. Morgan and Gross (1982, p. 89) concluded in

their study that "adolescents who watch more television will score lower in achievement, particularly for reading, and that they will express lower ambitions for both schooling and career."

The effects of the home computer across society has been compared to the introduction of the television. Similar direct and indirect effects should exist for the personal computer. Each will be discussed in turn.

Indirect Effects of Computers

Because of the speed of the diffusion of television in society, it was not possible to study the indirect effects efficiently (Lepper, 1982). In response to this situation, Condry and Keith (1983) identified the necessity of research into the diffusion of the home computer.

Condry and Keith (1983, p. 90) also pointed out that, chronologically, "in regard to computers, the early consequences will be indirect, due to the availability of the hardware and the manner in which its use requires time." They warned, however, that the "displacement of time formerly spent on other activities may not be as evident as it was with television" (p. 95). In fact, they suggest that "computers may make more time available, rather than less" (p. 95). Thus, the issue of time displacement is not resolved at this time. Does the computer absorb time, much like the television or reading? Or does it create time by rapidly and efficiently completing tasks much like other

labor-saving devices? While it may be premature to identify a direction for this relationship, two factors suggest that the relationship may be negative. First, the computer may be used more for recreational purposes than for its time-saving attributes (such as word processing, homework, and other activities related to employment, housework and education). Second, it seems unlikely that the home computer will free up time so that the individual and families will have more time to spend together in the form of recreation. Other forms of labor-saving devices (washing machines, vacuum cleaners, microwave ovens) did not "save labor" in the long run, but only raised standards of cleanliness, food processing, etc. For these reasons, the first proposition is stated as a negative relationship.

> Proposition 1.   There is a negative relation-
> ship between the amount of time spent on the
> home computer and the amount of time spent on
> non-computer activities (except television).

Since television had a demonstrative effect on the time displacement factor for all forms of recreation, including free time outside of work and sleep, a second proposition was constructed to investigate the indirect effects of computer usage on television viewing.

> Proposition 2.   There is a negative relation-
> ship between the time utilized on the home com-
> puter and the time utilized for viewing tele-
> vision.

An underlying assumption for proposition two is that the activities of computer usage for recreation and time spent for viewing television are mutually exclusive. The

computer is a physically interactive technology for the
user, while the television is a more passive technology.
One works or plays on the computer or one views television,
but generally not both. A certain number of users may
attempt to use the computer and watch television at the same
time. If this is true, the proposition would not hold.

Direct Effects of Computers

Condry and Keith (1983) wrote that the direct effect of
computers would follow Maccoby's research to the extent that
the direct effects will be the result of the content of the
programs or software available to the home computer user.
These researchers suggest that the potential direct effects
of computers have to do with the content of available
software particularly in the two areas of education and
recreation. While Condry and Keith (1983) point out that
computers promote intrinsic learning, they offer no direct
effects of recreation time spent on the computer.

Maccoby (1964) pointed out that direct effects could be
either immediate or long-range. The long-range direct
effects would be noticeable after the saturation of the home
market with computers, an event that has yet to take place.
Emotional reactions of the individual while interacting with
the home computer would be an immediate direct effect and
could be reflected as fatigue, excitement, dreams, and other
processes that would have direct effects on an individual's
interpersonal relationships. The next section investigates

these immediate direct effect of home computer technology on the family.

Technology and Changes in Family
Relationships

New technology creates opportunities and problems for families. Mesthene (1970) stated that technology "has both positive and negative effects, and it usually has the two at the same time and in virtue of each other" (p. 26). A new technology, such as the introduction of home computers, can cause change in the family social organization by replacing previously existing social structures. An important aspect is that the new technology can bring about solutions to problems created by an earlier technology. A possible example would be the use of a personal computer for educational games, thereby increasing the verbal and mathematical abilities that have been decreased by the introduction of television.

Opportunities and Problems

Problems in family relationships created by the introduction of a new technology have not been an area of wide investigation. Rosenblatt and Cunningham (1976,) wrote of two ways that the technology of television could be related to problems in family relations. The first problem was that "television set operation would produce frustration and consequent tension" (p. 105). This problem generated

two hypotheses in their study: "the more time a television

set is on in a dwelling the more tension in family

relationship there may be" and "this relationship would be

especially strong in households with a high population

density" (p.105).

The second problem discussed by Rosenblatt and

Cunningham (1976) dealt with how the television was used as

a "coping mechanism or means of escape from preexistent

family problems" (p. 105). The resultant propositions of

Rosenblatt and Cunningham included: "high levels of

television watching will co-occur with high level of family

tension" and the "relationship between television watching

and family tensions would be stronger in a high population

density" (pp. 105-106). Their findings revealed an indirect

relationship between the amount of time spent viewing

television and the amount of family tension, thus supporting

similar, earlier findings by Maccoby (1964).

The problems and frustrations with computer usage may

be similar to those presented by television. The first

problem cited by Rosenblatt and Cunningham (1976) was that

television operation, itself, creates frustration and

tension. Sources of family frustration from television

viewing included noise, distraction, discrepant preferences

for program choice, sound volume, viewing schedule, etc.

The home computer, while having some of the same

characteristics of television, is a more interactive

technology and one that lends itself to usage by only one

individual at a time, unless recreational or educational multiplayer games are being pursued. However, conflict of amount of usage, type of usage, expenditures for hardware and software, etc., are still possible. It seems reasonable to expect that a concurrence in computer usage (including a multiplicity of factors, such as the decision-making process of purchasing the computer and computer software and when the computer will be used) will be positively related to family conflict and negatively related to family cohesion. In fact, the microcomputer may serve as a cohesive bond whereby family members are concerned about each other and are helpful and supportive in their relationships. Two propositions can be stated:

Proposition 3. There is a positive relationship between the concurrence of home computer owner-ship and cohesion of the family.

Proposition 4. There is a negative relationship between the concurrence of home computer owner-ship and general conflict in the family.

The second problem cited by Rosenblatt and Cunningham (1976) (television as an escape from family tension) appears to also be a characteristic of microcomputers. The interactive status of the home computer with an individual family member may serve as an escape mechanism to the total exclusion of other family members. This may increase family tension, especially if the computer is used primarily as a means of avoiding tense family interactions.

Other writers also pointed to the computer as an obstacle in human interaction. Evans (1979,) wrote that the

amateur home-computer programer, being involved in a singular activity, has many of the same characteristics of a professional programer. "Programers tend to be introverted people, high achievers, prone to anxiety, and of course, quite obsessive" (p. 136). This makes other relationships difficult because they find it easier to relate to computers than to their families, and thus avoid intimacy.

Rossman (1983) noted the difficulties in relationships and wrote that the "strains and obstacles their computer creates in relationships are an unavoidable part of the human price we are paying for the power we are beginning to grasp through our cybernetic extension" (p. 138).

Brod (1984) identified over-involved computer users as "technocentered persons." For Brod, such persons are creations of technology who have overadapted to emulate the values of the computers they use.

Toffler (1980) theorized about the "electronic cottage" where the work force returns to the home and commutes to work via telecommunications technology. He predicted that one-fifth of the American labor force will be in the electronic cottage in the next ten to twenty years and will create an "electronic expanded family" that will have social consequences as drastic as those created by the Industrial Revolution.

The consensus of opinion, then, is that the heavy computer user not only escapes family tension, but may also become increasingly ineffective at interpersonal interaction

and be unable to achieve family cohesion. The electronic cottage, which forces family members into close proximity all of the time, may be a source of conflict and exhibit a lack of cohesion among family members. Resulting strains of family members focus on the needs for individuals to be away from other members, a feeling of intrusion by the computer, and an awareness that work is always present (Schwarz, 1984). One family commented that "it is like someone is there watching over us" (Schwarz, 1984, p. 35).

Of course, the electronic cottage can also result in opportunities for strengthening the family. Evans (1979) identified three such beneficial factors:

> One is the tremendous range of interactive games, some of immense sophistication and power, which will be available on home computers and will offer intellectual stim-ulation of a kind not found in the external world. The second is the shift in education from public, group teaching in schools to home tuition, most of which will undoubtedly be computer-based. A third important factor will be that the 1980's, and possibly the 1990's will be periods of social turbulence, discouraging aimless travel and making the home an even more attractive environment (pp. 259-260).

Evans' optimistic outlook may fall into the realm of long-term effects. In the short-term, it appears as if:

> Proposition 5. There is a negative relationship between the amount of time spent on the home computer and the cohesion of the family.
>
> Proposition 6. There is a positive relationship between the amount of time spent on the home computer and general conflict in the family.

The direct effects of the amount of conflict and cohesion present in the family are not the only direct effects that are measurable. Another direct effect is a change in values. The introduction of any new technology can bring about changes in options for the family, and has a conceivable bearing on values currently held by the family. Mesthene (1970) states:

> Technology appears to lead to value change either by bringing some previously unattainable goal within the real of choice, or by making some values easier to implement than in the past, that is by changing the costs associated with realizing them (p. 50).

American families, according to Williams (1967), have been shown to have a cluster of value-beliefs. High on this list is activity and work, achievement and success, efficiency and practicality, science and secular rationality, material comfort, and progress. Many of these values relate directly to the advantages of using computer technology.

Currently, the value of using computer technology in the home is apparently tied to the two issues of cost and need for the computer. Naturally, the cost of the computer will determine which system the family will purchase (Quinones, 1982).

The second, and more important, issue is if a need really exists for a computer in the home at all. Computers are marketed as being essential tools and families often purchase computers for uses that can be readily filled by a calculator or typewriter. Rather than basing a

determination of "need" on the computer as a tool, the essential variables seem to be the value placed on education and achievement in the home. Indeed, the value of home computers seems to be linked closely to William's (1967) value-beliefs, with achievement and education being a common factor. This idea suggests the next proposition.

> Proposition 7. There is a positive relationship between the value of achievement in the family and the extent to which the home computer is used for educational applications.

The assumption for this proposition is that achievement in the family is tied to education, and that the computer will be used more specifically for educational purposes than for recreational game time.

Ownership and Use

One study has compared current home computer owners to "pioneer buyers" of other technology such as automobiles and televisions when they were first introduced. Home computer owners were characterized as "unusually adventurous, aggressive and goal-oriented" (Mace, 1983, p. 144). These pioneer buyers were reported as being challenged by computer ownership and spent about four months of educating themselves before purchasing a home computer.

Dickerson (1982), in her research on characteristics of personal computer owners, found that early adopters of computers had higher levels of income, education, and "tended to be information seekers, consider themselves self-designated opinion leaders, be confident, financially

satisfied, be a homebody, a homeowner and be married" (p. 86).

Additional research showed that families with annual incomes of more than $25,000 accounted for 90 percent of the 621,000 household investing in personal computer system during 1983. However, prices are coming down, and the microcomputer will cease to be a tool for the more affluent in our society. It is predicted that by 1990 there will be millions of computers in homes purchased largely from money set aside for recreation (Blundell, 1983, p. 171).

A market survey by Link Resources (Zientara, 1983, p. 39) addressed the values of computer ownership. Their research determined that the longer a person owned their personal computer and the more they paid for it, the more the person used their computer. The assumption is that the expense of computer ownership will result in individuals finding initial uses for the computer to decrease their cognitive dissonance over the purchase. The initial utilization of the computer will then increase over time. In other words, use begets use.

> Proposition 8. There is a positive relationship between the amount of time spent on the computer and the length of time of computer ownership.

Theoretical Background

Wallace (1969) advises that one should be oriented toward a particular current theory when asking questions about social phenomena. Consideration was given to the

various theories now current in family studies and a conclusion was drawn that choice and exchange theory would be the most logical perspective to approach this project (Nye 1979).

Choice and exchange theory is a conceptual framework that has a background in sociology, economics, and anthropology. From this background, a conceptual framework was developed in the 1950's that has two divergent categories of interest. Nye (1979) wrote that the two emergent areas are those dealing "with exchanges in face-to-face interaction in voluntary groups and those involving large groups, institutions, and/or individuals in normatively defined relationships" (p. 1). The element of choice was added by Heath (1976) and advocated more recently by Nye (1979). Choice and exchange theory has evolved from a strictly exchange theory point of view because, according to Nye (1979) "exchanges probably always involve choices, but choices may not necessarily involve exchanges" (p. 4). Heath (1976) had further expanded on this notion of exchange theorists writings and wrote that "all of them can be applied, to a greater or lesser extent, to the study of social exchange, but that is all that really holds them together" (p. 176).

A major feature of choice and exchange theory is the analysis of social relationships in terms of costs and rewards. This is particularly appropriate for dealing with the interpersonal levels of research concerning social

reality (Johnson, 1981). Nye (1979) states: "One makes an infinite number of choices so as to reduce his costs, maximize his rewards for the most profits (or least losses)" (p. 4). He puts this in a different perspective by noting that "humans avoid costly behavior and seek rewarding statuses, relationships, interaction, and feeling states to the end that their profits are maximized" (p. 3).

Concepts and Assumptions of Choice and Exchange Theory

Three major concepts pertinent to choice and exchange theory have suggested in the writings of Nye (1979) and Thibaut and Kelley (1959):

1. Rewards - which are described as the pleasures, satisfactions, and gratifications a person enjoys.

2. Costs - a status, relationship, interaction, milieu, or feeling not liked by an individual.

3. Profit - a relationship that provides the best outcome in relationship of costs to rewards (to obtain the best outcome).

Choice and exchange theory has several basic assumptions. Nye (1979) drew together the assumptions of choice and exchange theorists such as Thibaut and Kelley (1959), Homans (1974), Blau (1969), Simpson (1972) and Heath (1976) and presented the following assumptions of a partial theory:

1. Humans are rational beings. Within the limitations of the information that they possess and their ability to predict

the future, they make the choices that will bring the most profits.

2. Human beings are actors as well as re-actors. They make decisions and initiate action rather than having them predetermined by their culture/milieu.

3. People must undergo costs in order to obtain rewards. All behavior is costly in that it requires expenditure of energy and preempts time that might otherwise produce other rewards.

4. Social behavior will not be repeated unless it has been rewarded in the past, except that if no alternative promises positive reinforcement it will be repeated if it can be expected to produce the least costs.

5. If no profitable alternative is perceived as available, the one promising the least unprofitable will be chosen. In some situations people do not wish to choose _any_ alternative available to them but, if they must choose among primarily costly alternatives, they will choose the one in which they anticipate the smallest loss.

6. Those who receive what they feel they deserve feel satisfied, those who receive less feel anger, and those who receive more experience guilt.

7. Social life requires reciprocity.

8. It is rewarding to inflict costs on someone who is perceived has having deliberately hurt oneself.

9. The costs of receiving punishment usually are greater than the rewards of inflicting it.

10. Individuals vary in the value they place on specific objects, experiences, relationships, and positions. Within a given society, most individuals will agree whether something is a reward or cost but may assign it to different places in their hierarchy of values.

11. The more of something one has, the less
    additional units of it are worth (p. 7).

Linking of Current Research and Choice
and Exchange Theory

The heightened prominence of the personal home computer in the American family faces us with the interrelated tasks of profiting from its opportunities and minimizing the costs to our interpersonal and intrapersonal relationships. In deciding whether to utilize a new technology, the individual must decide what benefits they can derive from it and what are the costs. The individual must decide, too, if there are benefits and costs of the new technology (home computer) that will extend beyond his/her decision to their family.

It is thought that choice and exchange theory can help explain the processes that take place with the introduction of the new technology of a home computer in the family. This will then provide the basis for a better understanding of the relationships between individuals, families, and their technological environment.

CHAPTER III

METHODOLOGY

This chapter outlines the procedures utilized in the
current project. Issues are briefly discussed followed by
instrumentation discussions. The chapter closes with a
discussion of statistical and analytical procedures.

Survey Research

The specific survey research design employed a mail
questionnaire consistent with the "Total Design Method," a
unique data gathering technique intended to insure high
returns of the questionnaire (Dillman 1978). Low return
rates on mail surveys have been a serious defect of this
type of research. Schuman and Presser (1981) wrote that:
"For most surveys, the failure to interview all members of
the target sample constitutes a potentially serious bias,
since the goal is to generalize to the total population
sampled" (p. 331).

Survey research is used for descriptive, explanatory,
and exploratory purposes. It is probably the best method
available for purposes of describing a population that is
too large to observe directly. Babbie (1975) wrote that:
"Ultimately, self-mailing questionnaires have many

advantages in terms of ease, economy, and response rate, but they should be planned and pretested with care" (p. 261).

Survey research has numerous weaknesses, even in view of Dillman's research. Babbie (1975) pointed out that question design, superficial coverage of complex topics, inability to develop a feeling for the whole situation of the respondents, and the number of total respondents returned are but a few of the difficulties incurred in survey research. Kerlinger (1973) stated that survey research has the disadvantages of "not going very deeply below the surface. . . the survey seems best adapted to extensive rather than intensive research" (p. 422). He further pointed out that surveys are demanding of time and money and can "temporarily lift the respondent out of his own social context, which may make the results of the survey invalid" (p. 423).

Issac and Michael (1981) list the following limitations to survey research:

1. Surveys only tap respondents who are accessible and cooperative.

2. Surveys often make the respondent feel special or unnatural and thus produce responses that are artificial or slanted.

3. Surveys arouse "response sets" such as an acquiescence or a proneness to agree with positive statements or questions.

4. Surveys are vulnerable to over-rater or under-rater bias--the tendency for some respondents to give consistently high or low ratings (p. 128).

In particular, the disadvantages of mailed

questionnaires are: "a) Low response rate can occur, especially with less educated and older addresses inviting a nonrepresentative return, b) no assurance the questions were understood, c) no assurance addressee actually was the one who answered" (Isaac & Michael, 1981, p. 130).

Labovitz and Hagedorn (1981) wrote on a different perspective concerning the limitations of survey research:

> Surveys, as compared with experiments, are often characterized by a high degree of representativeness but a low degree of control over extraneous factors. Surveys usually employ a random sampling technique, which yields some confidence of representativeness within specified limits. Because surveys do not have experimental and control groups, however, other factors besides the independent variables may have produced the changes in the dependent variable. Consequently, surveys are low on control over extraneous factors but possess the advantage of being high on representativeness (p.55).

Instrumentation

The Initial Instrument

The initial instrument was a 12 page questionnaire that was divided into three sections. The first section contained questions related to computer ownership including type of computer, length of time of ownership, and hours spent on the computer. The respondents were asked to fill in the hours spent per week on computer and non-computer activities for themselves and their children (if applicable). Additional data were gathered regarding computer time and television viewing. The final questions of this section involved the decision making process of

purchasing the computer and when and how the computer was used in the home.

The second section of the instrument was a six-point Likert-type scale of questions designed to assess attitudes concerning activities surrounding the computer, utilization of the computer, displacement of non-computer activities, and emotional responses to the computer and family members. The questions were constructed to obtain answers from the respondent so as not to bias the scale number order. A rating of "1" was the highest positive expression, "strongly agree;" a rating of "5" was the highest negative expression, "strongly disagree." The number "6" rating was "not applicable" for those questions that did not pertain to the respondent, while a rating of "3" was "neutral or neither."

The third section contained 6 of the 10 Moos Family Environment Scales (FES) (Moos, 1981) that were appropriate to the propositions of this study. The FES is one of 9 "Social Climate Scales" developed by Moos in the Social Ecology Laboratory at Stanford (Moos, 1981). The Moos FES is a widely accepted and utilized instrument that contains 90 items that measure 10 dimensions on three categories of family environments. The 6 dimensions that were appropriate to the propositions being studied were: cohesiveness, conflict, independence, achievement orientation, active recreational orientation, organization, and control. Moos (1981) described the subscales as follows:

> Cohesion - the degree of commitment, help, and support family members provide for one another.

Conflict - the amount of openly expressed anger, aggression, and conflict among family members.

Achievement Orientation - the extent to which activities (such as school and work) are cast into an achievement-oriented or competitive framework.

Active-Recreational Orientation - the extent of participation in social and recreation activities.

Organization - the degree of importance of clear organization and structure in planning family activities and responsibilities.

Control - the extent to which set rules and procedures are used to run family life (p. 2).

Internal consistencies, test-retest reliability, stability, and validity for the FES are all within an acceptable range. The normative data was sampled from normal and distressed families (Moos, 1981).

The final section of the instrument measured socio-demographics of the sample. The respondents were asked to furnish appropriate information in the areas of age, annual income, age of children living in the home, education attainment, marital status, and occupation. In addition, questions were asked related to the room where the computer was located and the size of the respondent's home.

The Pilot Study and Revised Instrument

A pilot study of the instrument was conducted utilizing computer owners from faculty members at Oklahoma State University and the University of Tulsa. These families were asked to complete the questionnaire and respond to it with

constructive criticism. The majority of the respondents held graduate degrees and were knowledgeable in research methods. A variety of incomes, ages, and professions were represented in the pilot study.

Patterns of responses and differences were noted. In addition, the suggestions of the respondents relating to wording, division of questions, and construction errors were analyzed. The final instrument reflected these corrections while still adhering to the Dillman design method. The instrument was condensed from a 12 page to an 8 page questionnaire, which gave a response time of answering the questionnaire of less than ten minutes.

Data Collection Procedure

Dillman (1978) gives a step-by-step prescription to follow in implementing his "Total Design Method" (TDM) of mail surveys. His methodology follows Choice and exchange theory and encourages higher response rates by increasing the rewards of a respondent by minimizing the costs. He suggests the following schema:

1. Reward the respondent by:

   showing positive regard
   giving verbal appreciation
   using a consulting approach
   supporting his or her values
   offering tangible rewards
   making the questionnaire interesting

2. Reduce costs to the respondent by:

   making the task appear brief
   reducing the physical and mental effort
      that is required

        eliminating chances for embarrassment
        eliminating any implication of subord-
           ination
        eliminating any direct monetary cost

3. Establish trust by:

        providing a token of appreciation in
           advance
        identifying with a known organization
           that has legitimacy
        building on other exchange relation-
           ships (p. 18).

Dillman's design was executed for this project in a modified structure. The modification was in the number of mailings asking respondents to return the questionnaire. Only one follow-up letter was mailed, one week after the original questionnaire was sent, to all of the sample population. There were no additional requests by certified or registered mail. See Appendix A for correspondence materials.

The questionnaire (Appendix B) was reproduced on two sheets of folded, 8 1/2 by 11 inch paper which allowed for eight pages. The questionnaire was brief using Dillman's construction methods to facilitate an easy response. This involved utilizing arrows and other directives to aid the respondent in answering the questions.

The cover letter rewarded the respondent as being important in the study and offered to send the results of the study to the respondent if they were requested. To maximize the legitimacy of the study, the cover letter was individually typed and signed by the project director on Oklahoma State letterhead stationery. The cover letter,

along with 2 questionnaires, was sent by first class mail to all 386 addresses in the survey population. A prepaid postage business reply envelope was include for return of the questionnaires to the Central Mailing Service at Oklahoma State University. A second letter was mailed one week later. This follow-up reminder stressed the importance of the family and offered the telephone number of the project director to call collect in the event the questionnaire had been misplaced or never received.

There were a total of 4 collect calls received by the project director. Three were in response to misplacing or never receiving the questionnaires and 1 was asking that the results of the survey be sent to them.

Sampling Procedure

The final sampling frame was purchased from a commercial vendor that supplied 2000 names and addresses of Apple Computer owners throughout the United States. The names and addresses had been randomly selected from a subscription list of a magazine made available, free, to all registered Apple Computer owners.

A "non-biased group" (Kerlinger, 1973) was used for selection of the population sample. Utilizing a non-biased group, for this study, involved mailing the research instrument only to Apple Computer owners. This sampling method, whereby only a certain computer owner was utilized, allowed standardization of the computer type used in the

home. The rationale for limiting the subjects for this
procedure to a given computer was to avoid differences
arising from the varying costs and capabilities of the many
home computers currently available on the market. These
computers now available range from those that are primarily
designed for games to those that are dedicated to a
particular function, such as word processing. The Apple
computer owner was selected because of the popularity of
this computer, the wide range of software and programs that
are available for a multiplicity of applications, and the
length of time that the Apple Computer has been
manufactured.

A random number generator program was written to select
450 numbers from the mailing list provided by the commercial
vendor. The randomly selected mailing labels were placed on
index cards that had been numbered 1 through 450. The names
and addresses that were deemed to be business locations were
discarded and replaced by continuation of selection from the
random list until the numbers were exhausted. This left a
final sample population of 386 addresses.

A master list was generated and sorted by zip code.
Each member of the sampling population was then assigned an
identification code number for future reference in return of
the instruments. The identification code number was to
insure anonymity of the respondent and to act as a control
for checking off participants in the study as the
instruments were returned.

Response Rate

The response rate to the initial mailing of the survey was not within the expected range as predicted by Dillman (1978). The second follow-up mailing did not make an appreciable improvement in the return of the questionnaires. See Table I for the survey results.

A third follow-up letter is suggested by Dillman, but this was not allowable within the budget containment of the study. An interpretation of the low response rate would be conjecture.

Analysis of the Data

The analysis of the quantitative data was to establish if the correlations between the variables in the propositions existed and to establish a pool of data that would be useful for further research. This exploratory study utilized various statistical procedures for showing direction of the variables of families that own computers, but offers no causal analysis from this descriptive data. The propositions in this study are to identify covariation between the variables and do not offer any assertions of causality.

Data obtained from the questionnaires was coded and entered into files on 5 1/4" diskettes for transmission from a personal computer to the computer center at Oklahoma State University. The analysis was performed utilizing the

TABLE I

QUESTIONNAIRE RESPONSE RATE

Variable	Computer Households	Actual Questionnaires
Original sample size	386	772 (a)
Number of question-naires mailed	386	772
Questionnaires re-turned as address incorrect	26	52
Number of question-naires completed	100	128 (a)
Number of invalid questionnaires	--	10
Number of valid questionnaires for the study.	--	118

(a) These figures can only be approximate as some of the households contain only single residents.

Statistical Package for the Social Sciences, Version X
(SPSSX, 1983), computing frequency distributions and Pearson
Product-Moment correlations.

Frequency Distributions

A frequency distribution was computed on all variables
in the study. This type of statistics is utilized primarily
for descriptive purposes, but can be used for testing
whether two distributions are similar, comparing observed
distributions to theoretical distributions and testing of
hypotheses (Kerlinger, 1973).

The purposes of the frequency distributions in this
study were to describe the variables of this sample and
compare the occurrence of various data to other studies in
order to verify that the current sample was normative in its
distributions.

Pearson Product-Moment Correlation

The Pearson r has been suggested as the most common
correlational technique by Linton and Gallo (1975) and is
the proper test to "establish whether or not a relationship
exists in the population" (p. 342). To determine the
direction and strength of the relationship the Pearson r has
a numerical range from -1.00 to +1.00. The relationship
that is described for a coefficient of +1.00 is positive in
direction and "perfect" (i.e., all high scores are related)
while the relationship for a -1.00 is negative in direction

and "perfect" (i.e., all high scores are related to low scores). A score of 0.00 is indicative of no relationship at all. The strength of a correlation is measured by how close the absolute value is to +1.00 or -1.00.

Correlational coefficients "express the extent to which the pairs of sets of ordered pairs vary concomitantly. In effect, they tell the researcher the magnitude and (usually) the direction of the relation" (Kerlinger, 1973, p. 145). While there is a close relationship between prediction and correlation, Labovitz and Hagedorn (1981) state: "We must remember a crucial fact. <u>Correlation is not causation.</u> Causal interpretations require much more than the finding of a correlation between variables" (pp. 105-106).

The Pearson r assumes that interval or ratio data is being utilized for the correlation. In this study, some of the data gathered and computed in the correlational studies is rank-ordered data which violates a principal for the computation. However, Babbie (1975) suggests the following:

> A quick review of social scientific literature
> will yield countless examples of statistical
> measures applied to data that do not meet the
> logical requirements of the measures. The
> computation of Pearson's r for ordinal data
> is perhaps the most typical example. One's
> response to this practice seems largely a
> matter of personal taste. It is my personal
> orientation to accept, and even to encourage,
> the use of whatever statistical techniques
> help the researcher (and the reader) to
> understand the body of data under analysis.
> If the computation of r from ordinal data
> serves this purpose, then it should be
> encouraged. However, I strongly object to
> the practice of making statistical inferences
> on the basis of such computations (p. 422).

The purpose of the use of correlational statistics in this study then, was to understand the body of data and offer interpretation of association and not inference. Only the direction was suggested and no causality offered.

CHAPTER IV

FINDINGS

This study investigated the effects of introduction of
a new technology, in the form of a home computer, on the
family. This chapter begins with a descriptive study of the
subjects and then presents socio-demographic data. Data is
analyzed regarding the families utilization of time spent on
the home computer and non-computer activities, including the
decision making process of who decided to purchase the
computer and when it is used.

The questions regarding the emotional responses
surrounding the computer will be analyzed and discussed.
Selected subscales of the Moos FES will be interpreted and
investigated in relationship to other data. The final
section is devoted to the relationships between the
variables in the propositions presented in Chapter II and
the testing of the hypotheses.

Description of the Subjects

A description of the 118 respondents to the
questionnaires in the study is presented in Table II. The
respondents were Apple Computer owners who lived throughout
the continental United States. Over two-thirds (67.8%) of

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TABLE II

DESCRIPTION OF THE RESPONDENTS

Variable	Number	Percent
Sex:		
Male	80	67.8
Female	38	32.2
Age:		
Under 25	10	8.5
25-30 years	9	7.6
31-35 years	27	22.9
36-40 years	27	22.9
41-45 years	24	20.3
46-50 years	8	6.8
51-55 years	5	4.2
56-60 years	7	5.9
61-65 years	1	.8
66-70 years	1	.8
71-75 years	1	.8
Income:		
$10,000 to $14,999	2	1.8
$15,000 to $19,999	4	3.7
$20,000 to $24,999	6	5.5
$25,000 to $29,999	9	8.3
$30,000 to $34,999	15	13.8
$35,000 to $39,999	10	9.2
$40,000 to $49,999	19	17.4
$50,000 to $59,999	12	11.0
$60,000 and higher	32	29.4
Education:		
Some High School	1	0.9
Graduated High School	3	2.6
Some College	27	23.7
Graduated College	43	37.7
Masters Degree	24	21.1
Doctoral Degree	16	14.0

TABLE II (Continued)

Variable	Number	Percent
Occupation:		
Housewife	7	6.3
Education	25	22.3
Engineering	10	8.9
Data Processing	22	19.7
Skilled Worker	2	1.8
Professionals	9	8.0
Business	26	23.2
Student	8	7.2
Self-employed	3	2.7
Marital Status:		
Never Married	29	25.7
Married	79	69.9
Remarried	3	2.7
Divorced or Widowed	2	1.8

the respondents were male. Almost half (45.8%) were in the age range of 31 to 40 years of age. The average age of the respondent was 38.9 years of age, with males having an average of 39.3 years and females 38.0 years. A total of 73.6% of the respondents were married (80.6% female and 69.2% male).

The demographic profile revealed that the respondents were not typical of the general population. The income level was high; almost one-third (29.4%) stated a family income of $60,000 and higher. Education of the respondents was high, too, with almost three-fourths (72.8%) graduating from college or having a graduate degree. Over two-thirds (69.9%) of the sample were married. Questions dealing with occupation of the computer owners revealed almost one-half were either in business (23.2%) or education (22.3%).

The most popular location for the computer was in the den/family room (34.2%), followed by the bedroom (14.5%) and library-study (13.6%). Only one respondent said the computer was located in the "computer room."

Time Usage Patterns

The average user had owned his/her computer slightly over three years (Table III) and utilized its capabilities approximately 10 hours per week (Table IV). However, the range of computer usage varied from 0 to 50+ hours per week. The computer was primarily used by the respondent for word processing, business at home, programing, and then

TABLE III

LENGTH OF COMPUTER OWNERSHIP IN MONTHS

Variable	Number	Percent
1 to 5	1	.9
6 to 12	10	8.8
13 to 24	15	13.3
25 to 36	27	23.9
37 to 48	24	21.2
49 to 60	18	15.9
61 or over	18	15.9

TABLE IV

HOURS PER WEEK SPENT ON THE COMPUTER

Variable	Number	Percent
0	15	12.7
2	15	12.7
4	14	11.9
6	16	13.6
8	9	7.6
10	11	9.3
15	14	11.9
20	12	10.2
25	7	5.9
30	2	1.7
50 or over	3	2.5

recreation. Other computer activities such as
telecomputing, education, running the home, and volunteer
work accounted for a small part of the time spent on the
computer. The use of the computer for farming activities
was mentioned by only one respondent.

The respondents seem to be participating in all phases
of computer and non-computer activities. The average
respondent spent 5.6 hours per week on non-sporting
recreation outside the home and 4.0 hours per week on
sports. Reading (books and magazines) accounted for 7.9
hours per week.

Since the introduction of computers has been compared
to the introduction of television (see Chapter II), several
questions are related to television usage. The average
number of hours of television viewing for the sample was
10.3 hours per week. This television consumption was double
the 1970 figures of 5.6 hours per week in homes that had a
similar educational background (Comstock et al, 1978). The
information reported in this study reveals that television
viewing was still the primary activity (outside of sleep and
work) of these computer study respondents.

Patterns of Usage by Gender

Studies concerning technology usage have shown that
males tend to be the primary innovators. The present study
confirms this observation. Males averaged more than twice
as much usage of the computer than females (12.4 hours per

week for males compared to 5.6 hours per week for females).

Activities on the computer (see Table V) tended to be different for males and females as measured by: a) percent involved in the activity and b) number of hours spent in the activity. For example, males utilized the computer more for programing than did females (70.0% compared to 21.1%). However, considering only those respondents who indicated that they used their computer for programing, females averaged 5.6 hours per week compared to an average of 4.4 hours per week for males. Word processing, another popular activity, was engaged in by 66.2% of the males and 36.8% of the females. Again, considering only those who actually used the computer for word processing, females spent 2.0 hours per week in comparison to 1.7 hours per week spent by males. Business in the home was another source of usage for the computer, more males using the computer for this purpose (53.7%) than females (15.8%). Males who used the computer for business at home averaged 5.0 hours per week, while females averaged 4.7 hours per week. Telecomputing showed a larger contrast, with more males (32.5%), using the modem connection for somewhat more than 1.8 hours per week, than females (2.6%), who averaged 1.0 hours per week.

Differences in recreational usage of the computer were also noted. Recreational games on the computer were played by 50.0% of the males compared to 31.6% of the females. Males played an average of 3.1 hours per week. Females played computer games an average of 2.2 hours per week.

TABLE V

HOURS PER WEEK SPENT IN COMPUTER RELATED ACTIVITIES

Variable	Males		Females	
	Number	Percent	Number	Percent
Programming:				
0	24	30.0	30	78.9
1	16	20.0	1	2.6
2	17	21.3	4	10.5
3	2	2.5	2	5.3
4	5	6.3		
5	7	8.8		
6	2	2.5		
7	2	2.5		
8	1	1.3		
9	1	1.3		
20	1	1.3		
25	1	1.3		
50	1	1.3	1	2.6
Graphics or Drawing:				
0	62	77.5	36	94.7
1	6	7.5	1	2.6
2	6	7.5	1	2.6
3	2	2.5		
5	1	1.3		
7	1	1.3		
10	1	1.3		
20	1	1.3		
Wordprocessing:				
0	27	33.8	24	63.2
1	32	40.0	5	13.2
2	12	15.0	3	7.9
3	3	3.8	3	7.9
4	2	2.5	1	2.6
5	3	3.8	2	5.3
6	1	1.3		

TABLE V (Continued)

Variable	Males Number	Percent	Females Number	Percent
Business at Home:				
0	37	46.3	32	84.2
1	6	7.5	2	5.3
2	11	13.7	1	2.6
3	5	6.3	1	2.6
4	2	2.5		
5				
6	3	3.8	1	2.6
7	2	2.5		
8	2	2.5		
9	2	2.5		
10 to 14	7	8.8		
15 to 19	3	3.8	1	2.6
Recreational Games:				
0	40	50.0	26	68.4
1	16	20.0	6	15.8
2	7	8.8	4	10.5
3	9	11.3		
4	1	1.3		
5	3	3.8	1	2.6
10	3	3.8		
20			1	2.6
40	1	1.3		
Educational Games:				
0	73	91.3	36	94.7
1	5	6.3	1	2.6
2			1	2.6
3	1	1.3		
10	1	1.3		

TABLE V (Continued)

Variable	Males Number	Percent	Females Number	Percent
Telecomputing:				
0	54	67.5	37	97.4
1	13	16.2	1	2.6
2	7	8.8		
3	1	1.3		
4	1	1.3		
5	2	2.5		
6	1	1.3		
8	1	1.3		
Running Home:				
0	61	76.2	31	81.6
1	9	11.2	5	13.2
2	6	7.5	2	5.3
3	3	3.8		
4	1	1.3		
Farming:				
0	80	100.0	37	97.4
1			1	2.6
Volunteer Work:				
0	61	76.3	32	84.2
1	8	10.0	2	5.3
2	4	5.0	2	5.3
3	1	1.3	1	2.6
4	1	1.3		
5	2	2.5	1	2.6
8	1	1.3		
10	2	2.5		

Using the computers to run the home or farm appeared to be infrequent utilizations of microcomputers. Among the sample of respondents, 18.4% of the females reported using the computer for running home activities and averaging 1.3 hours per week. A larger number of males reported using the computer to run the home (23.8%), with an average of 1.8 hours per week reported. Only one respondent, a female, reported utilizing the computer for farming applications. Volunteer work done utilizing the computer was reported by 15.8% of the females and 23.7% of the males. Of those that used their computer for volunteer work, females sM pent an average of 2.3 hours per week and males spent 3.2 hours per week.

Non-computer related activities were also examined. Television (see Table VI) remained the most popular activity with 94.7% of the females watching television an average of 11.9 hours per week. Males (91.2%) reported an average viewing time of 9.5 hours per week. Reading was reported in the same amount as was television viewing. Females (94.7%) responded they read 7.6 hours per week and males (93.7%) read an average of 8.0 hours per week. Recreation outside the home was high. Females (86.8%) participated in some form of recreation on an average of 4.5 hours per week, while males (81.2%) participated at a somewhat higher rate of 6.1 hours per week. Sports were participated in by 57.9% of the females with an average time of 3.7 hours per week. Males (71.2%) were involved in sports 4.1 hours per week.

TABLE VI

HOURS PER WEEK SPENT IN NON-COMPUTER RELATED ACTIVITIES

Variable	Males Number	Percent	Females Number	Percent
Viewing Television:				
0	7	8.8	2	5.3
1	3	3.8	2	5.3
2	4	5.0	3	7.9
3	3	3.8	4	10.5
4	1	1.3	1	2.6
5	11	13.8	3	7.9
6	10	12.5	2	5.3
7				
8	10	12.5	3	7.9
9				
10	10	12.5	4	10.5
11 - 15	9	11.3	5	13.2
16 - 20	9	11.3	5	13.2
21 - 25	1	1.3	1	2.6
26 - 30			2	5.3
31 - 35	2	2.5		
60 or over			1	2.6
Recreation Outside the Home:				
0	15	18.8	5	3.2
1	6	7.5	6	15.8
2	8	10.0	5	13.2
3	7	8.8	7	18.4
4	9	11.3	3	7.9
5	11	13.8	3	7.9
6	4	5.0	4	10.5
7	1	1.3		
8	6	7.5	1	2.6
9				
10	6	7.5	2	5.3
11 - 15	2	2.5	1	2.6
16 - 20	4	5.0	1	2.6
50 or more	1	1.3		

TABLE VI (Continued)

Variable	Males Number	Percent	Females Number	Percent
Sports:				
0	23	28.8	16	42.1
1	8	10.0	4	10.5
2	12	15.0	5	13.2
3	6	7.5		
4	9	11.3	1	3.2
5	5	6.3	3	7.9
6	5	6.3	2	5.3
7			2	5.3
8	5	6.3	2	5.3
9				
10	4	5.0	2	5.3
11 - 15	2	2.5	1	2.6
16 - 20	1	1.3	1	2.6
Reading:				
0	5	6.3	2	5.3
1	5	6.3	1	2.6
2	7	8.8	2	5.3
3	7	8.8	4	10.5
4	10	12.5	2	5.3
5	6	7.5	7	18.4
6	5	6.3	4	10.5
7			2	5.3
8	7	8.8	3	7.9
9				
10	16	20.0	3	7.9
11 - 15	5	6.3	6	15.8
16 - 20	3	3.8	2	5.3
21 - 25	1	1.3		
30 or over	3	3.8		

Testing of the Hypotheses

None of the hypotheses tested could be supported on the basis of statistical treatment of the data (See Appendix C). The following results are discussed in terms of the direction that the correlations assumed and what these directions suggest in terms of interpretation. The decision to accept or reject the directional hypotheses was established at the .05 level of significance

Hypothesis 1

There is a negative relationship between the number of hours reported by the respondent as being spent on the home computer and the number of hours reported being spent on sports, recreational activities, and reading.

Males (65.4%) and females (69.4%) disagreed that they had spent less time on recreation outside of the home since purchasing a home computer (Table VII). Both concurred (males, 70.9% compared to females, 60.0%) that their children are not engaged in less recreational activities outside the home, either. This was additionally supported by the frequency distributions which showed the average recreation outside the home, per week, is 6.1 hours for males and 4.5 hours for females. Not included in these figures is the time spent on organized sports.

Another non-computer related activity measured was reading. This singular activity was popular among both sexes with males reading 8.0 hours per week and females

TABLE VII

ACTIVITY PREFERENCE RATINGS

Variable	Number	Percent
My children spend less time on recreational activities since we bought the computer.		
Agree	9	14.8
Neutral	15	24.6
Disagree	27	44.3
Strongly Disagree	10	16.4
I spend less time in recreation since we bought the computer.		
Stongly Agree	2	1.8
Agree	14	12.3
Neutral-Neither	22	19.3
Disagree	52	44.1
Strongly Disagree	24	21.1
My children read less since buying our home computer.		
Strongly Agree	1	1.7
Agree	1	1.7
Neutral-Neither	6	10.3
Disagree	30	51.7
Strongly Disagree	20	34.5
I read less since buying a home computer.		
Strongly Agree	2	1.8
Agree	10	8.8
Neutral-Neither	19	16.8
Disagree	42	37.2
Strongly Disagree	40	35.4

reading 7.6 hours. The parents agreed that the computer had not had a negative effect on their children's reading habits (males, 81.6% and females, 95%) nor on their own (males, 75.7% and females, 65.7%).

Pearson correlations show a positive relationship between hours spent participating in sports (males, r= .1306 and females, r= .0158) and hours spent on the computer. A positive relationship occurred, too, between reading (males, r= .0233 and females, r= .1693) and time on the computer. There was, however, a negative correlation for males (r= -.2789) and a positive correlation with females (r= .0757) with recreation outside the home and time (number of hours) spent on the home computer. None of the correlations are significant.

The hypothesis, restated, is that increased time spent on the computer would decrease the amount of time spent on non-computer recreation, sports, and reading. However, the correlation data showed that there was an increase in time spent on non-computer activities when there was an increase of time spent on the computer, except for the category of time spent on recreation outside the home for males which was decreased in relationship to the time males spent on the computer. The correlation was non-significant. A non-significant correlation indicates that there is no appreciable difference between the time spent on non-computer related activities of low computer users and high computer users. Thus, the hypothesis cannot be

supported among those who responded to this survey.

Hypothesis 2

> There is a negative relationship between the
> number of hours reported by the respondents
> as being spent on the home computer and the
> number of hours reported being spent on
> viewing television.

Television viewing has increased among children during

the past 10 years (Pearl et al., 1982). The data from this

current study reveals that the average television viewing of

both male and female respondents has increased since 1970

when compared with findings of Pearl et al. (1982). The

introduction of the computer was not perceived as having

decreased the amount of television viewing by females

(57.6%) as evidenced by them disagreeing with the statement

"I watch television less since buying a home computer."

However, 50.0% of the males reported watching less

television since buying a home computer.

Pearson correlations between hours spent on the

computer and time spent viewing television differed in

direction for the males and females. The male respondents

had a negative correlation (r= -.1643) compared to a

positive correlation (r= .1732) for the females.

Hypothesis 2, restated is that the more time one spends

on the computer, the less time they would watch television.

The frequency data suggested that this was true in the case

of males and not females. However, the correlation data,

while suggesting the direction of the relationships, was not

significant. Thus, the hypothesis cannot be supported by the responses in the current study.

Hypothesis 3

> There is a positive relationship between the
> the spouses agreement on purchasing the home
> computer and when and how the home computer
> would be utilized with the Moos FES Cohesion
> subscale.

The decision-making process of how and when the computer would be used tended to be a male dominated activity. Males (Table VIII) stated that they had a "major" say in this decision 90.4% of time while the female respondents related a "major" say 41.7% of the time. When asked about the input that their respective spouses had in this decision-making process, males reported that their wives had a "moderate" to "major" (50.9%) say about the usage of the computer, while the female reported that their husbands had a "moderate" or "major" say 90.3% of the time.

The decision to purchase the computer was primarily a male activity. The males (94.5%) responded that they had a "major" say in the purchase of the computer while 40.5% of the females reported a "major" say. Approximately half of the male respondents reported that the spouse had "little" or "no say" in the purchase (51.7%) while the majority of the females reported that their spouses had a "major" say in the purchase (90.3%).

Pearson correlations on "decision to purchase" with the Moos FES Cohesion subscale showed a positive trend for

TABLE VIII

COHESION OF HOME COMPUTER OWNERSHIP

Variable	Males Number	Males Percent	Females Number	Females Percent
Decision Making Process to Purchase (Self)				
None			8	21.6
Little	1	1.4	9	24.3
Moderate	3	4.1	5	13.5
Major	69	94.5	15	40.5
Decision Making Process to Purchase (Spouse)				
None	18	32.1	1	3.2
Little	11	19.6	1	3.2
Moderate	13	23.2	1	3.2
Major	14	25.0	28	90.3
Decision on How and When Computer is Used (Self)				
None			5	13.9
Little	2	2.7	8	22.2
Moderate	5	6.8	8	22.2
Major	66	90.4	15	41.7
Decision on How and When Computer is Used (Spouse)				
None	15	27.3	1	3.2
Little	12	21.8	2	6.5
Moderate	17	30.9	4	12.9
Major	11	20.0	24	77.4

females (r= .2751) and a negative trend for males (r= -.0009). Both males (r= .1093) and females (r= .0942), however, show a positive trend when a correlation is done between "decisions on when and how the computer is used" and the Moos FES Cohesion subscale.

Hypothesis 3, restated, is the more that spouses reported input on purchasing the home computer and had a say in when and how it will be used, the more concern and commitment would be expressed in their relationship. Findings of the study showed that purchase of the home computer reflected a decision that was primarily one done by the male but that more frequently both sexes shared the decisions on when and how the computer would be used. However, the correlation data, while showing a trend, was not significant. Thus the hypothesis cannot be supported.

Hypothesis 4

> There is a negative relationship between spouses agreement of purchasing the home computer and when and how the home computer would be utilized with the Moos FES Conflict subscale.

The correlation between "decision to purchase" and the Moos FES conflict subscale shows a negative trend for both males (r= -.0172) and females (r= -.1824). The same negative trend is shown in the correlation of "decision on when and how to use the computer" with the Moos FES Conflict subscale (males, r= -.0963 and females, r= -.1300).

Hypothesis 4 restated, is that the less the spouses had

part in a mutual decision of purchasing the home computer

and the less they had a say in when and how the computer

would be used, the more anger and aggression was expressed

in the family. The direction of the correlations suggested

support for the hypothesis. However, the correlations were

non-significant. Thus, the hypothesis could not be

supported with confidence among the respondents in this

study.

Hypothesis 5

> There is a negative relationship between the
> number of hours reported being spent on the
> home computer by the respondents with the
> Moos FES Cohesion subscale.

The hours that a respondent spends on the computer,

according to Maccoby's (1964) research, should have

displaced hours that were devoted to other activities.

While no information is available on prior activities of the

respondents, their time spent on non-computer activities

appears high for an average family. The correlations

between time spent on the computer with the Moos FES

Cohesion subscale suggests a positive trend for both males

(r= .1509) and females (r= .1749) in the study.

Hypothesis 5 restated, is that the more time (in hours)

spent on the home computer the less help and support family

members would provide for one another. However, the

correlational data suggested that the trend of the

variables is positive, but it is not significant. Thus, the

hypothesis could not be supported with confidence among the

respondents in this study.

Hypothesis 6

> There is a positive relationship between the
> number of hours being reported being spent
> on the home computer by the respondents and
> the Moos FES Conflict subscale.

Isolation from the family, mentioned in Chapter II, is
one factor that may create conflict within the family. It
was previously suggested that the computer may isolate the
user from the family and thus be a source of conflict. The
results of this study, however, showed that male (17.7%) and
female (29.4%) respondents "agree" or "strongly agree" that
time on the computer caused family members to feel isolated
from one another. See Table IX for data. The correlations
of the Moos FES Conflict subscale with hours on the computer
showed a positive trend with male respondents (r= .0162) and
a negative trend with female respondents (r= -.0081).

Hypothesis 6 restated, is that the more time (hours) a
family member spends on the computer, the more anger and
aggression is expressed in the family. The direction of the
correlations suggest that this hypothesis would hold true
when males spend a high amount of time on the computer.
Previous data presented showed that males spend more than
twice as much time on the computer as females. However,
none of the respondents spent disproportionate hours on the
computer per week with the average of 10.2 hours, and only
4.2% spending over 30 hours. There may be some sort of
threshold of computer usage when the users spend 60-80+

TABLE IX

FAMILY ISOLATION SCALE

Variable	Number	Percent
Time spent on the computer has caused family members to feel isolated from one another.		
Strongly Agree	3	2.9
Agree	19	18.6
Neutral-Neither	18	17.6
Disagree	41	40.2
Strongly Disagree	21	20.6

TABLE X

EDUCATION APPLICATION RATINGS

Variable	Number	Percent
My children spend less time playing games on the computer.		
Strongly Agree	3	2.7
Agree	10	8.8
Neutral	15	13.3
Disagree	41	36.3
Strongly Disagree	44	38.9
Our computer is being used for educational purposes.		
Stongly Agree	16	14.7
Agree	72	66.1
Neutral-Neither	9	8.3
Disagree	8	7.3
Strongly Disagree	4	3.7

hours a week. Regardless, the correlations showed no significance. Thus, the hypothesis cannot be supported among those who responded to this survey.

Hypothesis 7

> There is a positive relationship between the Moos FES Achievement-Orientation sub-scale and the application of the home computer for educational purposes.

The families in the study (see Table X) related that both the males (78.4%) and females (85.7%) agreed that the computer is being used for educational purposes. They both disagreed (males, 74.4% and females, 77.2%) that most of the time spent on the computer was for playing games. Correlations of the Moos FES Achievement-Orientation (AO) subscale with the responses to the statement "We spend most of our time playing games on the computer" suggests a negative trend for both males ($r= -.0664$) and females ($r= -.0547$). Correlations of the Moos FES AO subscale with the responses to the question "Our computer is being used for educational purposes" shows a positive trend (males, $r= .2324$ and females, $r= .1622$).

Hypothesis 7 restated, is that the more the family is achievement-oriented in areas such as school or work, the more the family will encourage educational uses of the computer. The correlations suggested that the trend of the data showed that this hypothesis was positive. However, there was no significance in the correlations. Thus, the hypothesis could not be supported by the respondents in this

current research survey.

Hypothesis 8

> There is a positive relationship between the
> amount of time spent on the computer and the
> length of time of computer ownership.

The purchase of a home computer is an investment of not only money, but time to learn the computer system and software to achieve an expertise and efficiency. The respondents of this study have been shown to use their computers for a wide range of activities, but especially for word processing, work done at home on the computer, and programing. Each of these activities would, singularly, be costly in terms of hours devoted to their mastery. Therefore, usage would beget use.

The correlation between amount of time (hours) spent on the computer with the length of computer ownership shows a positive direction for both males (r= .0875) and females (r= .2823) in the study.

Hypothesis 8 restated, is that the longer a family owns the computer, the more the family will use the computer. The correlational data suggest t the direction of the hypothesis. However, the correlation showed no significance. Thus the hypothesis was rejected.

CHAPTER V

SUMMARY AND RECOMMENDATIONS

The family has been deluged with new technological
advances for the home. Many of these technologies do not
have an appreciable effect on the family due to their limited
capabilities. The home computer, however, is a new
technology whose capabilities are just beginning to be
realized for the home. If the changes that will take place
in the family with the home computer are equal to those
changes that the main-frame computer has had on business and
industry, then, indeed, the family is headed for a computer
revolution.

Summary

The purpose of this study was to describe the nature and
direction of the effects that the introduction of the home
computer would have on the family. More specifically, eight
specific hypotheses were drawn from the more general question
of whether the computer would have direct and indirect
effects on the family similar to what had been experienced
by the family following introduction of television. A review
of the literature of the effects that the computer has had
on the family showed an absence of available materials and

findings. Consequently, the literature was reviewed from
a somewhat similar technology, television, and the findings
were generalized to the introduction of the computer.

The results of this study, while largely inconclusive,
suggest that the computer does not interfere with the
interpersoinal relationships in the family, and, in fact,
might reward the exchanges between the family and the
computer. This would occur by making more time available
for other activities, or acting as a center for family
interactions.

All eight of the hypotheses being tested were rejected,
based on insignificant correlations. However, the trends of
the correlations were in the directions as stated by the
hypotheses, even though non-significance was observed. This
lack of insignificance might be a result of one of three
conditions: 1) the methodology employed might not have been
sufficiently subtle to tease out the nuances in the
relationships examined, 2) there might have been a gap
between the theoretical concepts and the research indicators,
and the scales might have simply failed to have the validity
necessary to adequately test the theoretical ideas, 3) the
methodology might have been adequate and the scales/
indicators sufficiently valid indicating that the theorized
correlations are the source of error. There might be, in
fact, no relationship between computer usage and such other
variables as time dispersion of other activities, confict,
and cohesion in the home, etc.

It is difficult to articulate which of the possible

reasons for the non-significance obtained in the present research. Each of the three conditions may play a special role in the over-all non-significance of the results.

Condition One

In condition one, inadequate methodology may be the problem. Future research in this area may compensate by employing other methodology including experiments, observations, diaries, in-depth interviews, or qualitative approaches. Survey methodology may yet be an appropriate way to analyze these relationships. One clear difference and limitation of the present research is the small response rate. The small percentage of the population that responded may will be those people who have successfully integrated the home computer into family life. Perhaps the questions posed in the current research were particularly susceptible to socially desirable responses. The selection of the population, Apple Computer owners, may not have been representative of the average home computer user. There may have been too much divergence of usage of the computer, thus the study should have addressed a more narrow population such as those families using the computer for work in the home as an "electronic cottage." Finally, future survey research apparently may well profit from social desriability scales built into the questionaires despite the space and effort required.

Condition Two

Condition two, <u>the gap between research and theory</u>, may well be a factor in the lack of significance. It should be noted that some of the scales utilized in the research already have a demonstrated reliability, for example the Moos Family Environment Scale (FES). However, other scales and questions were created specifically for this project and may be suspect. For example, the self report of computer usage may not accurately measure usage. Prior research has clearly demonstrated the problematic nature of self reports of televisioin usage. At the very least, self reports are contaminated by the recall nature of the data. The actual hours spent in non-computer activities may not have changed but the perception of the hours spent in these activities may be what really changed. This may well be the most compelling reason for the non-significance obtained in this study.

Condition Three

Condition three implies that the error is embedded in the <u>theoretical mosiac itself</u>. However, the propositions delineated in Chapter II are based, in part, on extant literature on computers and over twenty-five years of television research. While they may be erroneous, their content validity is not such that warrants a full rejection. The computer appears not to interfere with recreational activities or sports. Reading appears to have increased

in families with a computer. Television viewing is still very much a part of the computer family. Indeed, the average viewing time has consistently increased since 1970. Cohesion is high in the families of this study and conflict is notably low. Overall, the computer appears to have a positive effect on family life.

Clearly, the present study does not provide answers the questions raised concerning the indirect and direct effects of computers on the family. To the extent that conclusions may be drawn, it appears that the present study only suggests direction of relationships. The home computer, a new technology, is making a rapid diffusion into American homes. Hopefully, other studies can expand on this initial effort to give further insights of the "computer revolution" and foresee not only the rewards and profits the computer family will incur, but be able to project the potential losses and forestall the negative aspects by computers.

Implications for Future Research

Based on the findings of this study, the researcher makes the following observations and recommendations:

1. Additional research comparing a broader population of computer owners is recommended. Because the respondents of this study were only Apple Computer owners, an expansion to other computer brand owners might elicit different responses.

2. The experiences of pioneer users of a new
   technology, due to the personalities of these
   innovators, may not be representative of the
   families in the United States. A replication of
   this study when personal computers have sufficently
   saturated the potential market may yield different
   results.

3. Further research is needed to study the impact of
   personal computer ownership on the parental/child
   dyad. Just as television had a major impact on
   parent and child relationships, the personal
   computer may even have a more pronounced effect.
   Computer technology requires an expertise and
   interactive response from the user that parents
   may not view as important for their own immediate
   future needs as it is to their children. Thus
   creating a further gap between generatiions.

4. Current publications suggest that the future of
   the personal computer is linked more closely with
   the interface of the computer with phone lines and
   cable television. This interface with older
   technologies may bring more acceptance of the
   personal computer as an extension of the family
   environment rather than as an oddity of the
   general population.

5. The reality of the "electronic cottage" will be an
   important area of investigation. Families having

the capability of large amounts of time being
spent together due to working at home, yet living
in a technologically advancing environment, will
present unique areas of research. These areas
might include the effects of increased paternal
presence on the family, changes of sexual
stereotyping in parenting roles, child rearing
practices, and the economic impact of less
demands being made on the family income due to
decreased costs of commuting to work.

No one knows what the future holds for the family in a
computerized environment. It is important , however, that we
learn from the introduction of other technologies so that we
and our children can take an active part in the positive
shaping of the present computer revolution in our society
today.

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APPENDIX A

CORRESPONDENCE

4317 South Madison Place
Tulsa, Oklahoma 74105
January 18, 1984

Apple Computer Inc.
10260 Bandley Drive
Cupertino, California   95014

Dear Sirs:

I am a doctoral student and research associate in the Department
of Family Relations and Child Develpment at Oklahoma State
University. My dissertation topic is the effects of high
technology on the family. I am writing to ask your assistance.

Specifically, for my population samples, I would like to reach
Apple Computer users that have owned their computer for less than
one year and those that have owned their computer for more than
one year.

If a list of Apple Computer owners and their addresses are not
available from Apple Computer, Inc. then could you supply me with
a list of Apple Computer Clubs so that I may make contact with the
Apple owners through those organizations.

If there is a small charge for the list, please enclose the
invoice along with the list and I will be happy to remit my
personal check.

I sincerely appreciate your cooperation and assistance.

Thank you,

A. Lee Jones

apple computer inc.

20525 Mariani Avenue
Cupertino, California 95014
(408) 996-1010

February 1, 1984

A. Lee Jones
4317 South Madison Place
Tulsa, OK   74105

Dear M. Jones:

Thank you for your letter of January 18 requesting a list of Apple
Computer owners.

As Apple's customer information is considered confidential, we do not
make these lists available. However, to obtain a list of Apple Users
Groups, just send a self-addressed, stamped envelope requesting this
information to:

> International Apple Core
> 908 George Street
> Santa Clara, CA   95050

(They will send a list of Users Groups in your state only, unless you
request otherwise.)

Thank you for your interest in Apple computers...and good luck with
your dissertation!

Sincerely,

Joe Begley

Joe Begley
Customer Relations

Oklahoma State University

DEPARTMENT OF FAMILY RELATIONS
AND CHILD DEVELOPMENT

STILLWATER, OKLAHOMA 74074
241 HOME ECONOMICS WEST
(405) 624-5057

May 3, 1984

Dear Computer Owner:

Personal computers, since the middle 1970s, have been rapidly introduced in the home for family usage. The home computer could greatly affect the quality of life in families like yours. However, no one really knows the effects that the introduction of the computer has had on families, or what is thought about the home computer.

Your family is one of a small number of families that has been randomly selected and asked to give their impression of effects of the home computer on family life. In order that the results will truly represent the families that own computers, it is important that each questionnaire be completed and returned. It is also important that we have about the same number of men and women participating in this study. Thus, we would like the questionnaires to be completed independently by both the male and female head of household. If you are not married, your response is important to us, too, and it would help if the second questionnaire were completed by any other adult living in the same residence (please specify your relationship).

You may be assured of complete confidentiality. The questionnaire has an identification number for mailing purposes only. This is so we may check your name off the mailing list when your questionnnaire is returned. Your name will never be placed on the questionnaire itself.

You may receive a summary of results by writing "copy of results requested" on the back of the return envelope, and printing your name and address below it. Please do not put this information on the questionnaire itself.

I would be most happy to answer any questions you might have. Please write or call. The telephone number is (918) 742-2599.

Thank you for your assistance.

Sincerely,

A. Lee Jones
Project Director
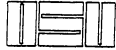
Oklahoma State University

DEPARTMENT OF FAMILY RELATIONS
AND CHILD DEVELOPMENT

STILLWATER, OKLAHOMA 74078
241 HOME ECONOMICS WEST
(405) 624-5057

May 18, 1984

Personal computers have been rapidly introduced into the American home. However, no one really knows the effects they will have on families.

Your family is one of a small number that has been randomly selected to give their impressions on home computers. In order that the results will truly represent the families that own computers, it is important that each questionnaire be completed and returned. If you are not married, it would help if the second questionnaire were completed by any other adult living in the same residence (please specify your relationship).

You may be assured of complete confidentiality. The questionnaire has an identification number for mailing purposes only. This is so we may check your name off the mailing list when your questionnaire is returned. Your name will never be placed on the questionnaire itself.

You may receive a summary of results by writing "copy of results requested" on the back of the return envelope, and printing your name and address below it. Please do not put this information on the questionnaire itself.

I would be most happy to answer any questions you might have. Thank you for your assistance.

Sincerely,

A. Lee Jones
Project Director
(918) 742-2599

Oklahoma State University

DEPARTMENT OF FAMILY RELATIONS
AND CHILD DEVELOPMENT

May 29, 1984

Last week I mailed you a questionnaire from the Family
Study Center investigating the effects of computers on
the family. If you have responded to the study I want
to thank you for helping make the research a success.

In the event that you did not receive the questionnaire,
or have misplaced them, and you would like to partici-
pate in our study, please call me, collect, at (918)
742-2599. I will be happy to mail you the materials.

I anticipate that the results of the project will be
available in about 4 weeks.

Thank you,

A. Lee Jones
Project Director

APPENDIX B

SURVEY
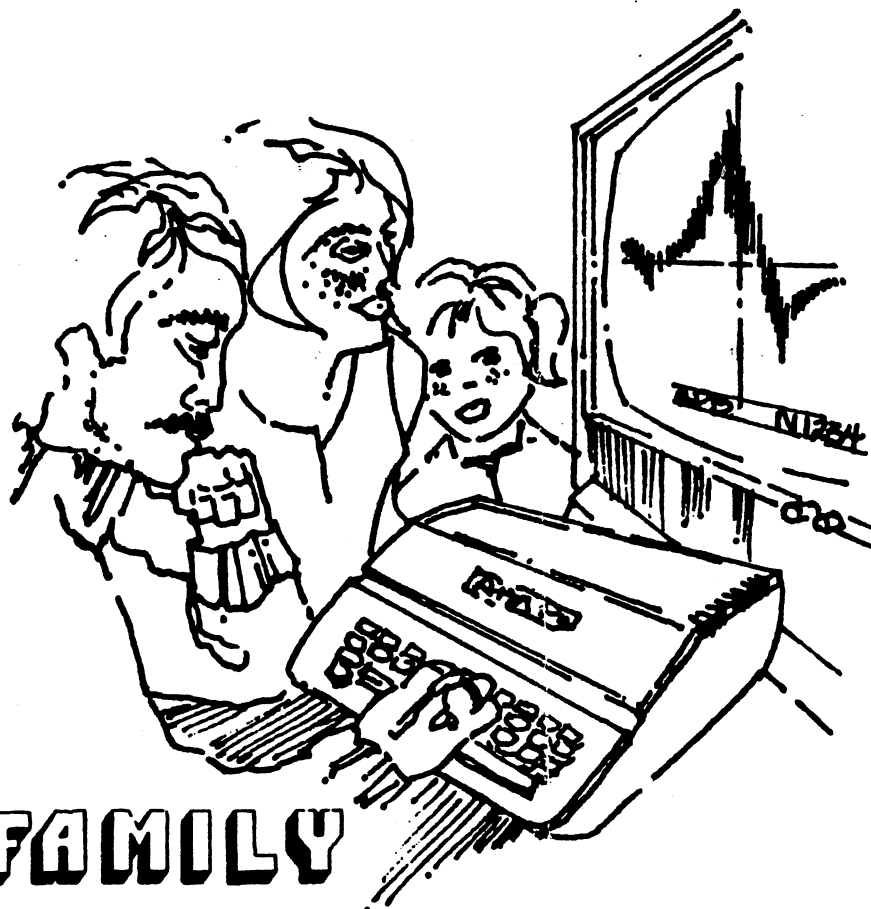
FAMILY
COMPUTER
STUDY

FAMILY STUDY CENTER

Oklahoma State University

Which computer do you own? (You may check more than one)

```
APPLE II SERIES (II, II+, IIe, IIc)   [  ]    COMMODORE   [  ]
APPLE MACINTOSH/LISA  [   ]      IBM  [   ]       TRS-80   [  ]
ATARI   [   ]     TI   [   ]  OTHER (specify)_____
```

On the average, how many hours per week do you spend working on the computer in your home? (circle the number of hours that apply):

0   2   4   6   8   10   15   20   25   30   40   50+

When did you buy your computer (month and year)?   _____, 19_____

Are you: ADULT MALE [   ]   ADULT FEMALE [   ]

We would like to know approximately how many hours PER WEEK you and your child(ren) spend on each of the following activities:

	SELF	CHILD #1	CHILD #2	CHILD #3	CHILD #4
A. Computer-related Activities:					
PROGRAMMING (non-business) . . .	____	____	____	____	____
GRAPHICS/DRAWING	____	____	____	____	____
WORD PROCESSING (non-business). .	____	____	____	____	____
BUSINESS (word processing, programming, etc. done at home) .	____	____	____	____	____
RECREATIONAL GAMES.	____	____	____	____	____
EDUCATIONAL GAMES	____	____	____	____	____
TELECOMPUTING	____	____	____	____	____
RUNNING HOME (lists, recipes etc)	____	____	____	____	____
FARMING	____	____	____	____	____
VOLUNTEER WORK (clubs, users' groups, church, etc).	____	____	____	____	____
B. Non-computer Activities					
WATCHING TELEVISION	____	____	____	____	____
RECREATION/ENTERTAINMENT (outside the home).	____	____	____	____	____
SPORTS, ATHLETICS, EXERCISE . . .	____	____	____	____	____
READING BOOKS OR MAGAZINES. . . .	____	____	____	____	____

Does the room where your computer is located have a television other than the computer monitor? Circle your answer:

YES   NO

If YES, is the computer connected to the television?
Circle your answer:
                          YES   NO

How much of your computer time is spent viewing TV programs at the same time? Circle your answer:

0%   5%   10%   15%   20%   30%   40%   50%   75%   100%

How much involvement did each family member have in decisions about the computer (Circle your answers)?

A. Decision to purchase?	NONE	LITTLE	MODERATE	MAJOR	N/A
MYSELF	1	2	3	4	5
SPOUSE	1	2	3	4	5
CHILD(REN)	1	2	3	4	5

B. Decision on when and how the computer will be used?

	NONE	LITTLE	MODERATE	MAJOR	N/A
MYSELF	1	2	3	4	5
SPOUSE	1	2	3	4	5
CHILD(REN)	1	2	3	4	5

Please indicate how much you agree or disagree with each of the following statements.	STRONGLY AGREE	AGREE	NEUTRAL NEITHER	DIS- AGREE	STRONGLY DISAGREE	N/A
The computer has improved communications between my spouse and me.	1	2	3	4	5	6
I read less since buying a home computer.	1	2	3	4	5	6
Someone in my family often has temper outbursts.	1	2	3	4	5	6
I often have temper outbursts	1	2	3	4	5	6
The computer has improved communications between the parents and the children.	1	2	3	4	5	6

Please indicate how much you agree or disagree with each of the following statements.

	STRONGLY AGREE	AGREE	NEUTRAL NEITHER	DIS-AGREE	STRONGLY DISAGREE	N/A
The computer has had a positive effect on family relationships.	1	2	3	4	5	6
My children spend less time on recreational activities since we bought the computer.	1	2	3	4	5	6
We use our computer to solve family financial problems.	1	2	3	4	5	6
I watch television programs less since buying a home computer.	1	2	3	4	5	6
Time spent on the computer has caused family members to feel isolated from one another.	1	2	3	4	5	6
One or more of the children are learning to program.	1	2	3	4	5	6
I spend less time in recreation since we bought the computer.	1	2	3	4	5	6
Our computer is being used for educational purposes.	1	2	3	4	5	6
We spend most of the time playing games on our computer.	1	2	3	4	5	6
The males in our family use the computer more than the females.	1	2	3	4	5	6
My children read less since buying our home computer.	1	2	3	4	5	6

The following questions are about families. You are to decide which of these statements are true of your family and which are false. Remember, we would like to know what your family seems like to you. So don't try to figure out how other members see your family but DO give us your general impression of your family for each statement. (circle the best answer).

	TRUE	FALSE
Family members really help and support one another.	T	F
We fight alot in our family	T	F
We feel it is important to be the best at whatever you do . .	T	F
We spend most weekends and evenings at home	T	F
Activities in our family are pretty carefully planned	T	F
Family members are rarely ordered around.	T	F
We often seem to be killing time at home.	T	F

Family members rarely become openly angry . . . . T   F

Getting ahead in life is very important in our family . . . . T   F

Friends often come over for dinner to visit . . . . T   F

We are generally very neat and orderly. . . . . T   F

There are very few rules to follow in our family. . . . . . . T   F

We put a lot of energy into what we do at home. . . . . T   F

Family members sometimes get so angry they throw things . . . T   F

How much money a person makes is not very important to us . . T   F

Nobody in our family is active in sports, Little League,
bowling, etc. . . . . T   F

It's often hard to find things when you need them in our
household . . . . T   F

There is one family member who makes most of the decisions. . T   F

There is a feeling of togetherness in our family. . . . . . . T   F

Family members hardly ever lose their tempers . . . . T   F

We believe in competition and "may the best man win". . . . . T   F

We often go to movies, sports events, camping, etc. . . . . . T   F

Being on time is very important in our family . . . . T   F

There are set ways of doing things at home. . . . . T   F

We rarely volunteer when something has to be done at home . . T   F

Family members often criticize each others. . . . . T   F

We always strive to do things just a little better the
next time . . . . T   F

Everyone in our family has a hobby or two . . . . T   F

People change their minds often in our family . . . . T   F

There is a strong emphasis on following rules in our family . T   F

Family members really back each other up. . . . . T   F

Family members sometimes hit each other . . . . T   F

Family members rarely worry about job promotions, school
grades, etc . . . . T   F

Family members are not very involved in recreational
activities outside work or school . . . . T   F

Family members make sure their rooms are neat . . . . T   F

Everyone has an equal say in family decisions . . . . T   F

There is very little group spirit in our family . . . .   T   F

If there's a disagreement in our family, we try hard to
smooth things over and keep the peace . . . .   T   F

In our family, we don't try that hard to succeed. . . . . . .   T   F

Family members sometimes attend courses or take lessons for
some hobby or interest (outside of school). . . . .   T   F

Each person's duties are clearly defined in our family. . . .   T   F

We can do whatever we want to do in our family. . . . .   T   F

We really get along well with each other. . . . .   T   F

Family members often try to one-up or out-do each other . . .   T   F

"Work before play" is the rule in our family. . . . .   T   F

Family members go out a lot . . . .   T   F

Money is not handled very carefully in our family . . . . . .   T   F

Rules are pretty inflexible in our household. . . . .   T   F

There is plenty of time and attention for everyone in
our family. . . . .   T   F

In our family, we believe you don't ever get anywhere by
raising your voice. . . . .   T   F

Family members are often compared with others as to how
well they are doing at work or school . . . .   T   F

Our main form of entertainment is watching T.V. or
listening to radio. . . . .   T   F

Dishes are usually done immediately after eating. . . . . . .   T   F

You can't get away with much in our family. . . . .   T   F

Excluding bathrooms, how many rooms do you have in your home? _____ ROOMS

In what room is your computer located?   _____

What was your age at your last birthday?   _____YEARS OLD

Please list the ages of all your children presently living at home:

_____   _____   _____   _____
CHILD 1   CHILD 2   CHILD 3   CHILD 4

What was your approximate annual <u>family</u> income last year?   (check one)

LESS THAN $10,000   [ ] $30,000 TO $34,999   [ ]
$10,000 TO $14,999   [ ] $35,000 TO $39,999   [ ]
$15,000 TO $19,999   [ ] $40,000 TO $49,999   [ ]
$20,000 TO $24,999   [ ] $50,000 TO $59,999   [ ]
$25,000 TO $29,999   [ ] $60,000 AND OVER   [ ]

What was the last year of school that you completed (check one)

GRADE SCHOOL   [ ]   SOME COLLEGE   [ ]
SOME HIGH SCHOOL   [ ]   GRADUATED COLLEGE   [ ]
GRADUATED HIGH SCHOOL   [ ]   MASTERS DEGREE   [ ]
                                 DOCTORAL DEGREE   [ ]

What is your current marital status? (check one)

NEVER MARRIED   [ ]   DIVORCED   [ ]
MARRIED   [ ]   SEPARATED   [ ]
REMARRIED   [ ]   WIDOWED   [ ]

What is your current occupation, business or profession?
(If retired, what was your occupation before retirement?)

_____

What is your specific job role or title?

_____

THIS COMPLETES THE QUESTIONS. THANK YOU VERY MUCH FOR YOUR COOPERATION.

IF THERE IS ANYTHING YOU WOULD LIKE TO ADD ABOUT COMPUTERS AND THEIR EFFECTS
ON FAMILIES PLEASE WRITE IT BELOW.

Oklahoma State University

DEPARTMENT OF FAMILY RELATIONS.
AND CHILD DEVELOPMENT
STILLWATER, OKLAHOMA 74078

APPENDIX C

PEARSON CORRELATIONS

Testing of the Hypotheses

Pearson Correlations

Hypothesis 1 - Hours on Computer With:

	Recreation Outside Home	Sports	Reading
Male:	r= -.2789 p>0.05	r= .1306 p>0.05	r= .0233 p>0.05
Female:	r= .0757 p>0.05	r= .0158 p>0.95	r= .1693 p>0.05

Hypothesis 2 - Hours on Computer With:

	Television Viewing
Male:	r= -.1643 p>0.05
Female:	r= .1732 p>0.05

Hypothesis 3 - Moos Cohesion Scale With:

	Decision to Purchase Computer	Decision on When and How Computer Used
Male:	r= -.0009 p>0.05	r= .1093 p>0.05
Female:	r= .2751 p>0.05	r= .0942 p>0.05

Hypothesis 4 - Moos Conflict Scale With:

	Decision to Purchase Computer	Decision on When and How Computer Used
Male:	r= -.0172 p>0.05	r= -.0963 p>0.05
Female:	r= -.1824 p>0.05	r= -.1300 p>0.05

Hypothesis 5 - Time Spent on the Computer With:

Moos Cohesion Scale

Male:	r= .1509 p>0.05
Female:	r= .1749 p>0.05

Hypothesis 6 - Time Spent on the Computer With:

Moos Conflict Scale

Male:	r= .0162 p>0.05
Female:	r= -.0081 p>0.05

Hypothesis 7 - Moos Achievement Scale With:

	Educational Use of the Computer	Recreational Use of the Computer
Male:	r= .2324 p>0.05	r= -.0664 p>0.05
Female:	r= .1622 p>0.05	r= -.0547 p>0.05

Hypothesis 8 - Time Spent on the Computer With:

	Length of Computer Ownership
Male:	r= .0875 p>0.05
Female	r= .2823 p.>0.05

2

VITA

Arthur Lee Jones

Candidate for the Degree of

Doctor of Philosophy

THESIS: DIRECT AND INDIRECT EFFECTS OF COMPUTERS ON THE
        FAMILY: A PRELIMINARY STUDY

Major Field: Home Economics-Family Relations and
             Child Development

Biographical:

    Personal Data: Born in Tulsa, Oklahoma, July 18, 1944,
        the son of Carl L. and Cleo I. Jones.

    Education: Graduated from Frederick High School,
        Frederick, Oklahoma, in May, 1962; received
        Bachelor of Science Degree in Education from
        Oklahoma City University in 1975; received Master
        of Science Degree from University of Oklahoma in
        August, 1978; completed requirements for the
        Doctor of Philosophy Degree at Oklahoma State
        University in December, 1984.

    Professional Experience: Registered Nurse in staff
        positions in Oklahoma, 1972-1978; Clinical Special-
        ist in nursing, 1978-1980; Assistant Professor,
        College of Nursing, University of Tulsa, 1980-
        1984; Assistant Professor, School of Nursing, The
        University of Texas at Austin, 1984 to present.