

## Factors Affecting Human Capital Expenditures of Female-Headed Households

Using the 1990-91 Consumer Expenditure Survey, this study investigated the determinants of human capital expenditures by female-headed households. Two categories of human capital expenditures were examined: health care and reading/education. Human capital theory was used as the conceptual framework in this study. OLS regression was used for empirical analysis. Results showed that household size, home ownership, age, and race of the reference person were positively related to health care expenditures. The results also indicated that household income, home ownership, age, race, and occupation had positive impact on reading/education expenditures.

Yoon G. Jang, University of Missouri-Columbia<sup>1</sup>

### Introduction

In the past three decades, while the proportion of traditional two-parent households has been declining, the number of female-headed households has been increasing rapidly. The percentage of married-couple households with children under age 18 declined from 40 percent of households in 1970 to 26 percent in 1990 (U.S. Bureau of the Census, 1991). Female householders headed 28 percent of all households in 1990 (U.S. Statistical Abstracts, 1991). Since the female-headed household is an increasing segment of the population, the study of their human capital investment behavior could be a matter of concern for family economists.

The objective of this study is to identify human capital investment behavior of female-headed households and to predict factors which have a significant effect on the amount of human capital related expenditures contributed by the female-headed household. The manner in which female-headed households allocate their money resources has a substantial impact on their economic well-being and, ultimately, quality of life.

A number of studies have been conducted to identify the expenditure behavior of female-headed households (Horton, 1978; Lino, 1989). However, no studies that deal with variations in human capital investment through the analysis of expenditure categories have been found, and little is known about factors determining on human capital related expenditures. Investment for future consumption or future earnings could be the determinant of the future well-being of female-headed households. By identifying the extent of investment in human capital through consumption expenditures, the findings of this study could provide family resource management professionals with

information on how the socioeconomic characteristics of such households can be expected to affect human capital related expenditures.

### Review of Literature

Using data from the 1972-73 Consumer Expenditure Survey, Horton (1978) examined the factors affecting expenditures on food away from home, furnishings and equipment, transportation, health care, personal care, gifts and contributions, and alcohol and tobacco for single female-headed households. It was found that permanent as well as current income were positively related to all expenditure categories. It was also indicated that household size was negatively related to expenditures on health care and nonblack female-headed households spent less on health care than black female-headed households. Further, single female-headed households living in an owned home spent more on health care than those households who were renters. Households with an employed female head spent more on food away from home and health care than households with an unemployed female head.

Lino (1989) examined the factors influencing the housing, transportation, food, and clothing expenditures of single-parent households, using the 1984-85 Consumer Expenditure Survey. As factors affecting expenditures of the single-parent household, he included household income after taxes, household size, sex of head, age, race, educational level, employment status, home ownership, and car ownership. The household income had a significant positive effect on all four expenditure categories. Household size had an effect on transportation and food expenditures for single-parent households in the sample. Female-headed households

spent 148 percent more on clothing than did male-headed households, and the educational level of the single parent was positively related to the expenditures on housing. Age of head had a positive effect on both the transportation and food expenditures, and the employment status of the head had a positive effect on housing, transportation, and clothing expenditures. The single-parent households who owned a car had transportation expenditures higher than those who did not own a car.

Horton and Hafstrom (1985) compared differences in consumption expenditures between single female-headed and two-parent families. The six individual categories of consumption were modeled as functions of permanent income. The results showed that permanent income had a significant effect on all six expenditure categories. It was found that race of head had no effect on recreation/reading expenditures investigated for female-headed families, but education of head had a positive impact on recreation/reading expenditures. Among female-headed households, age of head had a significant positive effect on expenditures for total food and food eaten at home, but no significant effect on household expenses, clothing, and recreation/reading expenditures. In their study, location showed no consistent relationship to expenditures on all six categories. Homeowners with and without a mortgage spent more on total food, food at home, and household expenses than renters. However, home ownership had no effect on recreation/reading expenditures among female-headed families.

Abdel-Ghany and Schwenk (1993) examined differences in consumption patterns between single-parent and two-parent families for six major expenditure categories. The results showed that permanent income had a significant effect on all six expenditure categories. Family size had a significant positive effect on expenditures for total food and food eaten at home, but family size had no effect on household expenses or expenditures for recreation and reading for the single-parent families. Black, single-parent families spent 67 percent less on recreation and reading than nonblack single-parent families, holding other variables constant. Education of the head had a significant positive effect on recreation/reading expenditures in single-parent families. Single-parent families whose heads had a high school diploma or higher spent more on recreation and reading than the omitted category, whose heads lacked high school diplomas. It was found that location was not a significant factor explaining the variation in recreation/reading expenditures for single-parent families.

## Conceptual Framework

Human capital theory posits that an individual's education, job training, work experience, health, and other attributes enhance productivity in the labor market (Schultz, 1961). Additional schooling increases an individual's productivity, and employers, recognizing this, pay higher wage rates to individuals with more schooling. Human capital theory also suggests that if education is not regarded as pure consumption, if formal schooling initially has a high rate of return, the individual maximizes his/her wealth by continuing to invest in schooling until the rate of return on schooling has been driven down to the market rate of interest.

The concept of human capital has been explained by several scholars. Mincer and Polachek (1974) stated that individual endowments are not merely genetic, but that they can be augmented by processes of investment in human capital and reduced by depreciation. Becker (1975) viewed education as an investment in human capital which is similar to industry's investment in physical capital, and he also explained that individuals develop characteristics that endow them with value and this accumulated human capital makes them more employable.

In a broader sense, human capital includes initiative, resourcefulness, capacity for sustained work, ethical values, interests, attitudes, and other human qualities conducive to higher output and accelerated economic growth (Mehta, 1976). Furthermore, the obtained knowledge and skills for music, art, drawing, crafts, and sewing could be viewed as human capital: these variables are represented as cultural capital by DiMaggio (1982).

In the study of human capital investment, Bryant (1990) stated that Americans spent great amounts of time and money investing in themselves. He revealed that the United States devoted 6.7 percent of its gross national product to schools and schooling in 1980, and millions of people took private lessons in everything from sewing to music, from skiing to hang gliding. Bryant named formal education, experience, and health as the three most obvious types of human capital investment.

Typically, the theory of investment in human capital aims to estimate the money rate of return to high school and college education (Becker, 1975). Several empirical studies have been undertaken to estimate the rate of return on investment in human capital, particularly in education and on-the-job training (Mehta, 1976). This study, however, is not designed to measure the value of human capital, but to analyze how female-headed households use resources either for current consumption or for future earnings (i.e., for investment). Investment in

human capital means that using time and spending money are not related to current consumption, but to acquiring skills and credentials that will provide future benefits.

Investment in human capital could be the most important economic decision most people make (Morgan & Duncan, 1983). People make decisions about how much time and money to invest in improving personal skills, acquiring knowledge, augmenting experience, and maintaining health. Based upon previous studies that explained the concept of human capital, education, reading, on-the-job training, and visiting physicians are considered as the means to obtain the characteristics of knowledge, skills, experience, and health that endow individuals with value. Accordingly, if individuals spend money on formal education, reading, and health maintenance in order to acquire, develop, augment, and maintain their knowledge, skill, and health, such consumption activity is considered as human capital investment. Table 1 summarizes the types of behavior included in human capital investment.

Table 1  
Human Capital Investment Behaviors

Type	Objectives	Means
Acquiring/ Developing/ Maintaining	Knowledge, Skills, & Experience	Education, Reading, & On-the-job Training
Maintaining/ Augmenting	Health	Physician Visits, Dental Checkups, & Hospital Service

## Method

### Data and Sample Characteristics

Data for this study are from the interview component of the 1990-91 Consumer Expenditure Survey. In this study, 162 female-headed households, who participated in the survey for the full term and gave complete income information, are included as the sample. Eighty-six percent of the women are over age 30, 74.1 percent are white, 65.6 percent have a high school diploma or more, and 54.9 percent are not employed. In the sample, 30.2 percent reside in the south, 24.1 percent in the northeast, 22.2 percent in the midwest, 17.3 percent in the west, and 6.2 percent in the rural area,

respectively. Most female-headed households, 74.1 percent, are renters.

### Analysis

Using the OLS regression analyses, two expenditure functions are estimated in the present study. The respective dependent variables measure health care and reading/education expenditures. Expenditures on these two categories are regressed on a set of socioeconomic variables, including household income after taxes, household size, age, education, race, occupation, region, and home ownership.

### Model

The theory of consumer demand suggests the basis for the empirical analysis. Human capital expenditures are assumed to be a function of income as well as tastes and preferences which will be modeled by socioeconomic characteristics. The following model is used to estimate the relationship between human capital expenditures, household income, and other household sociodemographic characteristics.

$$E_i = a + b_k Y_{ik} + g X_{ij} + u_i$$

Where

$E_i$  = human capital related expenditures by household  $i$   
 $Y_{ik}$  = income of household  $i$  from stock  $k$ ,  $k=1, \dots, k$   
 $X_{ij}$  = sociodemographic characteristics, household  $i$ ,  
 $u_i$  = error term

### Selection of Dependent Variables

From the conceptual framework, to investigate the behavior of acquiring knowledge, developing skills, augmenting experience, and maintaining health through expenditure categories, the following two expenditures are empirically selected as the human capital expenditure categories.

**Health care expenditures.** Since spending money on these categories is related to the behavior of maintaining one's health, this study considers such consumption categories as human capital investment. Using data from the Consumer Expenditure Survey (CES), health care expenditures include a wide range of the annual total expenses incurred in the following categories paid by the consuming unit: hospital room, hospital services, physician's services, lab tests, x-rays, nursing services, eye examinations, purchase of eyeglasses, dental care, and prescribed medicines, rental

of medical equipment, medical and medicine supplies, and purchase of medical equipment.

Reading/Education expenditures. Since the reading and education category is related to the behavior of acquiring, developing, enhancing, and maintaining one's knowledge and skills, this consumption category could be a partial explanation of the human capital investment behavior. Specifically, reading expenditures include such categories as newspaper delivery, books purchased from a book club, books and magazines purchased in stores, and magazines or periodical subscriptions. Educational expenditures involve such categories as recreational lessons or other instruction; tuition, housing, and meals while attending school; and rental of any school books, supplies, and other school-related expenses.

#### Selection of Independent Variables

After-tax household income. Current after-tax income is used as the income measure in the analysis. This income measure includes salary/wages, alimony/child support, and public assistance.

Household size. Household size is measured by the number of household members and is coded as a continuous variable.

Age. Age is measured by actual age of the reference person and is coded as a continuous variable.

Education. Four dummy categories of education level are created for education variable. They are less than a high school graduate, high school graduate, some college or college graduate, and advanced degree. Advanced degree is the omitted category.

Race. Two race categories are used in this study to account for possible impact of race on human capital expenditures; white and nonwhite. The white is the omitted category.

Occupation. Five occupational categories are used, including professional, managerial, service, laborer, and non-employment. Non-employment includes those who were retired, not-working, and laid-off. Non-employment is the omitted category.

Region. Five regions are included in the analysis. They are urban northeast, urban west, urban south, urban midwest, and rural region. Rural area is the omitted category.

Home ownership. Two housing tenure categories are included in this study: home owners and renters. The omitted category is the renters.

## Results

A description of the female-headed household, including average household income after taxes, human capital expenditures, and other characteristics, is presented in Table 2.

Table 2  
Sample Characteristics (n=162)

	Mean
After-tax household income	\$16,557
Health care expenditure	\$1,285
Reading/Edu expenditure	\$204
Household size	2.0
Age of reference person	55
	Percent
<u>Education</u>	
Less than high school	34.5
High school graduate	34.0
College graduate	26.0
Advanced degree	5.0
<u>Race</u>	
Nonwhite	25.9
White	74.1
<u>Occupation</u>	
Professional	11.1
Managerial	16.7
Service	8.0
Laborer	9.3
Non-employment	54.9
<u>Region</u>	
Northeast	24.1
Midwest	22.2
South	30.2
West	17.3
Rural area	6.2
<u>Home ownership</u>	
Owned home	25.9
Rented	74.1

The average annual after-tax income is \$16,557. Average annual health care and reading/education expenditures are \$1,285 and \$204, respectively. In terms of percentage, it is found that the female-headed households spend 1 percent of total expenditures on reading/education, while 8 percent of total expenditures is devoted to health care. Average household size and age of reference person are 2.0 and 55, respectively.

Table 3 shows results from the OLS regression analysis. Household income after taxes has a significant and positive effect on reading and education expenditures, but not on health care expenditures. In Horton's study (1978), household size had a negative effect on health care expenditure, but household size is found to have a positive effect on health care expenditure in the present study. This was expected because

additional household members would require additional health care. Although the relationship between household size and reading/education expenditures is negative, it is not statistically significant.

Table 3  
Predictors of Human Capital Expenditures  
(n=162)

Independent Variables	Health Care	Reading & Education
CONSTANT	-711.3 (1275) <sup>a</sup>	-370.7 (307)
HHINCATX	-0.0 (0.0)	0.0 (0.0)
HHSIZE	282.8** (141.1)	-10.6 (34.1)
AGEREF	22.6** (10.7)	6.0** (2.6)
EDU1	-323.3 (756.0)	-191.0 (182.5)
EDU2	237.6 (755.8)	-45.7 (182.5)
EDU3	712.2 (748.7)	-11.1 (180.7)
NONWHITE	-1125.8** (409.2)	185.6* (98.8)
PROF	-498.7 (596.6)	265.4* (144.0)
MANAGER	-159.2 (526.3)	209.6* (127.1)
SERVICE	-368.1 (623.0)	128.3 (150.4)
LABORER	-651.7 (624.6)	156.9 (150.8)
NOREAST	-108.3 (726.0)	182.1 (175.3)
MIDWEST	367.5 (724.6)	59.7 (174.9)
SOUTH	812.5 (712.6)	21.6 (172.0)
WEST	126.4 (734.4)	0.2 (177.3)
OWN HOME	990.1** (386.3)	184.6** (93.3)
R square	0.18	0.17
F value	2.07**	1.91**

<sup>a</sup> Figures in parentheses are standard errors.

\* Significant at the 0.1 level.

\*\*Significant at the 0.05 level.

Age is a significant determinant of health care expenditures as well as of reading and education expenditures. The age of the reference person is positively related to expenditures on health care. However, finding of a positive relationship between age of the head and educational expenditures contradicts human capital theory. Since information of children's age is not available in the data set, it may be surmised that older householders who have children in high school may spend more in educational expenses than young householders who have children in preschool. Further, older women might have more time to read or purchase educational items "for fun."

In this study, education of the reference person is not a significant determinant of health care and reading/education expenditures. Being non-white is an important predictor of both health care and reading/education expenditures in this study. The regression coefficients indicate that nonwhites spend less on health care but more on reading/education than whites.

The results show that professional and

managerial occupations are significant factors affecting expenditures on reading and education, while service and laborer occupations are not significant predictors of reading and education expenditures. Since occupational status might reflect one's social class, individuals in higher social class might have more access to education and reading than those in a lower social class. None of the occupational categories are significant predictors of health care expenditures.

Region is not a significant predictor of any human capital expenditure category. The results show that the northeast region has a negative impact on health care expenditures, while the other three regions have positive impacts on health care expenditures. However, none of the coefficients associated with the regional dummy variables is statistically significant.

Home ownership is a significant factor in explaining expenditures for both health care and reading and education. Female-headed householders who are homeowners spent more on health care as well as on reading and education than those who are renters.

### Summary and Conclusion

Human capital is viewed as the stock of resources existing in people--their acquired skills, experience, knowledge, and health. Human capital is usually accumulated through means such as formal schooling, on-the-job training, market work, household work, and maintenance of physical and mental health. This study attempted to identify how female-headed households allocate their money income to improving personal skills, acquiring knowledge, augmenting experience, and maintaining health, and to investigate which socioeconomic factors affect such investment behavior.

The results of this study indicate that household size, age, race, and home ownership are statistically significant in predicting health care expenditures for the female-headed household. These variables are found to affect health care expenditures positively, except race. The results revealed that household income, age, race, professional occupation, managerial occupation, and home ownership are significant predictors for reading and education expenditures. All these variables also are positively related to reading and education expenditures.

Region and education of the reference person have no significant effect on either health care or reading and education expenditures. Since home ownership is a significant factor for both health care and reading and education expenditures, it can be said that home ownership is an important factor predicting the behavior of human capital investment for the female-headed

household. This finding is consistent with that of Horton's study.

The human capital theory suggests a negative relationship between age and reading/education expenditures. The positive relationship between these two found in this study might imply that older people continue to spend money on reading and education in order to maintain their human capital and thereby maximize their total wealth. As discussed earlier, a positive relationship between age of the reference person and educational expenditures might also reflect that older householders whose children are in high school have more educational expenses than young householders whose children are preschoolers. Further, the findings indicate that nonwhite female-headed households spend less on health care than white female-headed households. This may be surmised that a large portion of these nonwhite female-headed households were on welfare. Therefore, their out-of-pocket expenses on health care might be less than white female-headed households. Information on welfare receipt and further analysis are necessary.

Understanding of human capital investment behavior is important because investment for future earnings could be the determinant of the future well-being. Few studies, however, has been done in investigating such behavior because of difficulties in empirical operationalization of human capital variables and limitations in data set. Since the concepts of investment in human capital are abstract and general, almost every specification of empirical indicators are more likely to be an approximation in the present study. Furthermore, although it has been well known that not only money spent on human capital investments but also time spent on activities could have a tremendous effect on the building of human capital, data from the CES do not provide information on the time dimension. For example, parents' shared time with their children or the amount of time devoted to investing in human capital for themselves could be an important measurement for human capital investment. More complete data will be necessary for future study on human capital investment behaviors.

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#### References

- Abdel-Ghany, M. & Schwenk, F. (1993). Differences in consumption patterns of single-parent and two-parent families in the United States. Journal of Family and Economic Issues, 14, 299-315.
- Becker, G. (1975). Human capital: A theoretical and empirical analysis with special reference to education. Chicago: The University of Chicago Press.
- Bryant, W. (1990). The economic organization of the household. New York: Cambridge University Press.
- DiMaggio, P. (1982). Cultural capital and school success: The impact of status culture participation on the grades of U.S. high school students. American Sociological Review, 47, 189-201.
- Ford, B. (1977). Case studies of black female heads of households in the welfare system: socialization and survival. Western Journal of Black Studies, 1, 114-118.
- Horton, S. (1978). Expenditure behavior of female-headed and two-parent families. Unpublished doctoral dissertation, University of Illinois, Urbana-Champaign.
- Horton, S. & Hafstrom, J. (1985). Income elasticities for selected consumption categories: Comparison of single female-headed and two-parent families. Home Economics Research Journal, 13, 292-303.
- Lino, M. (1989). Factors affecting expenditures on single-parent households. Home Economics Research Journal, 18, 191-210.
- Mehta, M. (1976). Human resources development planning: With special reference to Asia and the Far East. Calcutta: The MacMillan Company of India Limited.
- Mincer, J. & Polachek, S. (1974). Family investments in human capital: Earnings of women. Journal of Political Economy, 82, 576-598.
- Morgan, J. & Duncan, G. (1982). Making your choices count: Economic principles for everyday decisions. MI: The University of Michigan Press.
- Schultz, T. (1961). Investment in Human Capital. American Economic Review, 51, 1-17.

- U.S. Bureau of the Census (1991). Current Population Reports (No.157, pp. 60). Washington, D.C.: U.S. Government Printing Office.
- U.S. Department of Commerce, Bureau of the Census (1991). Statistical abstracts of the United States. Washington, D.C.: U.S. Government Printing Office.
- U.S. Department of Labor (1992). Consumer Expenditure Survey: 1990-91, Interview Survey Public Use Tape and Documentation. Washington, D.C.: Bureau of Labor Statistics.

Endnotes

1. Doctoral Student, Department of Consumer and Family Economics.