

household had to have experienced the death of the husband. Wives' deaths have been excluded because critical data on the existence of limiting health conditions is not collected each year for wives in the PSID. Second, the death had to occur between 1969 and 1981. The 1969 to 1981 time period was selected because in the 1983 release of the PSID data, these are the years for which one can calculate household economic status one year prior to the death and one year after the death. Third, the surviving spouse (i.e., the widow) must not have remarried during the follow-up period. There are 298 households where the husband died between 1969 and 1981 in the PSID. Of these 298, there are 13 widows who remarry, leaving 285 widowed households for the current analysis.

A sample of 1701 intact households has also been drawn from the PSID. Each household in this group is at risk of experiencing the death of a spouse. Thus, by examining the economic circumstances of the intact households over the same period of time, it is possible to establish a baseline estimate of changes in economic well-being against which the changing financial circumstances of the widowed sample can be compared.

Prior to conducting the descriptive analyses, the intact households are matched to the widowed households to avoid inappropriately attributing life cycle changes in economic well-being to marital status. The matching process involves several steps. First, the intact households are randomly assigned to a "year of widowhood." Second, the distribution of the year of widowhood and age of the surviving spouse at the time of the death are ascertained for the widowed households. Finally, the continuously-married households are weighted so that their age and year of widowhood distributions are comparable to the distributions for the widows.

DESCRIPTIVE ANALYSES

To assess the extent to which economic well-being differs between the two household types, we begin by examining mean household income for each group in the year immediately preceding the death (i.e., year $t-1$) and the year immediately following the death (i.e., year $t+1$).

⁶ For instance, it is quite likely that widowed households will be headed by an individual who is older than the head of an average continuously-married household. Furthermore, households headed by older individuals have less income than households headed by younger individuals. If the data are not weighted to correct for this age distribution difference, then we would run the risk of overestimating the difference in income between the two groups that can be attributed to marital status.

The definitions for all of the variables used in the analyses that follow appear in Table 1. The means and standard deviations for household income and income-to-needs ratios for both year $t-1$ and year $t+1$ appear in Table 2. The interpretation of the income-to-needs ratio is straightforward [12]. A household with a ratio of one has exactly enough income to meet its basic food, clothing, and shelter needs. In contrast, a household with a ratio of 4.5 has four-and-one-half as much income as it would take to meet its basic needs.

TABLE 1. Variable Definitions

Variable	Definition
WIDOW _t	Dummy Variable; 1 = household where the husband dies in year t 0 = continuously-married household
DISABILITY _{t-1}	Dummy Variable; 1 = husband reported a limiting health condition at least once between t-1 and t (i=1 or 5) 0 = husband reports no limiting health condition between t-1 and t (i=1 or 5)
INCOME _{t-1}	Household income in year t-1 (i=1 or 5) measured in 1982 dollars
INTRENT _{t-1}	Proportion of household income derived from interest earnings and rent in year t-1 (i=1 or 5) measured in 1982 dollars
PENSION _{t-1}	Proportion of household income derived from private pension sources in year t-1 (i=1 or 5) measured in 1982 dollars
SSECURITY _{t-1}	Proportion of household income derived from Social Security in year t-1 (i=1 or 5) measured in 1982 dollars
RETIRE _t	Dummy Variable; 1 = if the household head retires between t-1 and t+1 0 = if the household head does not retire between t-1 and t+1
PRERETIRE	Dummy Variable; 1 = if the household head retires between t-5 and t 0 = if the household head does not retire between t-5 and t
POSTRETIRE	Dummy Variable; 1 = if the household head retires between t and t+5 0 = if the household head does not retire between t and t+5
I/NEEDS _{t+1}	Ratio of household income to basic family needs in year t+1 (i= -5, -1, 1 or 5)
AGEL50 _t	Dummy Variable; 1 = head of household was less than 50 in year t 0 = otherwise
AGE5062	Dummy Variable; 1 = head of household was age 50 to 62 in year t 0 = otherwise
AGE62	Dummy Variable; 1 = head of household was over age 62 in year t 0 = otherwise
WIDYEAR _t	Calendar year of the widowhood. In the t-1 to t+1 analysis, WIDYEAR = 69 to 81. In the t-5 to t+5 analysis, WIDYEAR = 72 to 77.

⁷ Information on the household's economic status for year t is not used here because the data for this year would reflect the economic contributions of the deceased spouse for the months prior to the death. Thus, a "clean" measure of the change in financial circumstances at the time of a spouse's death can best be gleaned by looking at the difference between economic resources in t+1 and t-1.

The information presented in Table 2 shows that while intact couples on average, experienced a slight drop in income between $t-1$ and $t+1$, new widows experienced more than an \$8,000 decline in income on average. Similarly, although the mean income-to-needs ratio drops slightly between $t-1$ and $t+1$ for the intact households, the decline is much greater for the widowed households. These figures support past work which shows on average, the decline in economic resources at the time of a husband's death is quite severe [2,7,14].

TABLE 2 Mean Household Income and Income-to-Needs at $t-1$ and $t+1$ by Household Type (standard deviations in parentheses)

Sample	N	INCOME _{t-1}	I/NEEDS _{t-1}	INCOME _{t+1}	I/NEEDS _{t+1}
All Intact Households	1701	\$27,592 (\$21,324)	3.17 (2.48)	\$27,025 (\$21,608)	3.16 (2.48)
All Widowed Households	285	\$20,940 (\$15,385)	2.36 (1.64)	\$12,843 (\$9,424)	2.00 (1.30)
Intact--No Health Limitations	1360	\$30,916 (\$22,298)	3.46 (2.56)	\$30,244 (\$23,106)	3.42 (2.65)
Intact--Health Limitations	341	\$18,357 (\$12,193)	2.25 (1.48)	\$19,341 (\$12,916)	2.41 (1.58)
Widowed--No Health Limitations	125	\$24,526 (\$16,464)	2.73 (1.60)	\$13,690 (\$9,727)	2.10 (1.29)
Widowed--Health Limitations	160	\$17,648 (\$13,887)	2.03 (1.65)	\$12,334 (\$9,530)	1.93 (1.37)

However, the picture is somewhat altered if we look at the change in economic well-being for two widowed-household sub-groups; one group where the husband reported having some sort of limiting health condition in the year prior to his death and the other group where the husband reported no limiting health conditions in the year prior to his death. The statistics for these two sub-groups also appear in Table 2.

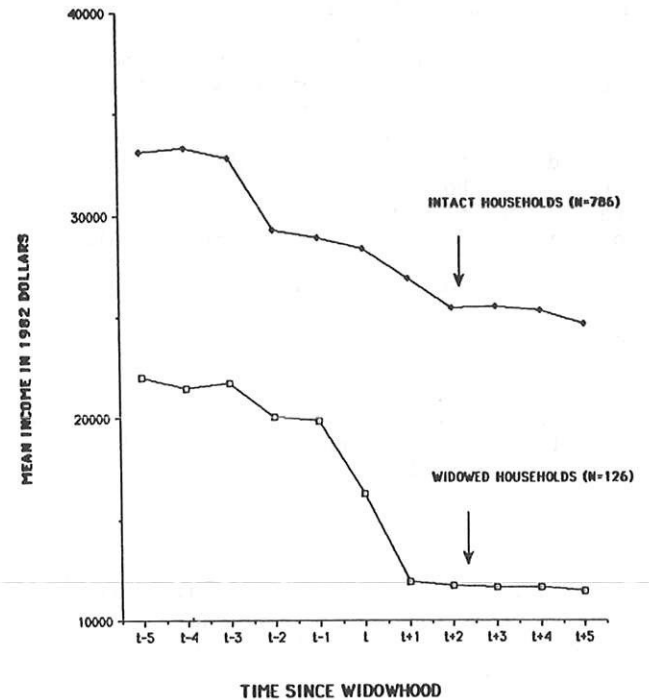
Two salient features about the economic resources of these sub-groups are readily apparent. First, households where husbands reported no health limitation have a higher mean income and income-to-needs ratio in the year prior to the widowhood than do the households where husbands reported some limiting condition. This difference is even greater for the intact couple sub-groups that have also been partitioned on the basis of the husband's reported health limitations. Second, between $t-1$ and $t+1$, the widowed households with previously healthy spouses experience greater declines in income and income-to-needs on average, than did their widowed counterparts with health limitations. This difference in the change in economic circumstances for the two widowed sub-groups is made even more striking if one looks at what happens to the economic status of intact couples during this time. Indeed, the sample where the husband reported one or more health limitations experienced increases in economic resources during the same period of

analysis. Such evidence is supportive of our hypothesis that the presence or absence of spells of prior illness affect the change in economic status that a household experiences at the time of a spouse's death.

To further examine the changes in economic well-being that occur during the process of widowhood, the period of analysis is now expanded to include the five years immediately prior to the death and the five years immediately following the death. It is important to note that while this expanded time horizon provides more information it is not without certain costs. To obtain this eleven-year sample using the PSID, the years of widowhood must be restricted to 1972-1977, inclusive. Thus, the sample of widows and the matching sample of intact couples are reduced to 126 and 786 households, respectively.

The plots of the mean income paths (measured in constant 1982 dollars) for the entire widowed and intact samples appear in Figures 1. The plots of the mean income-to-needs ratios for the same samples appear in Figure 2. The two figures paint a strikingly similar picture of changing economic resources over the eleven-year period.

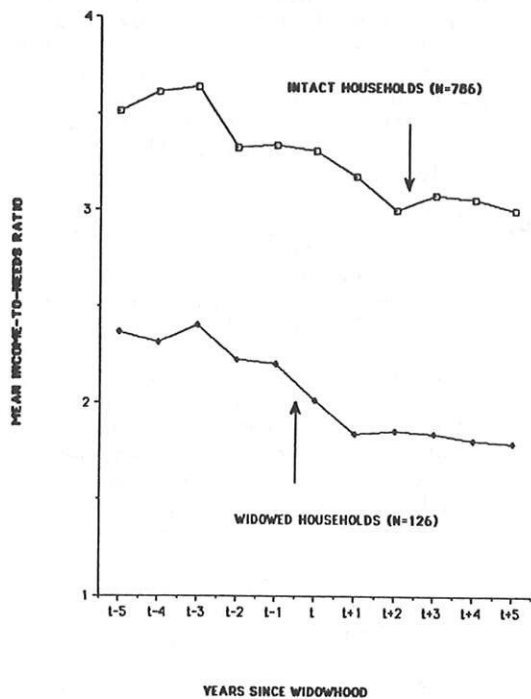
FIGURE 1. ELEVEN-YEAR MEAN INCOME PATH



Perhaps the most noteworthy information contained in these figures is that even as far back as five years, the average household that was to experience a death has a dramatically different economic situation than the average

household where no death was to take place. Previous widowhood research has suggested that poorer households are more likely to have a spouse die than are richer households [11]. These data support this hypothesis. Indeed, the data show that the pre-widowhood income differences between intact households and widowed households exist over an extended period of time.

FIGURE 2. ELEVEN-YEAR MEAN INCOME-TO-NEEDS PATH



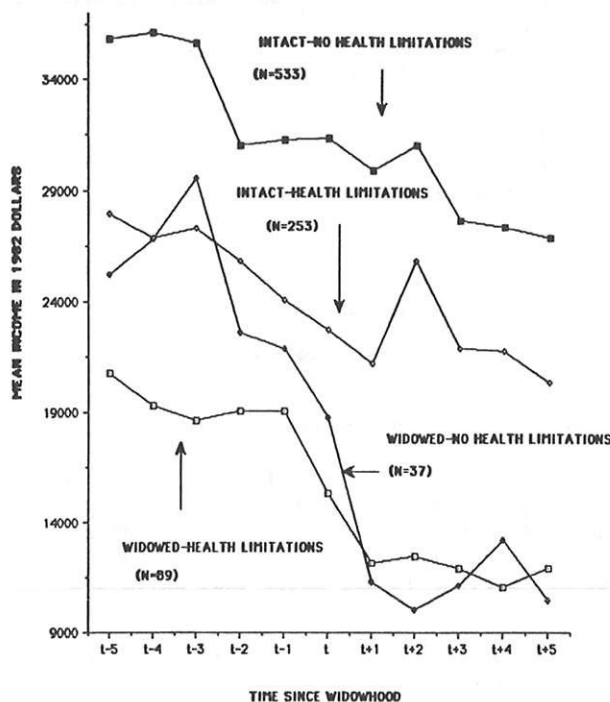
From t-5 to t+5, the economic status of intact-couple households declines moderately. Most of this decline is probably attributable to their changing labor supply patterns as they approach retirement. With the matching weights in place, 24 percent of the intact-couple sample has a husband between the ages of 50 and 62 in year t, and 66 percent of the sample has a husband over age 62 in year t. For these households, it is quite likely that one or both of the spouses will retire during the eleven-year period of analysis. Thus, it is not surprising that we observe some moderate decline in the economic well-being of the average household in this group.

For widowed households there is a gradual decline in economic status between t-5 and t-1. As in the intact-couple sample, some of this decline may be due to retirement. The rate of decline in economic status increases markedly between t-1 and t+1, and then finally, mean economic status appears to stabilize somewhat at a new, lower level between t+1 and t+5.

At this point the samples are stratified into

four groups based on whether the husband ever reported a health limitation during the five-year pre-widowhood period. The plots for the mean income and income-to-needs ratios for these sub-samples appear in Figures 3 and 4. Not surprisingly, the intact couples who report no health problems begin the period with the most income and they also fare the best over the eleven years on average. This group is followed by the intact households where the husband reports having one or more health limitations, the widowed households that report no health problems, and finally, the widowed households that report one or more health limitations.

FIGURE 3. ELEVEN-YEAR MEAN INCOME PATH BY HEALTH STATUS

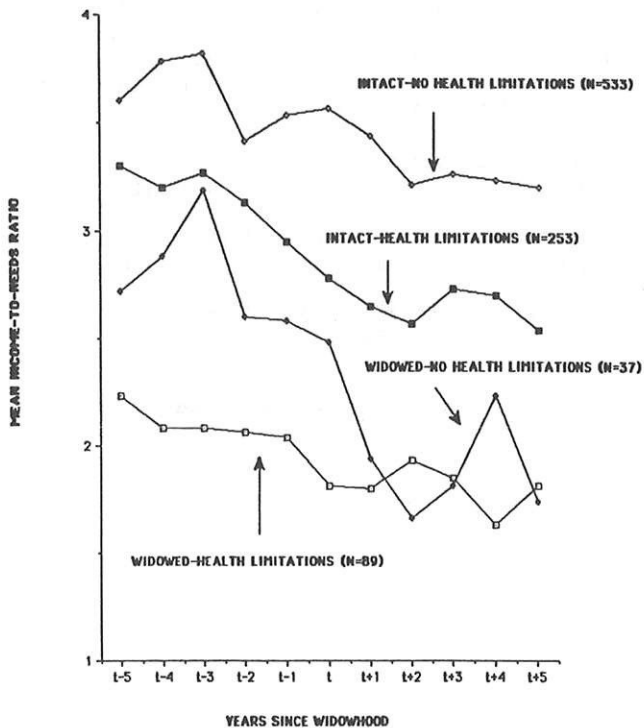


ESTIMATING THE IMPACT OF HEALTH STATUS AND THE TRANSITION TO WIDOWHOOD ON CHANGES IN HOUSEHOLD ECONOMIC WELL-BEING

The descriptive data from Table 2 and Figures 1 through 4 show that the economic situations of widowed individuals are generally worse than those of otherwise comparable intact couples. Furthermore, assessments of the economic experiences of the widowed vary by the existence of prior limiting health conditions and the period of time through which the households are followed. It is hypothesized that a household is less likely to experience a dramatic decline in economic well-being at the time of a death if the spouse who died had experienced previous health problems. To test this hypothesis, a multivariate model of household structure and change in economic well-being is specified and

estimated using the PSID data.

FIGURE 4. ELEVEN-YEAR MEAN INCOME-TO-NEEDS PATH



In the model, the dependent variable is the change in household income-to-needs between $t-i$ and $t+i$ (where $i=1,5$). For the purpose of this analysis, change in a household's income-to-needs ratio is a better indicator of change in economic status than is change in household income. Earlier it was noted that while the death of a spouse reduces household income, it also simultaneously reduces basic household needs. Thus, the net impact of the death of a spouse will be better estimated if change in a household's income-to-needs ratio is the dependent variable.

Change in income-to-needs over time is posited to be a function of both the death of a spouse and prior health limitations. Furthermore, the impact of prior health limitations is hypothesized to vary between intact households and widowed households. Thus, the basic model specification is an interactive one where a dummy variable that identifies reported health limitations of the husband and another dummy variable that identifies if the husband dies, are interacted as well as entered directly in the equation. It is posited that widowed households will experience a decline in income-to-needs over the period of analysis. However, this decline should be smaller for those households where the husband reported one or more health limitations prior to his death, *ceteris paribus*.

There are several other factors in addition to the death of a spouse and reported health limitations, that may affect changes in household economic well-being and these factors must also be controlled for in the estimating equation. First, the equation must control for retirement. Earlier it was noted that a large portion of the couples in these samples are in the age range where they are likely to be retiring from the labor force. Retirement usually precipitates a decline in financial circumstances for the household [1]. In this model, retirement will be measured by a dummy variable, that takes on a value of one if the household head retires during the period of analysis, zero otherwise. It is hypothesized that the estimated coefficient associated with this variable will be negative, all other variables held constant.

Second, initial income may affect the change in economic well-being experienced by the household. In theory, a household's current income is composed of two parts. The first component is its "permanent" income. This is the income the household expects to have each year over the life cycle on average. The second component is "transitory" income. Transitory income is the difference between the permanent component and current income. If permanent income is proxied by the average income in the sample, then households with higher than average initial income levels have a positive transitory component. Over time, these households should experience a negative change in economic well-being, all other things constant. In contrast, households with lower than average initial incomes have a negative transitory component. It is anticipated that these households would see a positive change in income during the period of analysis. Thus, it is anticipated that the estimated coefficient on initial income will be negative, *ceteris paribus*.

Third, it is hypothesized that the proportion of a household's income that comes from sources other than market earnings will affect their change in economic status during the period of analysis. A large proportion of income from nonwage sources may be one indication of a household where the spouses have engaged in

⁸ The transition to retirement is defined by having worked more than 500 hours in one year and less than 500 hours in the next year, and in the latter year reporting one's employment status as "retired."

⁹ The inclusion of such a regressor would lead to statistical complications if the dependent variable were change in household income. However, because the dependent variable is the change in the household's income-to-needs ratio, the likelihood of correlation between initial household income and the error term is small.

prior financial planning. For this reason, it is posited that the larger the proportion of income from nonwage sources, the greater the increase in the household's economic well-being during the period of analysis, other things held constant. In the PSID data there are three separate categories of nonwage income that can be controlled for in the estimating equation. These three categories are the proportions of household income derived from (1) rent and interest, (2) private pensions, and (3) Social Security.

Finally, dummy variables that measure the age of the head of household and a variable that identifies the year of the widowhood are included in the equation. Generally, economic well-being varies over the life cycle and across calendar time. These variables are included in the model to control for the possibility of such age and period effects.¹⁰

DISCUSSION OF RESULTS

This model is estimated twice, once using t-1 to t+1 as the period of analysis and a second time using t-5 to t+5 as the period of analysis. The results for both equations are presented in Table 3. Tests of the overall goodness of fit for each equation indicates that the model fits well in both instances, although the proportion of explained variation is greater in the equation where the t-5 to t+5 period is used. The estimated coefficients and their associated t-statistics show that most of the a priori hypotheses are supported by the data.

Of central interest are the coefficients associated with the dummy variables that indicate if a husband died and if a husband reported any health limitations between t-i and t (WIDOW_t, DISABILITY_{t-1}, and WIDOW_t*DISABILITY_{t-i}, and WIDOW_t*DISABILITY_{t-i}). With only one exception (the coefficient associated with DISABILITY_{t-1}), all of these estimated coefficients are large, in the hypothesized direction, and statistically significant.

¹⁰ One might think it is redundant to control for age and year of widowhood in a regression equation where the intact couple households have been weighted so that they mirror the widowed households age and year of widowhood distributions. However, while such weighting prohibits the use of age as an independent variable in any equation that predicts household structure, it does not preclude its inclusion in an equation that examines change in economic status. The reader is referred to Schlesselman [13] for a full discussion of the consequences of estimating regressions that do not take into account the matching variables used to structure the sample.

In the t-1 to t+1 change equation, intact households where the husband reports having a health limitation(s) experience a modest (and statistically insignificant) increase in income-to-needs (.104) relative to intact households where the husband reports no health limitation, *ceteris paribus*. In contrast, widowed households where the husband reported a health limitation in the year prior to the death demonstrate a significant decline on income-to-needs (-.209 = -.651 + .104 + .338) relative to their healthy intact counterparts. But the estimated coefficients indicate that the greatest drop in economic status is experienced by those households where the husband reports no health limitation in the year preceding his death. As had been anticipated, these households show a marked decline with their income-to-needs ratio dropping by -.651 more than their otherwise comparable intact-couple counterparts between t-1 and t+1.

TABLE 3. PARAMETER ESTIMATES OF THE FACTORS AFFECTING CHANGES IN INCOME-TO-NEEDS (t-statistics in parentheses)

Independent Variables	Dependent Variables	
	(I/NEEDS _{t+1} - I/NEEDS _{t-1})	(I/NEEDS _{t+5} - I/NEEDS _{t-5})
CONSTANT	-2.15 (-4.02)**	1.43 (.503)
WIDOW _t	-.651 (-5.78)**	-.925 (-3.31)**
DISABILITY _{t-1}	.104 (1.43)	-.334 (-2.51)**
WIDOW _t *DISABILITY _{t-i}	.338 (2.14)**	.979 (2.86)**
INCOME _{t-1}	-3.22x10 ⁻⁶ (-4.04)**	-1.66x10 ⁻⁵ (-5.81)**
INTRENT _{t-1}	.628 (3.64)**	1.69 (4.08)**
PENSION _{t-1}	.263 (1.88)*	.896 (3.03)**
SSECURITY _{t-1}	.662 (5.26)**	.637 (1.94)*
RETIRE _t	-.109 (-1.32)	---
PRERETIRE _{t-5}	---	-.759 (-4.53)**
POSTRETIRE _{t-5}	---	-.229 (-1.12)
AGE5062 _t	-.220 (-2.21)**	-.246 (-1.07)
AGEGT62 _t	-.622 (-6.18)**	-1.43 (-6.28)**
WIDYEAR _t	.0326 (4.57)**	-5.02x10 ⁻³ (-.134)
R ²	.065	.17
F	13.9**	17.0**
N	1986	912

** Significant at the .05 level.
* Significant at the .10 level.

The estimates of economic change for the t-5 to t+5 equation are very similar to those described above. Again, healthy intact households fare the best and in the equation they serve as the benchmark of comparison. Surprisingly, widowed

households where the husband had reported a health limitation are the next best. Their income-to-needs ratio changes by $-.280$ ($= -.925 - .334 + .979$) over the eleven-year period compared to the healthy intact group and the change is statistically significant. The widowed households with the "unhealthy" husbands are followed by the intact couples with husbands who have health limitations. This group shows a $-.334$ decline in economic status over the eleven-year period compared to the intact households where the husband reports no health problems. As in the short-run equation, widowed households with previously healthy husbands fare the worst. The coefficient estimate indicates that these households experience a $-.925$ change in income-to-needs relative to the healthy intact households.

The other set of variables in the equations that merit discussion are the three variables that measure the proportion of household income from various nonwage sources at the beginning of the analysis period. The coefficients indicate that there is a statistically significant relationship between increasing the proportion of household income derived from private pensions, interest/rent, and/or Social Security, and positive changes in the household's economic status during the interim period of analysis, *ceteris paribus*. In the short-run equation, Social Security has the largest positive impact, followed by interest/rent, and then private pensions. In the longer-run equation, an increase in the proportion of interest/rent income leads to the largest positive change in income-to-needs. An increase in the proportion of private pension income has the second largest effect while an increase in Social Security has the relatively smallest positive effect on change in economic status. These results support the hypothesis that the greater the share of household income from nonwage sources, the greater the growth in economic well-being over time.

Indeed, these findings suggest that private pensions, Social Security, and interest/rent income all serve to promote positive changes in economic status over time. In t-1, 34.5 percent of the widowed sample had some private pension income, 68.3 percent had some Social Security, and 55.2 percent had some interest/rent income. The corresponding figures for the intact households were 29.8 percent, 50.7 percent, and 59.1 percent, respectively.

Given that proportion of income from nonwage sources had such significant effects and that these income sources appeared to vary across household types, a second set of equations were run. These equations tested for the possibility that proportion of income from nonwage sources would have a differential impact across widowed and intact households. This interactive specification met with no support. That is, the

effect of initial proportion of household income from private pensions, interest/rent, and Social Security on change in economic status, did not vary between widowed and intact households.

CONCLUSIONS

The results of these analyses demonstrate that the exogenous change in living arrangements brought about by the death of a spouse precipitates significant economic changes for the surviving household member(s). On average in the first year after widowhood, the analyses showed that household income fell to 61 percent of what it had been in the year prior to widowhood. During the same period, average income-to-needs for the newly-widowed households also fell to 85 percent of what it had been in the year prior to the death. These are fairly dramatic short-run changes. As a point of comparison, when Duncan and Hoffman examined the economic consequences of divorce, they found the household income (income-to-needs) of women one year after a divorce to be 70 percent (87 percent) of what it had been in the year preceding the divorce on average [4].

The analysis also demonstrates that there is heterogeneity in the economic experiences of widowed households. Indeed, some striking differences emerged once the data were partitioned on the basis of the husband's reported health limitations. During the pre-widowhood period, households where the to-be-deceased spouse reported a limiting health condition had lower income levels than those households where the spouse reported no health problems. It would appear that for the households with identified health limitations, one or both of the spouses may be decreasing their labor supply to the marketplace during this time. In addition, it is possible these households are also liquidating other income-generating resources, perhaps to pay their increasing medical bills.

Yet, regardless of prior health status, the descriptive work showed both widowed sub-groups with lower initial income levels than their intact counterparts had. This finding was contrary to our *a priori* expectation. It had originally been posited that households where the to-be-deceased spouse was reportedly healthy would have pre-widowhood income levels like those of the intact couples.

What is it about the to-be-widowed households that leads them to have lower levels of economic status years before the spouse dies? The answer to this question is somewhat elusive in part, because of data limitations. Prior health conditions clearly matter, but exactly what it is about prior health status that matters cannot be investigated in detail using the current PSID data set. In 1983 release of the PSID data, the only information on health status one has is the

respondent's own assessment of whether or not he/she has a health condition that limits his/her activities. Ideally, one would like to have more information about what exactly the health limitation is and how long the respondent has had the health problem. Such information would help us better understand the heterogeneity of the death process and what impact it has on the economic well-being of the surviving household member(s).

REFERENCES

1. Burkhauser, R. V. and G. J. Duncan. "Life Events, Public Policy and the Economic Vulnerability of Children and the Elderly," draft manuscript, University of Michigan, 1978.
2. Campbell, R. T. and C. M. Hudson. "Synthetic Cohorts from Panel Surveys," Research on Aging, 7(1):81-93, 1985.
3. Corcoran, M. "The Economic Consequences Marital Dissolution for Women in the Middle Years," Sex Roles, 5(3):343-353, 1979.
4. Duncan, G. J. and S. Hoffman. "A Reconsideration of the Economic Consequences of Marital Dissolution," Demography, 22(4):485-497, 1985.
5. Duncan, G. J. "The Most Important--And Neglected--Consumer Choices," American Council on Consumer Interests' Annual Proceedings, pp. 106-110, 1985.
6. Helsing, K. J., M. Szklo, and G. W. Comstock. "Factors Associated with Mortality after Widowhood," American Journal of Public Health, 71-802-809, 1981.
7. Holden, K. C., R. V. Burkhauser, and D. A. Myers. "Income Transitions at Older Stages of Life: The Dynamics of Poverty," The Gerontologist, 26(3):292-675, 1986.
8. Hyman, H. H. Of Time and Widowhood. Durham, N.C.: Duke University Press, 1983.
9. Lopata, H. Z. "Contributions of Extended Families to the Support Systems of Metropolitan Area Widows: Limitations of Modified Kin Networks," Journal of Marriage and the Family, 40:355-364, 1978.
10. Masnick, G. and M. J. Bane. The Nation's Families: 1960-1990, Cambridge, MA: Joint Center for Urban Studies at MIT and Harvard University, 1980.
11. Morgan, L. A. "Economic Changes at Midlife Widowhood: A Longitudinal Analysis," Journal Marriage and the Family, 43:899-912, 1981.
12. Orshansky, M. "The Shape of Poverty in 1966," Social Security Bulletin, 31:3-32, 1968.
13. Schlesselman, J. J. Case Control Studies--Design, Conduct, and Analysis, New York: Oxford University Press, 1982.
14. Zick C. D. and K. R. Smith. "Intermediate and Delayed Effects of Widowhood on Poverty: Patterns from the 1970's," The Gerontologist, 26(6):669-675, 1986.

INNOVATIVE RESEARCH METHODOLOGIES
APPLICABLE TO CONSUMER EDUCATION

E. Thomas Garman, Virginia Tech¹

ABSTRACT

Three papers are presented which discuss innovative research methodologies applicable to consumer education: critical thinking, mass-analysis, and economic education.

INTRODUCTION

Consumer education as a school subject has continued to evolve over the past twenty years. What was once primarily a topic on buymanship taught in high school home economics classes is now a rather fully developed field of study. Today, consumer education courses are frequently offered in high schools, colleges and universities.

One part of the current interest in consumer education focuses upon research methodologies applicable to the field. Critical thinking as a problem solving method in the teaching of consumer issues involves not simply the development of thinking through increasing knowledge or just teaching thinking skills. It utilizes a human concerns approach to developing thinking which concentrates on the problems and issues affecting consumers. Using this methodology in teaching consumer education helps students themselves to make decisions on what actions should be taken to address various problems and issues.

Meta-analysis is an innovative research technique utilized to identify methods of converting data to a common statistic which allows comparison of results across studies. When tests for homogeneity (comparing p levels and effect sizes) suggest a variation the explanation(s) can be ascertained. An analysis of several research studies on consumer education, for example, revealed that completing a course in the subject definitely increased post-test scores on appropriate measurement instruments.

A review of the research literature suggests that few innovative methodologies are being reported in consumer education. It was observed that economic education studies dominate the literature and that researchers are only beginning to address measuring the impact of consumer education on behaviors after students leave the formal classroom.

¹Professor of Consumer Studies in the Department of Housing, Interior Design and Resource Management.

THINKING CRITICALLY IN THE TEACHING OF CONSUMER ISSUES

Patricia M. Copa, University of Wisconsin-Madison¹
Barbara L. Schuler, University of Wisconsin-Madison²

ABSTRACT

Three perspectives for developing critical thinking in the teaching of consumer issues are introduced and examined. Primarily information and thinking skill-oriented approaches are shown to have less-than-optimal consequences for students and society. An approach which addresses serious problems in consumer affairs while critically examining personal and societal beliefs and practices is described and illustrated.

It's Friday evening and J.R. is plotting the demise of yet another hapless competitor or family member. We don't know exactly what is going on in his head but we can get a pretty good idea by what he does next - a phone call with an offer that no one can resist, a threat that leaves no avenue for defense, a promise that makes all past transgressions seem like someone else's misunderstanding. J.R. has read the situation and all the people involved, has poured through his store of wiles and tricks, has considered all the facts at hand and has come out on top again. You can say a lot of things about old J.R. but you can't say that he doesn't think.

It was hard not to focus on J.R. and others like him when I recently came across a list that someone had assembled and labeled "The Characteristics of Good Thinking." There were 23 items on that list and we will not comment on all of them; however, some are particularly interesting when you consider the "J.R. type." "Organizes thoughts and articulates them concisely and coherently." J.R. seems able to see things more clearly than anyone around him and he certainly can express what he wants to convey very effectively. "Looks for unusual approaches to complex problems" - J.R. is creative and astute; he notices information that others miss and has ways of going about things that not many people would think of. "Listens carefully to other people's ideas" - J.R. probably knows more about other people than they do about themselves. He listens carefully so he can get others where they are most vulnerable.

We hear a lot about teaching for thinking these days. In fact, that is what this paper is about. On the other hand, the J.R. illustration cautions us that we should not move too quickly to the "how to's"; instead, we need to stop and consider the nature of that thinking toward which we hope to move. Is it the kind that J.R. uses

or is it something different? And, what can we do as teachers and facilitators to help develop the kind of thinking we decide is best?

In this paper, we would like to explore briefly three different orientations to teaching for thinking and examine the assumptions and probable consequences associated with each. After building our case that the third approach presented is most desirable, we will illustrate how educators might use this perspective to promote the kind of good thinking that is needed in consumer programs.

DEVELOPING THINKING THROUGH INCREASING KNOWLEDGE

Without much question, the most common approach to teaching involves transmitting knowledge in the form of subject matter by teachers to students. Teaching could take this form for different reasons but many educators undoubtedly feel that students can think better if they know more. "Knowing more" is defined as having a rich store of facts, concepts and principles at one's disposal. Teaching from this approach stems from and reinforces particular notions of teachers and students as well as defines what knowledge itself is and what counts as being worth knowing.

Some of the fallacies--in addition to the pitfalls--of this orientation to teaching are readily apparent. We all are well aware that we know a great deal more than we are ever apt to put into practice. For example, I am willing to wager that we would all do much better on a written examination of nutrition principles than we would on the analysis of our last five days of actual eating. I will not speak for you but I think I know more about principles of money management than my checkbook indicates.

Thus, there seems to be more than a little fall-off between knowing and doing. A second obvious difficulty inherent in the content-centered approach is that it is not practically feasible to implement even now, let alone in the future. We have fondly come to know our times as the Information Age and phrases such as the "knowledge explosion" are familiar to us all. We have all heard that the amount of information which exists has doubled in the past ten, five or fewer years. Recently a hastily-called conference of physicists was held because developments in this field were being made far more rapidly than journals could report. New discoveries were continually phoned in during the meeting and rushed to the podiums as they occurred. It just is not possible to teach everything that there is to know anymore.

Less apparent but more serious, as quickly as new information is proliferating, this kind of knowledge is also peculiarly outdated. The kind of

¹ Assistant Professor of Continuing and Vocational Education

² Research Specialist in Continuing and Vocational Education

information that we have been talking about, the kind that is taught in knowledge-based classrooms, can only come from what is and can only describe what we have actually been able to observe from what is observable. We look for and we consequently find general principles, universal laws and "objective" facts - of, for example, decisionmaking, planning, managing. We forget that these generalities have come out of particular human experiences that have been shaped by particular and powerful social, economic, political and cultural forces.

For these reasons, the content that is taught in traditional information-based programs comes from and perpetuates the status quo - as good or as bad as it presently is. Although presented as "factual" or neutral, knowledge can never be objective or value free. If students are led to believe that some information exists outside of or supercedes their own experiences and potential for knowing, they become powerless and vulnerable to events that are not of their own making. Thus, Botkin and his colleagues describe information-oriented approaches to education as "maintenance learning." They state, "Maintenance learning is the acquisition of fixed outlooks, methods and rules for dealing with known and recurring situations. It enhances problem solving ability for problems that are given. It is the type of learning designed to maintain an existing system or an established way of life" (2, p. 10).

This type of information-oriented learning also establishes defined roles for teachers and students. Since teachers have the kind of knowledge that "counts" and students do not, teachers are givers and students are receivers. Learners are viewed as comparatively passive individuals who absorb facts and information from "experts," those who have access to the important knowledge in the area. What students know is often ignored or disregarded and is sometimes considered misinformation or worse than knowing nothing at all.

DEVELOPING THINKING THROUGH TEACHING THINKING SKILLS

If information-based approaches distinguished education in the past, "teaching for thinking" appears to have become the vanguard of the eighties. From popular books to scholarly journals, national school studies to PTO meetings, the call for developing critical thinking skills and higher order reasoning is constantly heard. It would be useful to take a little time to examine what these efforts might mean for instruction in consumer issues programs.

Almost all of the recent books on teaching for thinking - and there are many - include a chapter on why better thinking on the part of people is needed and necessary. Often the increasing complexity of the world is cited as well as the need for reflective people in a participatory democracy. Many times, however, the need for good thinking is taken as a given and the writer goes on to discuss how this quality does not come naturally and/or is not fostered in traditional

classrooms. Generally, it appears that we are less than clear about why it is really important to be able to think well in the first place.

To fill this void, authors frequently provide a description of what good thinking involves, sometimes expanding this portrait to lists of 23 traits as mentioned at the beginning of the paper in relation to J.R. One cannot help but recall the countless hours that have been spent in the past to construct lists of tasks or competencies for various occupations; is it possible that being able to show evidence of "doing" most or all of the 23 tasks should qualify a person as a certified "critical thinker?" Skepticism about this approach might involve debate about whether wholes are more than sums of parts. Nevertheless, thinking does tend to lose some of its dynamic essence when it is dissected and scrutinized and treated in segments.

On the other hand, approaches such as the 23 characteristics have served to provide the base for numerous "teaching for thinking" programs. As Sternberg (1987) reports in a recent Phi Delta Kappa article, one of the most frequently-heard questions he encounters on his teaching for thinking lecture circuit is, "Which program should we use"(10). Which program will improve our students' ability to compare, classify, order, estimate, extrapolate, interpolate, form hypotheses, weigh evidence, draw conclusions, devise arguments, judge relevance, use analogies, and so on and so forth? If one program concentrates on six critical thinking skills in depth, is it better than one that covers ten in less detail? If we can't teach all 23 qualities - or 15 or 32 - which are the most important ones to hit?

Richard Paul (1985) labels this skill-oriented approach to developing thinking as teaching critical thinking in the "weak" sense or fostering students' "vocational thinking skills"(6). There is no doubt that these kinds of skills are useful and even necessary to function effectively, particularly in technical areas that are best addressed by one rather consistent, rationally-determined system of ideas or procedures. On the other hand, most of our "real world" dilemmas are not of this kind. Instead, they involve, as Paul states, "opposing points of view, contradictory lines of reasoning, and the realities of power and self-delusion"(6). Without recognizing the nature of these latter kinds of situations, it is too easy to employ "good" thinking skills to rationalize and defend self-serving or pleasant illusions, our own dearly-held positions against threatening opposing views and/or blatantly distorted or morally-questionable opinions. We can become good thinkers but still think questionable thoughts. This situation seems well represented by "J.R.-type" characters. Its implications are particularly important to fields such as consumer affairs as we will discuss in the next section.

However, before moving on, let us explore briefly one way in which we frequently see thinking skills employed to perpetuate rather than eradicate bigger problems. Decisionmaking and problem-

solving are two processes that are often taught in consumer programs (as well as others) as tools to help people deal more effectively with their daily lives. A problem is clearly identified and defined in "treatable" terms. Systematic steps are taught that have students consider goals, evaluate alternatives, weigh consequences and arrive at solutions. Only individual's creativity and ingenuity limit the possibilities and opportunities that might rise from what was once considered problematic. Debating whether or not the problem itself might be "wrong" - not in its definition but, rather, in its existence in the first place - is not considered necessary or productive. Problems are taken as givens and "solved" as quickly and efficiently as possible. The difficulties which arise from this approach will become more apparent as we move to the next section.

USING A HUMAN CONCERNS APPROACH TO DEVELOPING THINKING

A third way of viewing the development of thinking in consumer education programs concentrates on the issues or problems that affect consumers. These problems or concerns provide a framework and a reason for study. Thus, one does not learn content for the sake of interest or mastery alone; likewise, thinking skills are not taught primarily as exercises to strengthen and sharpen mental acuity. Instead, what is considered to be knowledge in consumer education consists both in what is known (some of the traditional "subject matter") and how it is known (the ways one thinks about the area) employed together to deal with matters of serious concern to consumers.

Let's focus first upon the special problems or issues because their qualities can tell us a great deal about the kind of thinking that is necessary to address them appropriately. These problems are practical concerns in that they involve determining what action should be taken. As such, they are different from abstract mental puzzles and from primarily "how to" technical problems. Consumer problems are recognized as human problems and, as such are permeated by humanly-constructed meanings, traditions, values, power structures and relationships and unique histories. Reid (1978) describes these problems as having the following characteristics:

- 1) They raise serious questions that demand complex answers,
- 2) The bases upon which decisions should be made are unclear and uncertain,
- 3) Some existing affairs must be considered to address the problem,
- 4) Each dilemma is in some ways unique, occurring in a particular contextual setting and period of time,
- 5) Choices need to be made between competing goals and values,
- 6) It is not possible to predict exactly the outcome of the resolution chosen,
- 7) On the other hand, we have reason to believe that our actions can lead to some more desirable state of affairs (8).

Problems do not come with labels that say "this is a practical problem" or "this is a technical concern." Rather, viewing the consumer world in terms of practical dilemmas requires a special orientation, one that is not always popular in this age of scientific answers and technological solutions. Each day we read and hear about rising incidences of personal bankruptcies, of families without adequate health protection, of the high cost of interest charges. Being good-intentioned professionals, we might respond, "People have trouble with money management, with setting priorities, with understanding lending options." "Let us give them more knowledge. Let us provide them with decisionmaking skills. Let us share what we know about planning, about managing, about investing. Let us help them overcome their problems once and for all."

But what may at first appear to be the problems we should "solve" often turn out to be symptoms of larger issues when we take the time and effort to probe more deeply. For example, is it an inability to manage successfully that is at issue when we note that 40% of those classified as being in poverty in the United States are children and another 10% of the poor are elderly? Fifty percent of our nation's poor are the young and the old! Is it a lack of knowledge that is the cause of one-fourth of all Americans and one-half of all black Americans reporting times when they did not have money to buy food, clothing or health care for their families - as they did in a recent Gallup Poll? Could the single moms whose mean family income in 1985 was \$13,257 (less than 40 percent of the \$34,379 average income for two-parent families) have avoided this state if they had had better thinking skills? But perhaps it was indeed some kind of critical thinking that kept the absentee husbands/fathers out of this no-win situation!

Sometimes - often - we need to question the conditions out of which our perceived problems arise, and help the people with whom we work to do the same. The settings in which our concerns are found are not unchangable givens - they are very much affected, even determined by, humanly-created policies, practices and institutions. The question becomes: Who benefits from these policies, practices and institutions? And, who suffers? In consumer affairs, we deal with the distribution of society's resources, a fundamental process that involves intensely-charged interests, deeply held dreams rooted within our cherished capitalist system and unacknowledged feelings of fear and bigotry.

In his difficult but most important collection of papers assembled in *What is Called Thinking?*, Heidegger (1968) suggests that most of our efforts at improved thinking are incremental and will only take us to what he calls the "foothills of thought." At that point, he believes "only the leap will help further. The leap alone takes us into the neighborhood where thinking resides (4)." He goes on to contend,

In contrast to a steady progress, where we move unawares from one thing to the next and everything remains alike, the

leap takes us abruptly to where everything is different, so different that it strikes us as strange (4, p. 12).

This is the kind of experience that is considered necessary for what Richard Paul speaks of as critical thinking in the strong sense (contrasted to the "weak" sense discussed earlier in this paper)(6). Paul portrays this strong sense of critical thinking as "a set of integrated macrological skills ultimately intrinsic to the character of the person and to insight into one's own cognitive and affective processes." He believes that attending to critical thinking in the strong sense involves "not only the development of technical reason - skills that do not transform one's grasp of one's basic cognitive and affective processes - but also with the development of emancipatory reason - skills that generate not only fundamental insight into but also some command of one's own cognitive and affective processes." In the strong sense, "we emphasize comprehensive critical thinking skills essential to the free, rational and autonomous mind" (6, p. 152).

WHAT THIS MEANS FOR CONSUMER ISSUES PROGRAMS

These are lofty-sounding goals that may tend to paralyze us rather than give us new visions for our teaching. Let's explore how what has been discussed earlier might be reflected in consumer education programs - especially in those intending to promote the effective critical thinking of their students.

Focus on important practical problems :

The most significant issue we need to address in our consumer education programs is that we focus on serious problem areas and we recognize the practical nature of these concerns. In doing this, we have to be careful to distinguish symptoms from real concerns, aberrations from ongoing problems, trees from forests. We cannot go for the "quick fix" but have to recognize the complex holistic nature of human situations. We need to be careful not to succumb to the temptation to reduce an issue only to its technical components or abstract out principles that avoid messy but critical human elements. And, we need to keep in mind that we humans make the worlds they live in as well as are affected by these worlds - thus, we can and must change what we create.

In teaching, this may mean that we use carefully-selected and/or developed case studies far more often than we have in the past. With our students, we would explore these or other resource materials for the social, economic, political, historical and cultural elements which the situations reflect and which affect how we address them. We would explicitly address desired ends or goals in relation to their moral defensibility in terms of their consequences for all who are involved. Different options for acting would be tested for appropriateness to the particular

contextual factors at play and to the goals we have determined to be most desirable.

Develop good thinking skills and practice them continually :

The importance of possessing good thinking skills, of being competent in analyzing and processing information to arrive at sound and rational conclusions, is critical and cannot be minimized. These skills provide a foundation and a necessary condition for being able to assess what presently exists and to make accurate predictions for what is likely to happen if alternative strategies were pursued. Thus, these skills are necessary even though they are not enough by themselves alone.

Evidence is available that thinking skills may be taught and/or developed in educational programs. A classic example of an effort to do just this that is grounded in sound learning theory and research is Joyce and Weil's Models of Teaching (1986)(5). As mentioned earlier, other programs and resources are being produced rapidly. On the other hand, the effects of even the best of these approaches will be as fleeting as totally information-oriented courses if good thinking is not integrated into every aspect of instruction. Dewey said it best as he described the way that thinking had to be experienced, rather than taught:

No thought, no idea, can possibly be conveyed as an idea from one person to another. When it is told, it is, to the one to whom it is told, another fact, not an idea...What he (the person) directly gets cannot be an idea. Only by wrestling with the conditions of the problem at first hand, seeking and finding his own way out, does he think (3, p. 48).

If we accept Dewey's position, then, although teachers can direct, guide, model and/or instruct, it is the students who must do the thinking as they struggle with real (or simulated) problems. Displaying critical thinking skills is not the same as thinking critically. Thinking critically needs opportunities to wonder, to speculate, to test and to deliberate over something challenging that merits and provokes this attention. Thinking takes place within students as a result of hard work on something that demands serious consideration. A teacher may set the stage and provide the cues but the student must write the script that he or she will follow. No formula or technique can short-circuit this essential process.

Continually ask ourselves hard questions about our own and society's beliefs and assumptions :

Finally, we and our students need to find ways that make it possible for us to "take the leap" and allow ourselves to move beyond our present ways of thinking- especially when these ways of thinking blind us to larger situations that are wrong and unfair. Getting outside of ourselves

and looking critically at something that is really "us" - our thinking - is an extremely difficult but critical operation. Moreover, if we as educators expect our students to be able to become critical of their own ways of thinking, we teachers must be able to do this ourselves. Once we accept the importance of this process, the question arises, "How do we do it?"

The first part of the answer is, "We can seldom do this by ourselves." However, by taking part in serious discussions with other thoughtful people, we are more apt to begin to question that which we have found so comfortable and familiar in the past that we accepted it as a given. After opening areas to examination, we are able to scrutinize and evaluate them and then propose better ways for thinking about them. The importance of undertaking this process with others is emphasized by R.S. Peters:

Given that critical thought about the assumptions in which we are nurtured rather goes against the grain, it will only develop if we keep critical company so that a critic is incorporated within our own consciousness. The dialogue within is a reflection of the dialogue without (7, p. 19).

As we become more skeptical and questioning, we can then ask hard questions of our students that they in turn may consider in discussion with their peers. For example, in a recent article, Boettner (1) describes a thought-provoking lesson developed around Shor's (1986) "Extraordinarily Re-experiencing the Ordinary" as students examine the "Cabbage Patch Doll Phenomenon" (9). Students were asked to stand back from a product they had come to take for granted and examine it as a reflection of larger social forces. Boettner encouraged this critical exploration through such questions as:

- Who created the phenomenon of the Cabbage Patch Doll?
- What social implications are created when a parent purchases a doll?
- How do advertising and media create wants and desires for people?

Hopefully, as students become more aware of how societal pressures promote certain practices, they cannot in the future be unconsciously controlled by these pressures or unintentionally contribute to undesirable practices themselves. For them, as Heidegger observes, everything has become radically different (4).

SUMMARY

After criticizing others for not offering convincing justification for the need to develop critical thinking, let us turn to this issue as we end. In areas such as Consumer Affairs, thinking is not an abstract nor an esoteric activity that is interesting but not essential. The substance of consumer education is not found in textbooks but, rather, is lived by real people everyday. The decisions that we make as

individuals and as a total society have serious long-term consequences for ourselves and for future generations, for our society and for the world society as well. Thinking well in both the technical and in the emancipatory sense about important issues is not a nicety or a luxury; we cannot afford to not think - and act - in the best ways possible. We as consumer educators can help ourselves and our students come closer to this condition by what and how we approach our educational programs.

REFERENCES

1. Boettner, D. An Exercise in Extra-ordinarily Re-experiencing the Ordinary: A Critical Look at the Cabbage Patch Doll Phenomenon. Illinois Teacher. 30 (4): 152-153. March/April 1987.
2. Botkin, J.W., Elmandjra, M., and Malitza, M. No Limits to Learning: Bridging the Human Gap. England: Pergamon Press, 1979.
3. Dewey, J. Quoted in R.S. Nickerson, D.N. Perkins, E.E. Smith. The Teaching of Thinking. Hillsdale, NJ: Lawrence Earlbaum Associates, Inc., 1985.
4. Heidegger, M. What is Called Thinking? New York: Harper and Row, 1968.
5. Joyce, B. & Weil, M. Models of Teaching, Third Edition. Englewood Cliffs, NJ: Prentice-Hall, Inc., 1986.
6. Paul, R.W. Dialectical Reasoning. In A.L. Costa (Ed.), Developing Minds: A Resource Book for Teaching Thinking. Association for Supervision and Curriculum Development, 1985.
7. Peters, R.S. What is an educational process? In R.S. Peters (Ed.), The Concept of Education. New York: The Humanities Press, 1967.
8. Reid, W.A. Thinking About the Curriculum. The Nature and Treatment of Curriculum Problems. Boston: Rutledge and Kegan Paul, 1978.
9. Shor, Ira. Critical Teaching and Everyday Life. Chicago: University of Chicago Press, 1986.
10. Sternberg, R.J. Teaching Critical Thinking: Eight Easy Ways to Fail Before You Begin. Phi Delta Kappa. 68(6): 456-459. February, 1987.

Mary L. Carsky, Eastern Connecticut State University¹

ABSTRACT

This paper presents an overview a meta-analytic techniques employed in integrative research reviews. A framework for conducting the review is provided and an example of the application to Consumer Studies is provided. Eleven studies to measure the cognitive effects of formal consumer education course on consumer competency are summarized using meta-analytic techniques and their cumulative effect noted.

In social sciences knowledge does not build and advance as it does in the hard sciences. Research reports commonly end with a call for further research to replicate the findings for substantiation purposes. In the social sciences the findings are rarely replicated. In fact, many attempts at replication are designed to refute the findings of previous research on the topic. The failure to build and advance through replication of prior research is, in part, due to the nature of social sciences. Unlike hard sciences where experimental conditions can be strictly controlled, our research commonly characterized by artifactual conditions which attenuate results and prevent perfect replication.

Building on prior knowledge is not simple in a domain where effect sizes are generally small and a single study can explain only a small proportion of variance. Our literature reviews are typically presented in a narrative form including a discussion on previous research which discloses conflicting results. Thus, we are continually seeking to answer the same questions; we are in search of the definitive study which will finally lay the issue to rest.

The field of Consumer Studies has been beset by these problems in our efforts to demonstrate that consumer education is a worthwhile endeavor or a credible academic course of study. In 1986, Bannister [1] stated that "there is a need for research that is carefully designed and meticulously executed to measure the benefits of consumer education." Bannister further stated that to indicate that [five] previous studies on consumer education did not increase consumer competencies "may be misleading and potentially harmful generalization when viewed as a collective summary of the five research studies cited" [1].

Researchers have been attempting to measure the effects of consumer education in the schools since the 1960's and to date have not designed or implemented the definitive study. Literature reviews discuss the independent variables measured and controlled [age, sex, major field of study, cognitive ability, work experience, social class] and the dependent variables including behavior, attitudes, and cognitive gain. Results

of the studies have indicated weak though statistically significant effects.

The reviews have not been nearly as informative as they might be with respect summarizing significance levels or summarizing effect sizes to provide an assessment of what is currently known. Quantitative results of the previous studies are rarely presented for comparison. It is possible to compare and combine the results of previous research through meta-analytic techniques which have been developed over the past twenty years. In spite of these methodological developments over the long term, it is only recently that there has been a growing interest in integrating research results.

Research reviews in the social sciences are finally beginning to move from a literary to a quantitative format. The purpose of this paper is to present an overview of meta-analytic techniques to synthesize knowledge within a specific research domain.

DEVELOPING AN INTEGRATED REVIEW

The purpose of a literature review is to demonstrate the current level of knowledge in a research domain. It is rare that a review in a thesis, doctoral dissertation, or published study establishes a clear answer to the underlying substantive issue identified in the hypothesis. More typically the review begins with a recitation of of the inconsistent results of previous research and concludes with the call for additional research.

The research review should systematically establish the concepts, variables, or situations and theoretical propositions linking the variables. As the findings are collected, consolidation should occur, leading to confirmed linkages among the variables [18]. As the quantification of research results across studies has gained momentum, several researchers have laid down a methodology for conducting an integrated review [6, 7, 12, 14, 18, 22, 25]. Monroe [18] described five steps to completing an integrated review.

STEP 1: DETERMINING THE RESEARCH DOMAIN

Prior to beginning the review, the primary research question must be identified. This will guide the review process and enable the completion of a cohesive analysis. The question might be as general as "What are the benefits of consumer education? or more specific as "Does enrollment in a consumer education course increase competency in the marketplace?"

¹Assistant Professor of Marketing

STEP 2: DETERMINE THE SAMPLE

Prior to beginning the search for salient information, the relevant population of studies must be defined. Initially one should seek to identify as many as possible. Thus a variety of indexes as well as journals which are oriented to literature reviews should be examined as well as bibliographies of all studies reviewed.

Once the population of studies has been identified, the problem of how to choose a representative sample of studies if the number of studies is large or conversely how far afield should one go into related areas if the actual sample is small? In identifying the reviewed studies there are two problems which contribute to the sample being incomplete: publication bias, and methodologically flawed studies. There is documented evidence that journals are prejudiced against statistically non-significant results [22]. This is evidenced in studies which ought to measure the benefits of consumer education. Dissertations by Bibb [2], Claar [5], and Thomas [24] are cited by other authors for their failure to detect a difference in competency following a consumer education course. The reliance on dissertations to guide the reviews might be due to an attempt to examine the original studies or [more likely] due to the failure to publish the studies. The latter could be again due to two causes: no effort to publish nonsignificant findings on the part of the researcher or rejection by editors for the same reason. According to Rosenthal [22] the journals are filled with five percent of the studies showing Type 1 errors, while "file drawers" are filled with 95 percent of the statistically nonsignificant results. Methodologically flawed studies present a problem in that the "flaw" may bias the findings. While it is recognized that there is no perfect study, the methodologically flawed biasing effect should be looked for as a source of variation across studies - only after accounting for other sources of variation.

The studies selected for this paper will be limited to published papers on the cognitive effects of consumer education. These will be further limited to empirical studies published after 1970.

STEP 3: CODING THE STUDIES

The primary research studies reviewed constitute data for analysis. To be able to draw conclusions that are meaningful, it is necessary to consider the many different characteristics of studies that may contribute to inconsistencies in the findings. By devising a coding mechanism, it is possible to avoid glossing some factors of studies that contribute to error or inconsistencies in results. A coding systems should include:

1. Full Reference including: type of publication, time frame, and author's orientation or discipline

2. The constructs & variables measured: What is being measured? List operational and conceptual definitions, independent and dependent variables
3. Sample and unit of analysis including: how obtained, geographic location, descriptors
4. Measures or instrumentation including: reliability and validity and what is being measured (cognitive, attitude, behavior); measured objectively or subjectively?
5. Research design: survey, experiment, quasi-experiment.
6. Method of gathering data including the data collection plan and task(s) required.
7. External and internal validity issues including experimenter effect/expectancy
8. Hypotheses: conceptual and operational issues as well as direction
9. Results and analyses: statistical tests used and/or reported along with results; effect size, power of the tests, main effects, interactions, second order effects.
10. Substantive Results: relationships between the variables and how these relate to underlying theory

This list is based on recommendations of Monroe [18] and Rosenthal [22] Other meta-analysts and researchers have included additional items which may be more or less appropriate to the a specific field of study. By coding studies in this manner, one can readily define the research results in terms of the relationships between variables rather than defining results by the researcher's conclusions. A summary of the coding for selected empirical studies to measure the cognitive effects of a formal consumer education course is presented in Table 1. From the data in Table 1, the variables measured and their effect can be readily identified. The reliability coefficients compared across the studies give an indication of a possible cause of inconsistency in results as do differences in research design. While the method of measurement was similar, several used cognitive gain (posttest - pretest) following a course and others simply measured differences in knowledge at some point in time. Variation in sample sizes and differences in orientation of the researcher are also evident.

STEP 4: QUANTIFYING THE RESEARCH RESULTS

Every effort should be made to quantify the results of studies where these have been empirical. Meta-analytic techniques have been established which enable this process. In these techniques, the result does not refer to the researcher's conclusions, but to the simple relationship between two variables. The question is addressed as simply as: "What is the

Table 1
Empirical studies to measure the cognitive effects of formal consumer education courses

Reference	Constructs/ Variables	Sample	Instrumentation (Measures)	Research Design	Results
¹ Moser & Hollman (1986) Conference Pro- ceeding. (Bus. Course)	Dependent = test score; independent = age, sex, work exp., major, CE course	College students n = 466	researcher dev. questionnaire 36 items; 2 vers. reliab. .513/.619	quasi. exp. posttest scores compared w/o use of pretest	w/wo CE = ns; 2yr/4yr = ns sex = ns; age F=9.88 p=.0001 major F=2.48 p=.0032 work exp. F=4.07 p=.0077
² Garman, McLaughlin, McLaughlin, Eckert. (1983) Conference Pro- ceeding (CE course)	Dependent = test score; independent = with/without CE	College students w/CE n=175 wo/CE n=75	TCC; 55 items KR reliab. .735	quasi. exp. pre/posttest compared w/CE to wo/CE	multivariate F = ns pre/posttest F = (2.45) ² p=.015
³ Carsky, Lytton (1984) Conference Pro- ceeding (CE course)	Dependent = gain score; independent = sex, major, acad lev.	College students n = 107	TCC 55 items KR reliab. .735	pre experiment pre/posttest	pre/post t=12.09 p <.001 sex F=.01; major F=.32 acad. level F=5.42 p <.05
⁴ Langrehr (1978) JCA (CE course)	Dependent = post indepnd; CE/ ECON; w/wo CE	HS students IL n=64; CE=26/EC=38 AL(w/o)=48	CIT [Claar 1974] 78 items	quasi. exp. pre/post	covariates: pre., IQ, soc. cl. w/wo CE F=26.56 p=.001 w/wo EC F=0.01 p=.999 CE/ECON F=13.33 p=.001
⁵ Hawkins (1977) JCA (CE course)	Dependent = behaviors indepnd; w/wo CE in high school	HS grads. 2 yrs post n = 272	mail surv. 18 items	case study pre experiment	X ² = ns
⁶ Moschis & Moore (1978) JCA (sociology)	Consumer skills & socialization. Indep: TV, family, CE, peer, sex, age, soc. class	Students jrHS n=205 HS n=402	questionnaire Legal know = 6 TF Cronbach alpha .44 Role = 10 disagree Cronbach alpha .50	case study pre experiment	legal know; age t=41.09 sex t=4.22 p=.01 social class: F=11.63 p <.001 role; age t=22.64; sex=ns CE = ns [beta = -.04 -.06]
⁷ Garman (1977) Natl Study for US Office of Education	Dependent = test score. Indep: w/wo 1+CE course;	College Seniors in Education n = 4616	TCC 55 items KR reliab. .735	case study pre experiment posttest	w/wo CE t=3.27 p <.001 w/CE n=307; w/o n=3801 1+CE/w/o t=3.39 p <.001 1+Ce [n=508]/CE t=1.89 p <.05
^{8a} Stanley (1974) norming data for TCC [Form A]	Dependent: post- test; Indep: w/wo CE	8th grade n=1103; w/CE n=54; wo/CE n=1,049	TCC 55 items KR reliab. .735	case study pre experiment	t=2.952 p <.01 CE mean=22.537 sd=5.716 wo/CE mean=19.797 sd=5.531
^{8b} Stanley (1974) norming data for TCC [Form A]	Dependent: post- test; Indep: w/wo CE	10th grade n=608; w/CE n=79 wo/CE n=529	TCC 55 items KR reliab. .735	case study pre experiment	t=0.776 p <.50 CE mean=22.127 sd=6.358 wo/CE mean=22.031 sd=6.184
^{8c} Stanley (1974) norming data for TCC [Form A]	Dependent: post- test; Indep: w/wo CE	11th grade n=813 w/CE n=107 wo/CE n=706	TCC 55 items KR reliab. .735	case study pre experiment	t=2.219 p <.01 CE mean=25.121 sd=7.689 wo/CE mean=24.493 sd=6.104
^{8d} Stanley (1974) norming data for TCC [Form A]	Dependent: post- test; Indep: w/wo CE	12th grade n=750 w/CE n=651 wo/CE n=99	TCC 55 items KR reliab. .735	case study pre experiment	t=5.631 p <.001 CE mean=27.008 sd=6.967 wo/CE mean=25.375

relationship between a formal consumer education course and consumer competency?" To implement the meta analytic techniques, studies should be divided into the smallest complete units. Where the same subjects were not included in two or more of the Stanley norming tests (see Table 1),

it was appropriate to divide the study. It should be noted that the Stanley norming data (8a - 8d) were broken down into four separate studies based on the academic level of the students. To quantify the results of multiple studies, homogeneity of the studies is tested through a comparison of the levels of significance and the effect sizes. An estimate is made of the magnitude of the relationships between variables and the accuracy of the effect size.

STEP 5: INTERPRETING AND REPORTING RESULTS.

Following these analyses, conclusions can be drawn on cumulative findings of the relationships

among the variables studied in previous research and their effects on the underlying conceptual framework. A written report of the integrated review should include a description of all procedures used as well as tabled summaries of the data which have been analyzed. The inclusion of the latter would allow reanalysis by the reader or another researcher wishing to investigate the topic.

FUNDAMENTALS OF META-ANALYTIC TECHNIQUES

In the following section an overview of meta-analytic techniques will be presented. The data in Table 1 will be used as the basis for analysis to begin an investigation into the question, "Does enrollment in a formal consumer education course increase competency in the marketplace?" For purposes of the present analysis, the question might be rephrased to read, "Have previous attempts to measure the cognitive

effects been successful in identifying the benefits of consumer education?"

In combining the results of previous research, relationships between and amongst the variables are compared and combined. Where conflicting results have been reported in previous studies,

the conflict may be resolved (see Fern, Monroe & Avila, 1986). Meta-analytic procedures provide the vehicle for quantifying results and determining the statistical significance of a set of studies which sought to answer the same question.

The objective of cumulating findings across studies is to determine the relationship between two variables such as the relationship between formal consumer education and consumer competency. Whether or not a relationship has been found to exist depends on a two part answer to the research question: (1) an estimate of the magnitude of the relationship, and (2) the test of significance of the difference between the obtained and expected effects.

Statistical significance is dependent on the sample size as well as the difference between treatments:

TEST OF SIGNIFICANCE = EFFECT SIZE X SAMPLE SIZE (1)

In order to cumulate and synthesize research findings, a common statistic is needed to compare results across studies. Hence it is necessary to identify methods of converting data to a common statistic. Two types of comparisons are made to test for homogeneity of the set of studies: a comparison of the significance (p) levels and a comparison of effect sizes. Table 2 provides the

Table 2
Research results for published studies on the cognitive effects of consumer education

Study	Design	Sample	Test	df	p ^a	Z	r	z _r
1	posttest	466	F = ns	---	.50	0.00	---	----
2	pre/post	254	F = (2.45) ²	1250	.007	2.46	.152	.153
3	pre/post	107	t = 9.946	105	.0005	3.29	.696	.891
4	pre/post	110	F = 26.56	108	.0005	3.29	.444	.477
5	post HS	272	χ ² = ns	270	.50	0.00	----	----
6	posttest	4616	t = 3.327	4613	.0005	3.29	.049	.049
7	posttest	607	Beta = ns	606	.50	0.00	----	----
8a	posttest	1103	t = 2.952	1101	.005	2.58	.089	.090
8b	posttest	608	t = 0.776	606	.50	0.00	.031	.031
8c	posttest	813	t = 2.219	811	.005	2.58	.078	.078
8d	posttest	750	t = 5.631	748	.005	2.58	.202	.205

^aOne-tailed probability

^bTCC - Test of Consumer Competencies (Stanley, 1974)

^cCIT - Consumer Information Test (Claar, 1973)

data from the sample of studies in Table 1 which is essential for completing the meta-analysis. The design, sample size, statistical test results (limited to the two variables under consideration here), and the degrees of freedom were taken from Table 1. The data in the remaining columns were computed for the present analysis.

THE COMMON STATISTIC

The p level, z, r, and z_r in Table 2 were computed for this analysis from the data provided by the eleven studies in this sample. The p levels used in these analyses are one-tailed. Many research results are reported as two-tailed tests of significance and the reviewer should make note of this in coding the studies. The one-tailed p level is converted to Z (a standard normal deviate) using a table which gives the area under the standardized normal distribution. More precise measures can be made if exact p levels are reported than if only the level of rejection is noted (ie. p = .003 vs. p < .05). Frequently p levels are not given for nonsignificant results in which case p = .50 is assigned along with the corresponding Z = 0.00.

Research reports frequently fail to give sufficient data to compute effect sizes, but it is usual to report p levels. The Z corresponding to a p level can be used to develop a reasonable approximation of the effect size. The effect size (r) can be computed from Z as follows:

$$r = \frac{Z}{\sqrt{N}} \quad (2)$$

Using study #6 as an example, where n = 4616 and Z = 3.29; r = .048 which is which is extremely close to the value r = .049 as computed from the t statistic.

Several different effect size estimates can be used. The most common are Cohen's d and the correlation coefficient r.

$$d = (\bar{X}_1 - \bar{X}_2) / s_y \quad (3)$$

Either may be computed from the other utilizing the relationship:

$$r = d / (d^2 + 4)^{1/2} \quad (4)$$

Rosenthal [18] prefers r to d because it is not necessary to make any adjustments when moving from t tests for independent samples to t's for correlated samples and it is often impossible to accurately compute d from information provided in a published report of a study. Results of t tests and ANOVA F tests can easily be converted to r:

$$r = \frac{t}{\sqrt{t^2 + df}} \quad (5)$$

Using study #6 as an example, where $t = 3.327$ and $df = 4614$; $11.069 / 11.069 + 4614 = .0024 = .049 = r$.

$$r = \frac{\sqrt{F(1,-)}}{\sqrt{F(1,-) + df \text{ error}}} \quad (6)$$

[(1-) indicates 1 df in numerator]

Using study #4 as an example, where $F = 26.56$ and $df = 108$; $26.56 / 134.56 = .197 = .444 = r$.

The correlation coefficient r is converted to z_r using Fisher's transformation. The transformation tables to obtain z_r can be found in the back of most statistic texts. As can be observed in Table 2, the Fisher transformed z_r is weighted in favor of higher correlation coefficients.

COMPARING RESEARCH RESULTS

The first step toward combining research results is to compare across studies for homogeneity. Two types of comparisons are made for homogeneity of the set: a comparison of p levels and a comparison of effect sizes. The test for homogeneity of p levels is:

$$\sum (Z_j - \bar{Z})^2 \text{ distributed as } \chi^2 \text{ with } K - 1 \text{ df} \quad (7)$$

For the data in Table 2, where $\bar{Z} = 1.824$ and $(Z_j - \bar{Z})^2 = 3.327 + .404 + 2.149 + \dots = 21.872 = \chi^2$. The probability of this chi-square value with 10 df is approximately .001. Thus, these 11 studies appear to be heterogeneous. An alternative and more conservative approach to comparing effect sizes is to assign $p = .01$ to all studies reporting a value $< .01$. Using this approach for the data in Table 2, $(Z_j - \bar{Z})^2 = 17.872$. The probability of this chi square with 10 df is approximately .02, still indicating heterogeneity. This variation in significance levels could be due to sample size or to effect size. Where the sample size ranges from 107 to 4616, there is a fair likelihood that sample variation is contributing factor to this result.

Several methods of testing for homogeneity of results have been developed. One method to compare results or effect sizes involves using the transformed z_r and conducting a chi-square test.

$$\sum (N_j - 3)(z_j - \bar{z})^2 \text{ is } \chi^2 \text{ with } K - 1 \text{ df} \quad (8)$$

where z_j is the transformed z_r and \bar{z} is the weighted mean:

$$\bar{z} = \sum (N_j - 3)z_j / \sum (N - 3) \quad (9)$$

For the data in Table 2:

$$\bar{z} = \frac{251(.153) + 104(.891) + \dots}{252 + 104 + 107 + \dots} = .077$$

and $(N_j - 3)(z_j - \bar{z})^2 = 251(.153 - .077)^2 + 104(.891 - .077)^2 + \dots = 104.803$. With 10 df the probability of this chi-square value is less than .001 indicating again that the results of these tests are heterogeneous.

When results of these preliminary tests suggest that there is variation across studies, explanations for the variation should be explored. Four possible causes include moderator variables such as differences in research design and three artifactual sources of variation. The artifactual sources include variation due to sampling error, variation due to unreliable measures, and variation in range (when there is a large distribution of potential values for the independent variable). Formula to correct for these can be found in Hunter, Jackson, and Smith [15].

A first effort to identify causes for the heterogeneity of the set of studies might be to identify moderator variables. In reviewing the data in Table 2, it is apparent that design differences could be a cause. For those studies which measured cognitive gain resulting from completion of a Consumer Education course (pretest/posttest designs), the correlation coefficients tend to be higher than for those where consumer competency was measured at some arbitrary point in time. By applying formula (8) to the set of three studies which used pre/post test designs, $(N_j - 3)(z_j - \bar{z})^2$ is χ^2 with $K - 1$ df = 40.27 with 2 df, the probability of this chi-square value is $< .001$. Hence, these three studies have produced heterogeneous results. As z_r for study #2 is considerably lower than the remaining two which utilized this design further examination of this study is needed. The differences in reporting are evident (df = 1250). It is possible that the low r (z_r) is due to a statistical aberration.

The test for homogeneity might also be applied to the eight studies which measured competency without the use of a pretest. The results of the test (formula 8) for homogeneity are $\chi^2 = 14.893$. With 7df, the probability of this chi-square value is $< .05$. Thus, indicating that other moderator variables in addition to design should be examined. Study #8d had a much higher effect size than the remaining three of this

group (8a, b, c), and is the cause of the difference. Because the design and research conditions were the same as for the other Stanley norming tests, the result seems to be artifactual and a look at the primary research data is

suggested. When looking for the effects of moderating variables, other methods may be employed. For example, Monroe [18] used point biserial correlation when contrasting within and between group research designs.

COMBINING RESULTS

Although the tests for homogeneity indicated that there were statistically significant differences among the studies, these results did not directly address the question posed earlier: "Have previous attempts to measure the cognitive effects been successful in identifying the benefits of consumer education?" To answer this question, the results of the studies can be combined. By combining the probability levels of the results of the eleven studies, the overall probability that there is a positive relationship between a formal consumer education course and consumer competency can be estimated. The standard normal deviate Z's for the p levels of the studies can be summed and divided by the square root of the number of studies.

$$Z_m = \frac{Z}{\sqrt{N}} \quad (10)$$

For these eleven studies, $Z_m = 20.07 / 3.32 = 6.045$ and is significant at the .01 probability level. If the three studies which used gain scores (posttest - pretest) are eliminated from the set, $Z_m = 3.91$ which is still statistically significant at .01 probability. Thus, it can be concluded that there is a statistically significant probability that there is a positive effect of a formal consumer education course on consumer competency. However, because level of significance for any nonzero effect size is monotonically related to the number of sampling units employed [22], these results should be viewed cautiously. As shown in Table 2, several of the studies obtained a small effect while employing a large sample. A judgement must be made as to whether the effect is substantive or trivial.

It is possible to estimate the combined effect size in a manner similar to that used above. The combined effect size estimated using the transformed z_r and computing \bar{z} :

$$\bar{z} = \sum z_j / K \quad (11)$$

For the eleven studies, $\bar{z} = 1.974/11 = .179$ $z_r = .177 = r$ which is positive. To determine whether the correlation coefficient (.177) is statistically different from 0, r must be converted to t and the significance of t found.

$$t = \frac{r}{1 - r^2} \times df \quad (12)$$

For the eleven studies, $t = .177/.907 \times 3.16 = .617 = t$ which is nonsignificant. Thus, we could tentatively conclude that while there is a high probability of finding a positive effect of a formal consumer education course, the effect may not be meaningful.

In addition to knowing the probability of finding an effect, a measure of the strength of the effect can be confirmed by estimating the number of additional or unretrieved "file drawer" studies it would take to reduce the probability of a positive relationship to $p = .05$ ($Z = 1.645$). Several formulas can be used which vary as to conservatism. If the studies reviewed are totally independent of one another, the following method can be used:

$$N = \frac{(\sum Z)^2}{2.706} \quad (13)$$

For the eleven studies, $N = 20.07^2 / 2.706 = 183$. However, these eleven studies were not totally independent. Four of the eleven were taken from the Stanley norming data. While the subjects differed, all were residents of the same state, and the studies were conducted at the same point in time. Three additional or unretrieved studies used the same measurement instrument. For situations where the studies are not totally independent, a more conservative estimate can be obtained by application of the following:

$$N = \frac{K [K\bar{Z}^2 - 2.706]}{2.706} \quad (14)$$

For the eleven studies reviewed, $N = 11 [(11 \times 20.07 - 2.706) / 2.706] = 138$ more studies having nonsignificant findings would be needed to reduce the overall probability of finding a positive effect to $p = .05$. It should be noted that the previous two tests for overall significance and the answer to the "file drawer" problem are extremely powerful.

CONCLUSIONS AND RECOMMENDATIONS

This paper presented an overview of meta-analytic techniques and their potential applications to the field of consumer studies. To demonstrate the quantitative methods for conducting an integrated research review, a set of studies which measured the cognitive effects of formal consumer education was analyzed.

Although the results of the studies summarized were not in agreement when tested for homogeneity, the combined probability test supported the majority of studies which found a positive effect of a formal consumer education course. However, as the combined effect size was nonsignificant, there is a likelihood that results of additional tests to measure the effects of formal consumer education courses will obtain similar results. While it was concluded

that an additional 138 studies with nonsignificant results would need to be retrieved from the file drawers or conducted to disconfirm the relationship posited, the practical significance of these is questionable. These results should not be construed to mean that consumer education is not effective, but rather to indicate that different methods of measuring the benefits of consumer education should be identified. Alternative approaches have been suggested elsewhere [4].

These results should be viewed cautiously and their limitations noted. Several published studies such as Dickinson [9] and Misselwitz [17] were not included in the review. Additionally, only the main effects of the eleven studies were compared and no effort was made to look for interactions or second order effects. The exception to this was the examination of posttest - pretest studies separate from posttest only studies. Further, corrections in the data were not made for measurement error, sampling error, or possible range variation. Lastly, because of the small effect sizes found and the high power of the tests conducted, a judgement call must be made as to whether the results are of practical significance or merely of statistical significance.

Meta-analytic techniques provide a quantitative assessment of a research domain. These analyses facilitate the handling of a large number of research reports which is likely to include a number of weak and heavily flawed studies. These techniques provide an opportunity to isolate relationships between and amongst variables studied in the domain. In addition, the formal classification of studies and analyses can be useful in building theory in a maturing discipline.

There are disadvantages and limitations to the quantitative methods for integrating research results. A primary limitation rests with the insufficiency of reported data. Published studies should report treatment means and effect sizes along with precise p values for both significant and nonsignificant tests. Information on reliability and validity measures is essential for complete analyses as are non quantitative aspects of the research such as the operational definitions for the constructs, and the sampling procedures.

As with many things, meta-analysis is no panacea. The quantitative techniques are only one component of the carefully executed integrated review. To conduct meta-analyses without rigor through out the review process can be misleading and results of the statistical tests not judiciously undertaken can be erroneous.

The field of consumer studies has probably reached the a stage maturity at which time a sufficient number of studies have been conducted that the cumulation of findings is feasible. This cumulation can be used to build theory and to permit the discipline to move to a higher plane of research in several domains.

REFERENCES

1. Bannister, Rosella (1986) Discussion of Papers on Consumer Education. in K. Schnittgrund (ed.), American Council on Consumer Interests 32nd Annual Conference Proceedings, 252-253.
2. Bibb, F.G., (1971). A Comparative Study of the Knowledge of Three Aspects of Consumer Information Possessed by Selected Indiana, Illinois and Wisconsin University Freshmen, Unpublished doctoral dissertation. Northern Illinois University.
3. Carsky, Mary L. & Lytton, Ruth H. Changes in Consumer Knowledge and Attitudes: Do Student Characteristics Make a Difference? Journal of Home Economics and Consumer Studies (in press)
4. Carsky, Mary L. & Mitchell, Glen H. (1986). An Alternative Approach to Evaluating the Effects of Consumer Education. (Unpublished working paper). Willimantic, CT: Eastern Connecticut State University.
5. Claar, R.C. (1973) Analysis of Economic Education and Consumer Education Knowledge of Kansas High School Seniors. Unpublished doctoral dissertation, Kansas State University.
6. Cook, Thomas D. and Leviton, Laura C. (1980). Reviewing the Literature: A Comparison of Traditional Methods With Meta-Analysis. Journal of Personality, 48 (December), 449-472.
7. Cooper, Harris M. (1981). Scientific Guidelines for Conducting Integrative Research Reviews, Review of Educational Research 52 (Summer), 291-302.
8. Dickinson, Virginia H. & Shaver, James P. (1982) A Test of Consumer Awareness for Adults. Journal of Consumer Affairs, 16 (Summer), 241-260.
9. Fern, Edward F., Monroe, Kent B., & Avila, Ramon A. (1986). Effectiveness of Multiple Request Strategies: A Synthesis of Research Results, Journal of Marketing Research 54 (May) 144-152.
10. Garman, E.T. (1979). The Cognitive Consumer Education Knowledge of Prospective Teachers: A National Assessment. Journal of Consumer Affairs, 13 (1), 55-63.
11. Garman, E.T., McLaughlin, J.S., McLaughlin, G.W., & Eckert, S.W. (1983). Measuring Change in Comprehension and Attitude in Consumer Education for Postsecondary Students. Proceedings of the Twelfth Annual Southeastern Regional Family Economics-Home Management Conference. February 2-4, 1983, 75-80.

12. Glass, Gene V., McGraw, Barry and Smith, Mary Lee (1981). Meta-Analysis in Social Research, Beverly Hills, CA: Sage Publications, Inc.
13. Hawkins, C.H. (1977). A Study of the Use of Consumer Education Concepts by High School Graduates. Journal of Consumer Affairs, 11 (2) 123-127.
14. Hunter, John E., Schmidt, Frank L., and Jackson, Gregg B. (1982). Meta-Analysis: Cumulating Research Findings Across Studies. Beverly Hills, CA: Sage Publications, Inc.
15. Langrehr, F.W. (1979). Consumer Education: Does It Change Students' Competencies and Attitudes? Journal of Consumer Affairs, 13 (2) 41-53.
16. Langrehr, F.W. & Mason, B.J. (1977). The Development and Implementation of Consumer Education. Journal of Consumer Affairs, 11 (1) 63-79.
17. Misselwitz, Rolf. (1968). "A Study to Determine the Extent of Consumer Education Knowledge of Secondary School Students Related to Family Finance." National Business Education Quarterly, 37, 30-31.
18. Monroe, Kent B. (1986) A Methodology for Conducting Integrative Research Reviews. (Unpublished working paper). Blacksburg, VA: Virginia Polytechnic Institute and State University.
19. Mochis, George P. & Moore, Ray L. (1978). An Analysis of the Acquisition of Some Consumer Competencies Among Adolescents. Journal of Consumer Affairs, 12 (1) 277-293.
20. Moser, Ronald H & Hollman, Kenneth W. (1986). "The Consumer Fiance Course: Does it Serve a Useful Purpose in Higher Education?" Paper presented at the East South Economic Conference, February 12-15, 1986.
21. Pillemer, David B. and Light, Richard J. (1980). Synthesizing Outcomes: How to Use Research Evidence from Many Studies. Harvard Business Review. 50 (May), 176-195.
22. Rosenthal, Robert (1984). Meta-Analytic Procedures for Social Research. Beverly Hills, CA: Sage Publications, Inc.
23. Stanley, T. O. (1976). Test of Consumer Competencies. Scholastic Testing Service, Inc., 4489 Mayer Road, Bensonville, Illinois.
24. Thomas, Lillie, R. (1969). A Comparative Study of the Effects of Course Organization on Achievement in Consumer Education Concepts. Unpublished doctoral dissertation. Tempe, Arizona: Arizona State University.
25. Yu, Julie and Cooper, Harris M. (1983). A Quantitative Review of Research Design Effects on Response Rates to Questionnaires. Journal of Marketing Research, 20 (February), 36-44.

RECENT RESEARCH IN CONSUMER EDUCATION
UTILIZING INNOVATIVE METHODOLOGIES

Carl Hall, Oklahoma State University¹

ABSTRACT

This paper on research in consumer education contains two dimensions. First, illustrations are presented representing the type and breadth of recent research in consumer education. In addition, it delineates a synergistic approach to possible research methodologies which might further enhance research efforts in consumer education.

RECENT RESEARCH IN CONSUMER EDUCATION
UTILIZING INNOVATIVE METHODOLOGIES

Consumer education research continues to attract both the best and worst of critic comment. These opposites of "best and worst" should not be surprising or unexpected. Consumer education, by its nature, blends elements of disagreement over content with somewhat controversial teaching/learning theory. In addition, delivery systems offer diverse teacher attitudes, knowledge levels and styles. Such diffuse characteristics provide the mosaic for important, continuing discussions about "innovative" methodologies.

This brief synopsis developed around two thrusts. First, there was a search of recent literature for those more creative research concepts which might provide vistas for additional "innovative" activity. Second, it was considered appropriate to challenge thought about possible synergistic linkages as motivation for more "best" scenario research.

RECENT INNOVATION

Searches were conducted for recent years. The process yielded several hundred documents, seventy-seven of which were pulled for review. Only four were selected from among the seventy-seven for reference in this report.

Through efforts of the Agency for Instructional Technology; Canadian Foundation for Economic Education; and the Joint Council on Economic Education [5], a set of six studies were conducted on the "Give and Take" series developed for secondary school use. This project included a consortium of agencies representing forty-five states and provinces. The series was determined to be effective as a supplement to traditional instructional patterns. It is important to note the teaching strategy had a direct impact on critical reasoning skills and a positive, indirect impact on verbal and quantitative skills.

The "Give and Take" series used as its base a set

of twelve 15-minute television/film programs, printed materials and selected teacher strategies to improve knowledge and decision-making skills for thirteen to fifteen year old students. One of the more significant aspects of this study relates to its scale. Involvement of large numbers of students, teachers and professional agency people provides a model useful in other areas of research.

The second piece chosen for review was completed by Nelson [4] and involved instructional approaches to study of the world economy. An intriguing rationale for development of controversy was utilized to delineate elements of economic thought. Economics by its nature is controversial and ideology and nationalism appear to be dominant obstacles in economic education. A variety of major stereotypes and perceptions of economics were designed to highlight disparities in thought. Students were encouraged to explore these differences in testing their own ideas. Students responded well and were motivated by the approach. This project illustrates an unusual teaching style.

Green and Williams [2] completed an analysis of competencies demonstrated by high school seniors enrolled in selected schools in the Rocky Mountain states. This study was chosen as illustrative of a number of similar research projects. Comparisons were made by states as well as school size. In addition, comparisons were built on gender, race and family income. A fifty-question consumer economics examination was given to a total of 751 high school seniors. This study, as have a number of other similar studies, exposed a relatively low comprehension of consumer knowledge. Data suggested the greatest discrepancies focused along racial lines. This study depicts the need for an instrument which is broadly accepted so a large data base can be created.

The final study cited here was conducted by Hearn [3] assessing consumer education in Oklahoma Secondary Schools. It was chosen for inclusion for two reasons. First, it deals with legislative requirements and at the same time, it assesses the programmatic impact of consumer education. In addition, it provides a model for use in evaluating other state programs where consumer or economic education is mandated.

Several things were focused as the result of the Hearn study. For example, consumer education was found to be an integral part of secondary education in Oklahoma. A multidisciplinary approach was utilized which provided a broad base for programs. While a number of positive dimensions were defined, one of the most frustrating findings related to the fact that less than 20 percent of all Oklahoma students were enrolled in classes cover-

¹Professor of Consumer Studies

ing consumer education topics. Legislation appeared to have had almost no effect on the initiation of consumer education in the public secondary schools of the state.

A SYNERGISTIC MIX

It is interesting to note from these selected studies that our innovation in research tends to focus itself either on methods of teaching or content taught, or some mix thereof. While this is to be expected, it does reflect somewhat superficial barriers placed on our own thinking about research methodologies for consumer education.

An additional purpose for this paper was to therefore excite and extend synergistically our creative thought about research in consumer education. The rationale for using the term synergistic to describe another approach emphasizes the fact that it brings existing methodologies together in somewhat unique ways for possible application to consumer education.

For some time, marketers have utilized the technique of life-style definition or psychographic analysis in the consumer profiling process. At the same time but on a very different track, learning theorists such as Bloom [1] have looked at a variety of taxonomies built on a variety of teaching/learning theories. Yet a third uniquely different dimension of effort has gone into the definition of content appropriate for inclusion in elementary, secondary and/or higher education in the consumer arena. It would appear no more than two of these three elements have been brought together by researchers in designing methodologies which might give insights to effectiveness in consumer education. (It is important to note that "effectiveness" as used here implies doing the right things, as opposed to efficiency which highlights a process of doing things right [Drucker]).

A synergistic mix in research suggests the need to pull together a solid base of teaching/learning theory, with the psychographic profiling process of students to determine the unique characteristics which blend most effectively with various teaching/learning styles. It would then be possible to experiment with a variety of content areas to determine just which mix of content, teaching style, and psychographic student profile leads to the greatest level of understanding.

This suggestion may seem rather farfetched at first, yet closer scrutiny provides insights which might make it more acceptable. For example, we have by and large arranged students by demographic characteristics, rather than psychographic profile characteristics. However, not every seven year old or fifteen year old or twenty-two year old learns in the same way at the same rate with the same end result. It might be interesting experimentally to arrange students within reasonable demographic limits, around life-style and/or psychographic characteristics rather than purely demographic attributes. Once these students are arranged psychographically it would be of further interest to determine how teaching/learning

theory interfaces with success of these various groups of students. The third and causal element of change would then be introduced through use of selected content in a variety of consumer education topical areas.

A selected group of educators in concert with graduate students and other professionals in statistics and research might be formed to initiate synergistic research activity at a variety of levels. If enough interest existed nationally it might be that within three to five years a data bank providing a sum greater than its parts could exist. In effect, a national net could be used to mobilize resources and enhance results.

For too long, many who supervise graduate work and engage research themselves, have worked independent of others who have similar or somewhat parallel interests. As a result of this, the literature in consumer education research appears fragmented and significantly more splintered than might be appropriate for a young discipline. If the area of consumer studies is to attract recognition, it will in fact participate in collaborative effort which provides support for more specialized, parochial research interests. It is intriguing to think that collaborative effort might generate recognition and integrity for consumer education research which not only fulfills individual researcher needs but also adds to the body of knowledge and theory base so badly needed in consumer education.

REFERENCES

1. Bloom, Benjamin S., Englehart, Max D., Furst, Edward J., Hill, Walter H., and Krathwohl, David R. Taxonomy of Educational Objectives: The Classification of Educational Goals; Handbook I: Cognitive Domain. New York: David McKay Company, Inc., 1956.
2. Green, Gary and Williamson, Gerald (1986). An Analysis of High School Seniors Consumer Competencies in Selected Schools in the Rocky Mountain States. Unpublished manuscript, University of Oklahoma, School of Education, Norman.
3. Hearn, Evelyn L. (1980). An Assessment of Consumer Education in Oklahoma Secondary Schools and the Impact of the Economic Education Act of 1974. Unpublished doctoral dissertation, Oklahoma State University, Stillwater.
4. Nelson, Jack L. (1984). Approaches to Education About a World Economy. Proceedings of Joint Meeting of the Social Science Education Consortium and the Bundeszentrale fur Politische Bildung. Irsee, Bavaria, West Germany.
5. "What the Research is Saying: Give and Take Series" (1986). Research Report 95. Agency for Instructional Technology, Bloomington, IN; Canadian Foundation for Economic Education, Toronto; Joint Council on Economic Education, New York, N.Y.

FOOD PRICES AND HOUSEHOLD CHARACTERISTICS

David B. Eastwood, The University of Tennessee¹
Danny Terry, Central Missouri State University²
John R. Brooker, The University of Tennessee¹

ABSTRACT

A new version of the characteristics model is examined. Results can be used to estimate which foods are over and under valued and to identify the effects of household characteristics on the demands for nutrients.

Characteristics theory assumes that consumers derive utility from the properties of goods consumers purchase in the marketplace. These properties are called characteristics, or attributes. The framework has contributed to our understanding of consumer demand through focusing attention on the characteristics goods possess, as opposed to the goods themselves. The demand for a good is derived from the demand for attributes. Given this perspective, an understanding of the structure of consumer demand for goods rests upon analyses of implicit prices of attributes and attribute demand. Models developed in this context analyze 1) consumer implicit prices of attributes and 2) the demand for attributes.

The consumer goods characteristics model (CGCM) is a form of the characteristics model created by Suvannunt and Ladd and Suvannunt, extended by Ladd and Zoher, and summarized by Ladd. The model assumes goods possess common and unique attributes. Common attributes are acquired from more than one good, whereas a unique attribute is acquired from a single good. Terry noted the assumption can be a limitation when examining categories of goods which only produce a common set of characteristics, such as occurs with food nutrients.

This paper explores two applications of the Terry version with respect to food demand. One is an examination of household valuations of food nutrients and their relationships to food prices. The other is an estimation of the effects of household characteristics on nutrient demand.

The first is empirical in nature. It pertains to the use of the estimated hedonic price equations to generate predicted prices of various food items. These can be compared to actual market prices to determine instances where the average consumer's valuations of nutrients are greater or less than market prices. The second is an illustration of the application of the nutrient demand equations. These are functions of socioeconomic characteristics of the household, and they permit estimation of nutrient demands based upon household composition.

¹Professors, Dept. of Ag. Econ. & Rur. Soc.

²Assistant Professor, College of Agriculture.

MODEL BACKGROUND

As stated by Hannemann there are two basic versions of the characteristics model. Houthakker-Theil assume that goods having different characteristics are part of a single group of goods having a distribution of characteristics. A consequence of this approach is that consumer choose the quality of a good and thereby its price simultaneously. Models in the spirit of Lancaster assume each good is a separate item, and consumers obtain a bundle of characteristics through purchasing a bundle of brands. The model discussed here was originally proposed by Ladd and Suvannunt.

Interested readers are referred to Eastwood, Terry, and Brooker for a formal discussion of the theoretical model. Essential features are described below along with a presentation of those equations which are estimated. Underlying the characteristics model is the assumption that utility is attained from a set of attributes derived from market goods. Assuming that food is separable from all other goods permits an examination of this sector apart from other commodities. With respect to food, utility is derived from a set of attributes common to all foods, and under the condition that nutrients are separable from other attributes (e.g., taste and appearance), attention can focus on nutrients alone. A linear consumption technology means that the amount of each nutrient found in a good is assumed to be independent of the level of food consumed.

Viewed as a one period problem, a consumer is considered to maximize utility subject to a budget constraint and a consumption technology. Solving this problem leads to a hedonic price equation in which the market price for a unit of a food is a function of the nutrients it contains and the consumer's valuations of the nutrients. A linear functional form is associated with CGCM through making a final assumption of constant marginal implicit prices of nutrients.⁴ Equation (1) represents this relationship where P_i is the market price of the i th good, x_{ij} is the amount of the j th nutrient contained in a unit of the i th good, β_j is the marginal implicit price of the j th nutrient, m is the number of nutrients, and n is the number of foods.

³For example, the amount of protein per ounce of milk is the same in a pint or gallon.

⁴More precisely, a given household's marginal implicit prices are assumed constant, but different households can have different, although constant, marginal implicit prices.

$$P_i = \sum_{j=1}^m \beta_j x_{ij} \quad (1)$$

CGCM also has a set of nutrient demand equations in which the levels consumed, X_j , are functions of income, I , and the amounts of nutrients per unit of food items. Equations (2) represents these equations.

$$X_j = d_j(\beta_1, \dots, \beta_m, I, x_{11}, \dots, x_{nm}) \quad (2)$$

Anticipating the use of cross-section data to estimate (2) prompts an adjustment. Over a short period of time, it is reasonable to assume that the x_{ij} are fixed. This necessitates dropping these variables from the regression analysis described in the next section.

Allowing for differences among households requires the incorporation of socioeconomic variables into the analysis. With respect to implicit prices, (1) is estimated for individual households. This yields a set of marginal implicit prices for each household, β_j^h . These predicted values can then be used in the nutrient demand equations (2). Assuming these latter equations are linear, and allowing for a vector of household characteristics (V), equation (2) becomes:

$$X_j = \delta_0 + \delta_1 \hat{\beta}_1 + \dots + \delta_m \hat{\beta}_m + I^h + V^h. \quad (3)$$

Hannemann has shown that within the Ladd framework there is no identification problem as discussed by Rosen, and the demand functions can be estimated. Studies which have proceeded in a similar fashion include Adrian and Daniel; Ladd and Suvannunt; Ladd and Zober; LaFrance; and Morgan, Metzen, and Johnson. Based upon existing food demand research, the following set of household characteristics are included. Existing food demand research (e.g., Adrian and Daniel; Burk; Capps and Love; Raunikar, Purcell, and Elrod; and Smallwood and Blaylock) has identified the variables. Table 1 lists the variables and indicates how they are measured.

DATA

The spring wave of the 1977-78 Nationwide Food Consumption Survey was used. It covered approximately 3,300 households. Some of these households were excluded in the present analysis because their reported food purchases exceeded their incomes including food stamps. Others were excluded because of missing socioeconomic data or because the number of food items purchased was too small to permit estimation of equation (1). This last criteria was to ensure there were sufficient degrees of freedom, or that the number of food items exceeded the number of nutrients. Only 200 households were deleted in this step, and altogether the selection criteria reduced the sample to 2,164 households.

Table 1. Socioeconomic Variables

Variable	Definition
Income	1976 disposable household income.
Food Stamps	The bonus value of food stamps.
Family size	Number of people residing in the household.
Race	Respondent's race (white, black, or other). The omitted category was other.
Education	Educational attainment of the homemaker: elementary school, graduated from high school, attended some college, and college graduate. Elementary school was the omitted category.
Meal adjustment	The difference between the total number of meals served and family size multiplied by 21 (1 person, 3 meals per day, 1 week).
Dual working	Employment status of the homemaker, = 1 if employed and = 0 otherwise.
Urbanization	City, suburban, or rural. Rural was the omitted category.
Age Distribution	Proportion of household members: less than 2, between 2 and 12, between 13 and 19, between 20 and 39, between 40 and 64, and over 64. The omitted category was 40-64.
Region	Northeast, North Central, South, and West. West was the omitted category.

Fourteen nutrients are included in the data. Preliminary analysis indicated high degrees of correlation among them. Consequently, they are grouped into seven more aggregate categories which are listed in Table 2. This aggregation should not detract from the analysis. Rather, it is consistent with the view that consumers are not knowledgeable about detailed nutritional compositions of foods and may instead consider broader categories.

Estimated implicit prices for each household were obtained for equation (1) using a no intercept OLS regression program (see Eastwood, Brooker, and Terry).

⁵An analogous situation arises with prices in Engel functions.