EARLY LIFE SCHOOLING AND COGNITION AND LATE LIFE FINANCIAL LITERACY IN THE WISCONSIN LONGITUDINAL STUDY

By Pamela Herd and Karen Holden

Using the Wisconsin Longitudinal Study, this study examines the links between early life cognition and schooling experiences and late life financial literacy. Early life cognition, especially for those with very low IQ scores, and schooling are related to late life financial literacy.

While the responsibility to save and invest for retirement falls increasingly on individuals, research indicates that many Americans do not have the skills to accomplish these tasks. Researchers examining financial literacy have found that targeted programs have positive, but small, effects. However, researchers have not examined the ways in which general cognition and education (especially in early life) affect financial literacy in later life. This paper examines the links between early life cognition and schooling experiences and late life financial literacy.

Data

The sample included 6,276 respondents from the WLS, a survey of 1957 Wisconsin high school graduates. We include six covariate measures: childhood cognitive ability (IQ score), high school rank (calculated as a percentile), educational attainment, number of English courses taken, number of algebra courses taken, and whether or not the respondent took trigonometry or physics.

The analyses employed a novel measure of financial literacy, which has the benefit of drawing from questions widely used in surveys: respondents’ knowledge of various aspects of their own financial situation. Financial literacy was measured via three outcome variables. The first assesses the respondent’s knowledge of all assets by measuring the percent of total asset categories (12 categories) held by the respondent for which the respondent provided an exact dollar amount. The second variable gauges the respondent’s knowledge of assets used in day-to-day life by indicating whether or not the respondent was able to determine the combined value of checking accounts, savings accounts, and money market funds. The final outcome variable evaluates the respondent’s knowledge of assets important for retirement planning by measuring whether or not respondents were able to provide the value of any balance-accruing retirement accounts. Measures of confounding covariates (parental socio-economic status [SES], gender, age, and race) are also included in the models.

Overall Levels of Financial Literacy

Overall, a high percentage of respondents demonstrated financial literacy: On average, 89 percent of total assets were reported with precise answers. Approximately 81 percent of respondents who had checking, savings, and mutual fund accounts knew the combined value of these accounts. A slightly smaller proportion of those with retirement savings accounts, 72 percent, were able to relate the value of the accounts. The likelihood of reporting assets varied by gender, educational attainment, IQ score, extent of English classes, extent of
algebra classes, and whether or not the respondent took physics or trigonometry.

**Percent of Assets Reported**

Among respondents with a college degree, taking more than the average level of algebra and taking trigonometry/physics increased the percentage of asset categories reported precisely by 1.6 percent. Compared to women, men provided a specific value for 8.6 percent more of their asset categories. Parental SES had a small negative effect. Neither IQ scores nor high school rank affected the percent of assets reported among college graduates. In contrast, for respondents without a college degree, IQ scores and high school rank influenced the percent of specified assets, but course work had no effects. For participants in the two lowest IQ categories (<100 and 100-120), a 10 point increase in IQ led to a 3 percent and a 2 percent increase in asset categories reported, respectively. Compared to those in the bottom quartile of high school rank, respondents in the top quartile related 2.6% more asset categories. Among those without a college degree, men reported 9% more assets than women.

**Figure 1. Percent of Individuals in the WLS Who Know the Value of their Balance Accruing Retirement Account by Sex, Educational Attainment, and IQ**

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**Knowledge of Retirement Accounts**

For college graduates, years of schooling and gender were the only variables related to knowing retirement account values. Each additional year of schooling increased the probability of specifying a retirement account total by 2% (a 25% increase in the odds), and men had a 17 percent higher probability than women (4.6 times higher odds). Effects were different among respondents without a college degree. There was a significant, but smaller, effect for men, compared to results for college graduates. For those in the lower two IQ categories, a 10 point increase in IQ score increased the probability of reporting retirement savings by 3-4 percent (an odds ratios of approximately 1.02). Parental SES, high school rank, and coursework did not affect retirement account reporting for either college graduates or those without a degree.

**Knowledge of Checking, Savings, and Mutual Funds Accounts**

As with the other two outcome measures, knowledge of checking account balances was influenced by coursework variables for college graduates and cognition variables for non-graduates. Among respondents with college degrees, those with the highest level of algebra courses had a 2.5% greater probability (a 34% increase in the odds) of knowing checking account balances, compared to those who took an average level of algebra. No other variables had significant results. Among those without a college degree, IQ score was the only variable with significant effects. Compared to those in the top category, for respondents with an IQ in the middle category (100-120) a 10 point increase in IQ score was associated with a 3% greater probability of reporting checking account value (an odds ratio of 1.28). As a final step of the analysis, we ran various models to test the robustness of the findings; none of these sensitivity
tests altered the main conclusions and results suggest the assumptions made in the course of the analyses are well-founded.

Implications for Vulnerable Populations

Those with lower levels of cognitive functioning may fare poorly with regard to managing finances and creating a retirement savings fund. Fully 20 percent of respondents in this (relatively well-educated) sample fell into this category. If the trend toward more complex retirement planning continues, scholars and policy makers must generate strategies to help those with limited cognitive functioning.

Conclusions

In sum, results indicate that for respondents who did not earn a college degree, cognitive functioning levels in early life influence late life financial literacy. For college graduates, early schooling experiences, specifically math coursework and the extent of post-college schooling, were related to late life financial literacy. English coursework did not have significant effects for either group. Gender had significant effects for both groups of respondents.

In future studies, it would be useful for researchers to define variables that capture a greater variation in knowledge. In addition, future research should examine gender differences in factors associated with late life financial literacy in greater detail.
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The Financial Literacy Research Consortium

The Financial Literacy Research Consortium (FLRC) consists of three multidisciplinary research centers nationally supported by the Social Security Administration. The goal of this research is to develop innovative programs to help Americans plan for a secure retirement. The Center for Financial Security is one of three FLRC centers and focused on saving and credit management strategies at all stages of the life cycle, especially helping low and moderate income populations successfully plan and save for retirement and other life events, including the use of Social Security's programs.

The Center for Financial Security

The Center for Financial Security at the University of Wisconsin-Madison conducts applied research, develops programs and evaluates strategies that help policymakers and practitioners to engage vulnerable populations in efforts which build financial capacity. The CFS engages researchers and graduate students through interdisciplinary partnerships with the goal of identifying the role of products, policies, advice and information on overcoming personal financial challenges.

For More Information:
Center for Financial Security
University of Wisconsin-Madison
Sterling Hall Mailroom B605
475 N Charter St.
Madison, WI 53706
(608) 262-6766
http://www.cfs.wisc.edu/