# Determinants of Objective Financial Knowledge and Subjective Financial Knowledge: Are They Different?

**Narang Park, University of Georgia[1]**
**Wookjae Heo, South Dakota State University[2]**
**Jae Min Lee, Minnesota State University, Mankato[3]**

## Objective and Significance

The three objectives of the study are to (a) investigate factors influencing objective financial knowledge (OFK), (b) examine the factors influencing subjective financial knowledge (SFK), and (c) compare the coefficients of influential factors for OFK and SFK. The first two research objectives are analyzed with Ordinary Least Squared (OLS) regression models while the third objective is analyzed using Seemingly Unrelated Estimation (SUE) for statistical comparison of coefficients of the determinants used in the OLS regression models.

In this study, we use the following four categories factors influencing financial knowledge: (1) educational, (2) financial, (3) behavioral, and (4) demographic. Educational factors include education level and financial education acquired in high school or college (Lyons et al., 2006).

Findings of this study contribute to the literature in three ways. First, by identifying the effects of educational factors, in particular, financial education experience, on both two types of financial knowledge, results shed light on the importance of financial education as noted by educators, financial practitioners, researchers, and policymakers. Second, by examining the effects of behavioral characteristics on financial knowledge, this study confirms that one can improve financial literacy through a behavioral intervention. Third, this study describes profiles of survey respondents' financial knowledge with a broad array of socio-demographic factors with different effects on OFK and SFK. Thus, this study can provide insight into underrepresented groups for financial literacy improvement efforts.

## Methods

*Data and Sample Selection*

Data were collected between August 30th and September 4th in 2019 using an online survey via QuestionPro based on a random sampling method across the United States. For our analytic sample, we use 997 respondents. The mean age of the respondents was 39.06 (*SD*= 12.24). Of the respondents, 77.83% were female, 81.14% were White 54.66% were married or in a relationship, and 65.90% were employed at the time of the study.

*Dependent variables*

We measured objective financial knowledge (OFK) using Lusardi and Mitchell (2017)'s Big 3 financial knowledge questions (0= no correct answers; 3= correct answers to all three questions) (*M*= 1.96, *SD*= .97). We measured subjective financial knowledge using a 7-point Likert-type scale of 1= very low to 7= very high for the question (*M*=3.71, *SD*= 1.58).

*Key Independent Variables*

For educational factors, we measured education level as a categorical variable. Over half of the respondents (56.04%) reported holding a bachelor's degree or a graduate degree. We measured financial education experience as whether the respondent completed any financial course in high school or college. Around 15.15% of respondents took personal finance courses in high school, while 14.44% of respondents took a personal finance course in college.

For financial factors, we coded homeownership and net worth balance (negative balance or positive balance) as binary variables. Over half of the respondents (60.48%) owned their home, and 26.38% had a negative net worth balance.

[1] Narang Park (narang.park25@uga.edu), Ph.D. Candidate, Financial Planning, Housing, and Consumer Economics
[2] Wookjae Heo (wookjae.heo@sdstate.edu), Assistant Professor, Consumer Sciences
[3] Jae Min Lee (jae-min.lee@mnsu.edu), Associate Professor, Family Consumer Science

 

For behavioral factors, we measured financial risk tolerance using 13 items developed by Grable and Lytton (1999). The average score of financial risk tolerance was 20.67 (SD= 4.26). We measured life satisfaction using five questions from the Satisfaction with Life Scale (SWLS) developed by Diener et al. (1985). The average score of life satisfaction variable was 20.92 (SD= 8.34). Finally, we measured locus of control using eight items developed by Perry and Morris (2005) (M= 24.87, SD= 4.091).

For demographic factors, we used the following demographic factors as control variables: working status (employed or not), gender (male, female), race (White or not), income level ($15k - $25k, $25K-$35K, $35K-$50K, $50K-$75K, $75K-$100K, $100K-$150K, and >$150K), and each respondent's number of children.

*Empirical Model*

We conducted two OLS regression models to identify the determinants of OFK and SFK. Then, based on the estimated coefficients of influential factors in each regression model, we utilized SUE as a post hoc test to check whether the coefficients were statistically different.

## Results

In each regression model, we included the same independent variables. As shown in Table 1, the model fits of the two models were statistically different, and the effect of the influential factors associated with OFK and SFK was different.

**Table 1. Seemingly Unrelated Regression Model Comparison**

| | Observation | RMSE | $R^2$ | $Chi^2$ |
|---|---|---|---|---|
| OFK Model | 997 | .86 | .21 | 261.62*** |
| SFK Model | 997 | 1.24 | .38 | 626.11*** |

As shown in Table 2, we compared the coefficient of each influential variable using SUE as a post hoc test of OLS regression analysis. Regarding educational factors, financial education experience (personal finance course taken in high school or in college) were significantly and positively associated with the level of OFK ($b$= .21, $p$< .05; $b$= .27, $p$< .01, respectively. However, they were negative and non-significant in level of SFK ($b$= .11, $p$ > .05; $b$= -.47, $p$< .001, respectively). These differences in coefficients were statistically supported by SUE post hoc test results ($X^2$= 4.89, $p$< .001; $X^2$= 18.95, $p$< .001, respectively). Similar results emerged in education levels between the OFK and SFK models; education levels associated positively with level of OFK but not significantly related to SFK. Specifically, when compared to the reference group (i.e., those with a high school diploma or below), higher education level had a significantly higher effect on OFK ($b$= .16, $p$< .05; $b$= .41, $p$< .001; $b$= .48, $p$< .001, respectively) but did not have a significantly association with SFK. These differences in coefficients were statistically supported, except some college by the result of SUE post hoc test ($X^2$= 16.10, $p$< .001; $X^2$= 10.19, $p$< .001, respectively).

Financial factors were partially associated with levels of OFK and SFK. Homeownership was negatively associated with OFK ($b$= -.19, $p$< .01), but was not significantly associated with SFK. Negative net balance and having an emergency fund were significantly associated with only SFK model ($b$= -.21, $p$< .05; $b$= .39, $p$< .001, respectively) and their directional effects were opposite.

Almost all behavioral factors were associated with both the OFK and SFK models. Financial risk tolerance, life satisfaction, and locus of control were all negatively associated with OFK ($b$= -.02, $p$< .05; $b$= -.01, $p$< .05; $b$= -.04, $p$< .001, respectively) while only the first two were positively and significantly with SFK ($b$= .11, $p$< .001; $b$= .04, $p$< .001; $b$= .02, $p$ > .05, respectively). These differences in coefficients were statistically supported by the SUE post hoc test ($X^2$= 88. 09, $p$< .001; $X^2$= 36.26, $p$< .001; $X^2$= 18.32, $p$< .001, respectively).

Demographic factors were partially associated with OFK and SFK levels. Working status negatively associated with OFK ($b$= -.20, $p$< .01), but positively associated with SFK ($b$= .29, $p$< .01), which was significantly different when compared between OFK and SFK model results using SUE ($X^2$= 17.67, $p$< .001). Non-married or those not in a relationship (e.g., single or divorced) were not associated with OFK and SFK levels. Female respondents had lower SFK ($b$= -.44, $p$< .001) than male respondents did, while no statistical relationship was found in the OFK model. Such coefficient differences between the OFK and SFK models in terms of gender were also statistically significant ($X^2$= 8.44, $p$< .01). White respondents had higher OFK

than did non-White respondents ($b$= .32, $p$< .001), while there was no difference in SFK. The coefficient difference between the two models was also statistically significant ($X^2$= 10.94, $p$< .001). All income groups except the lowest two groups and the highest group related positively to OFK, while only the highest group had a positive and significant relationship with SFK. The number of children was positive in the OFK model, but not significant in the SFK model. Coefficient differences in income and number of children between the OFK and SFK models were not statistically significant when SUE was conducted.

**Table 2. Results of OLS Regression Models and SUE for Coefficient Comparison**

| | OFK Model | SFK Model | Seemingly Unrelated Estimation |
|---|---|---|---|
| | β | β | ($Chi^2$) |
| Educational Factors | | | |
| Financial Class High School | .21* | -.11 | 4.89*** |
| Financial Class College | .27** | -.47*** | 18.95*** |
| Education level (ref.: <= High Sch.) | | | |
| Some College | .16* | -.10 | 3.00 |
| BA degree | .41*** | -.20 | 16.10*** |
| >= Graduate | .48*** | -.09 | 10.19** |
| Financial Factors | | | |
| Home Ownership | -.19** | -.17 | .03 |
| Negative Net Balance | -.04 | -.21* | 1.94 |
| Emergency fund | -.06 | .39*** | 14.04*** |
| Behavioral Factors | | | |
| Financial Risk Tolerance | -.02* | .11*** | 88.09*** |
| Life Satisfaction | -.01* | .04*** | 36.26*** |
| Locus of Control | -.04*** | .02 | 18.32*** |
| Demographic Factors | | | |
| Working (ref: not working) | -.20** | .29** | 17.67*** |
| Single (ref: married) | -.03 | -.17 | 1.44 |
| Female (ref: male) | -.08 | -.44*** | 8.44** |
| White (ref: non-White) | .32*** | -.13 | 10.94*** |
| Income (ref.: < $15K) | | | |
| $15k - $25k | .01 | -.01 | .01 |
| $25K - $35K | .13 | -.11 | 1.29 |
| $35K - $50K | .32** | .07 | 1.42 |
| $50K - $75K | .24* | .19 | .06 |
| $75K - $100K | .32* | .08 | 1.09 |
| $100K - $150K | .41** | .28 | .32 |
| > $150K | .18 | .65* | 2.73 |
| Number of Children | -.06* | -.06 | .01 |
| Constant | 2.32*** | 1.86** | |
| F-statistics | 11.10*** | 26.21*** | |
| $R^2$ | .21 | .38 | |

Note. * p < .05; ** p < .01; and *** p < .001.

## Conclusion and Discussion

This study empirically examined the effect of four types of influential factors on each type of financial knowledge using OLS regression models. We then compared the effect of each variable on each type of knowledge using the SUE technique. The results show that each variable had a different effect on each model, and the difference in the effects of a majority of variables was statistically tested and supported. Education attainment, financial education experience, some income levels, and race/ethnicity (White) had a positive effect on level of OFK while homeownership, risk tolerance, life satisfaction, locus of control, work status (employment) and number of children were negatively related to level of OFK. In SFK model,

emergency fund, risk tolerance, life satisfaction, work status (employed), and the highest income level were positively associated with level of SFK, while financial education in college, negative net worth balance, and gender (female) negatively affected the level of SFK.

Findings of the opposite effect of many variables between OFK and SFK models reflect different dimensions of financial knowledge, suggesting a need for further research and educational approaches to achieving balanced financial knowledge. Particularly, financial education experience in high school and college had a positive effect on OFK while financial education experience in college related negatively to SFK. Those with financial education experience in college may experience a greater need for more developed financial education programs after college or as they enter the labor force, when they face a range of financial circumstances and must make major financial decisions. The findings of this research provide empirical evidence about the role of major variables with different effects across OFK and SFK. The potential demand for financial education programs extends to a broader population, used by educators, researchers, financial practitioners, and policymakers.

## Acknowledgement

This work was supported by the USDA National Institute of Food and Agriculture, Hatch project 1017028 and Multi State 1019968.

## References

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment, 49*(1), 71-75.

Grable, J. E., & Lytton, R. H. (1999). Financial risk tolerance revisited: The development of a risk assessment instrument. *Financial Services Review, 8* (3), 163-181.

Lusardi, A., & Mitchell, O. S. (2017). How ordinary consumers make complex economic decisions: Financial literacy and retirement readiness. *Quarterly Journal of Finance, 7*(03), 1750008.

Lyons, A. C., Palmer, L., Jayaratne, K. S., & Scherpf, E. (2006). Are we making the grade? A national overview of financial education and program evaluation. *Journal of Consumer Affairs, 40*(2), 208-235.

Perry, V. G., & Morris, M. D. (2005). Who is in control? The role of self-perception, knowledge, and income in explaining consumer financial Behavior. *Journal of Consumer Affairs, 39*(2), 299-313.