FACTOR ANALYSIS OF KEY SCALES

SUMMARY

This brief summarizes findings from an exploratory factor analysis (EFA) of items from the 2014 administration of the Study on Collegiate Financial Wellness (SCFW), a survey examining financial attitudes, practices, and knowledge among students from institutions of higher education across the United States. The purpose of this study was to examine the factor structure that emerged from the data, in order to determine the extent to which these items represent underlying latent factors related to college student financial wellness.

A total of 24 items were retained in the final exploratory factor analysis. Five factors emerged from the data: financial socialization, financial management, financial strain, financial optimism, and financial knowledge.

METHODS

This study analyzes data based on the 2014 SCFW survey. The analytic sample for this study consists of 13,769 participants who completed each of the items selected for inclusion in the exploratory factor analysis.

A total of 33 items were selected for inclusion in the initial EFA (see Appendix). Items from the 2014 SCFW survey were selected for inclusion in the exploratory factor analysis if they (1) were believed to represent one or more psychological subconstructs related to the larger construct of financial wellness, (2) were distributed to the entire sample, not just a subset of respondents; and (3) were ordered binary, ordinal, or continuous in scale, rather than unordered nominal.

Due to variation in the scales that were used by different items and the presence of binary-scored items (e.g., 0 = No, 1 = Yes) a polychoric correlation matrix was computed for use in the factor analysis. The Keiser-Meyer-Olkin measure of sampling adequacy (0.82) and Bartlett's test of sphericity ($p < .0001$) both indicated that the data were appropriate for analysis using EFA. The EFA was conducted using principal axis factoring and a promax (oblique) rotation because literature and theory suggested that the items should be correlated.

An iterative process of analyzing the data, assessing the results, removing problematic items, and re-running the data was used. Items were removed if they demonstrated low communalities (< .30), thus failing to load significantly on at least one factor. Items were also removed if they loaded onto more than one factor (> .30), with one exception due to theoretical alignment. Following the criteria established by Fabrigar, Wegener, MacCallum, and Strahan (1999), factors were reviewed for interpretability, or the extent to which they have face validity and can be interpreted in the context of existing theory and research, and stability, or containing three variable loadings of at least 0.50. All of the factors met the standards for interpretability and stability.

However, two of the factors produced demonstrated lower than desired internal consistency reliability as measured using Cronbach's alpha. Financial optimism demonstrates slightly low reliability, which could be influenced by the low number of items and the weaker variable loading of one of the items. The low reliability estimate for financial knowledge may be due to the fact that all variables on this factor were dichotomously scored.

FINDINGS

The analysis resulted in a solution that retained 24 of the original 33 items into 5 factors. The following table summarizes the factors along with their factor loadings. For specific item wording, please see the appendix.

Variable	Socialization	Management	Strain	Optimism	Knowledge
parents_comfortable	0.74				
parents_moneymanagement	0.83				
parents_rolemodel	0.77				
precollege_save	0.87				
precollege_bankaccount	0.76				
precollege_invest	0.52				
relyfamily	0.52				
havebudget		0.71			
trackspending		0.83			
trackchecks		0.65			
confidentfinances		0.52			
managemoneywell*		0.59	-0.35*		
money_activities_peers			-0.87		
money_activities_self			-0.86		
stress_general			0.79		
stress_monthlyexpenses			0.83		
stress_payschool			0.63		
optimisticfuture				0.69	
supportself				0.75	
college goodinvestment				0.55	
finknowledge_1					0.66
finknowledge_2					0.74
finknowledge_3					0.74
finknowledge_4					0.44
Reliability (α)	0.77	0.74	0.86	0.67	0.57

*Note: The item *managemoneywell* demonstrated a weak (< .40) loading on the financial strain factor, in addition to a stronger loading on the financial management factor. Due to its theoretical significance and the fact that its second loading is weak, this variable was retained under the financial management factor.

IMPLICATIONS

Based on the findings of the EFA, the SCFW identified 5 key constructs measures by the survey: financial socialization, management behaviors, financial strain, financial optimism and financial knowledge. In order to provide a more robust survey instrument, several key areas of interest from the prior survey administration were retained (i.e. financial education) and additional items and scales have been added for the 2017 SCFW administration. These 2017 SCFW will measure the following key concepts:

- Financial Education
- Financial Management Behaviors
- Financial Self-Efficacy
- Financial Socialization
- Financial Stress & Strain
- Financial Optimism
- Paying for College
- Student Loans
- Consumer Debt
- Debt-Related Stress
- Financial Knowledge
- Academic Information
- Demographic Information

APPENDIX: ORIGINAL ITEMS

Number	Item	Wording
1a.	havebudget	I have a weekly or monthly budget that I follow.
1b.	trackspending	I track my spending in order to stay within my budget.
1c.	trackchecks	I track all debit card transactions/ checks to balance my account.
1d.	paybills**	I pay my bills on time every month.
1e.	addsavings**	I add to my savings on a regular basis.
2a.	relyfamily	I rely on family members for financial advice.
2b.	relyfriends**	I rely on friends for financial advice.
2c.	confidentfinances	I am confident that I can manage my finances.
2d.	managemoneywell	I manage my money well.
2e.	money_activities_peers	I have enough money to participate in most of the same activities as my peers do.
2f.	money_activities_self	I have enough money to participate in most activities that I enjoy.
2g.	spend_credit**	I regularly spend more money than I have by using credit or borrowing.
2h.	purchasewantvneed**	In the past three months, I purchased something expensive that I wanted, but did not need.
7a.	parents_comfortable	My parents or guardians were comfortable talking about money with me.
7b.	parents_ moneymanagement	My parents or guardians told me what I needed to know about money management.
7c.	parents_rolemodel	My parents or guardians were role models of sound financial management.
8a.	precollege_ allowancechild**	Did you ever receive an allowance as a child (age 12 or younger)?
8b.	precollege_ allowanceteen**	Did you ever receive an allowance as a teenager (age 13 or older)?
8c.	precollege_work**	Did you work for pay while in high school?
8d.	precollege_save	Did your parents or guardians encourage you to save money?
8e.	precollege_bankaccount	Did your parents or guardians encourage you to open a bank

		account?
8f.	precollege_invest	Did your parents or guardians encourage you to invest your money?
26a.	stress_general	I feel stressed about my personal finances in general.
26b.	stress_monthlyexpenses	I worry about being able to pay my current monthly expenses.
26c.	stress_payschool	I worry about having enough money to pay for school.
26d.	optimisticfuture	When I think about my financial situation, I am optimistic about the future.
26e.	supportself	After graduation, I will be able to support myself financially.
26f.	collegegoodinvestment	I think that the cost of college or university is a good investment for my financial future.
Q41	finknowledge_1correct	Imagine that the interest rate on your savings account is 1% per year and inflation is 2% per year. After 1 year, would you be able to buy more than today, exactly the same as today, or less than today with the money in this account?
Q42	finknowledge_2correct	Suppose you have $100 in a savings account and the interest rate was 2% per year. After 5 years, how much would you have in the account if you left the money to grow?
Q43	finknowledge_3correct	Suppose you borrowed $5,000 to help cover college expenses for the coming year. You can choose to repay this loan over 10 years, 20 years, or 30 years. Which of these repayment options will cost you the least amount of money over the length of the repayment period?
Q44	finknowledge_4correct	All paycheck stubs show your gross pay (the total amount you earned before any taxes were taken out for the pay period) and your net pay (the amount of your check after all taxes). The taxes that are commonly taken out include federal, state and local income tax, Social Security tax, and Medicare tax. On average, what percentage of your income would you expect to receive as take-home pay?
Q45	finknowledge_5correct**	Which of the following make up the TWO largest components of a credit score?

**Note: Items noted with asterisks were eliminated from the final factor solution due to either low communalities or loading onto multiple factors.