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Aims and Scope: Financial Services Review is the official publication of the Academy of Financial Services. The purpose of this refereed academic journal is to encourage rigorous empirical research that examines individual behavior in terms of financial planning and services. In contrast to the many corporate or institutional journals that are available in finance, the focus of this journal is on individual financial issues. The Journal provides a forum for those who are interested in the individual perspective on issues in the areas of Financial Services, Employee Benefits, Estate and Tax Planning, Financial Counseling, Financial Planning, Insurance, Investments, Mutual Funds, Pension and Retirement Planning, and Real Estate.

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Editorial Office: Stuart Michelson, School of Business, Stetson University, 421 N. Woodland Blvd., Unit 8398, DeLand, FL 32723. Phone: (386) 822-7376. Email address: smichels@stetson.edu. Web address: www.academyfinancial.org.

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From the Editor

This issue contains Volume 29 - Issue 3 of Financial Services Review (FSR). I would like to thank the board and members of the Academy of Financial Services for their continued support. I continue to work in broadening the scope of articles, while still focusing on individual financial management and personal financial planning. I encourage authors to reach out when discussing implications of their findings in a more comprehensive way. As such, all articles in the Journal more appropriately relate to financial planning issues.

The lead article “The relationship between objective financial knowledge, financial management, and financial self-efficacy among African American students” is coauthored by Kenneth White at University of Georgia, Narang Park at Texas State University, Kimberly Watkins at University of Alabama, Megan McCoy at Kansas State University, and Joycelyn Morris at Florida International University. The authors examine the factors contributing to African American college students’ financial literacy. Using the National Student Financial Wellness Study and structural equation modeling, their findings suggest that for African American students, objective financial knowledge is not directly or indirectly associated with financial self-efficacy. They find that only financial management is significantly associated with increased financial self-efficacy. Their findings posit that experiential learning may be effective for improving African American students’ financial literacy.

The second article “Income more Important than Financial Literacy for Improving Wellbeing” is coauthored by Tracey West at Griffith University, Michelle Cull at Western Sydney University and Dianne Johnson at Griffith University. The authors study the impact of financial literacy on financial behaviors. They do not find that university students with higher levels of financial literacy have reduced money management stress and positive financial behavior, leading to higher levels of financial wellbeing. They do find that being older and having higher levels of income contributed most significantly and consistently to explaining better financial wellbeing.

The third article, “The Effect of Risk Literacy and Visual Aids on Portfolio Choices among Professional Financial Planners” is coauthored by Meghaan R. Lurtz at University of Maryland University College, Michael G. Kothakota at WolfBridge Wealth Management, Stuart J. Heckman at Kansas State University, and Kristy Archuleta at University of Georgia. In this article the authors explore the impact of risk literacy on the ability to understand and interpret probabilistic trade-offs. The authors use an experimental design to test financial planners’ risk literacy and their ability to select the most resilient portfolio based on whether they were given probabilistic information and a visual representation or only
probabilistic information. Their results indicate that visual representation does help financial planners determine the appropriate choice, but risk literacy does not.

The final article, “Enumerating the Value of Financial Advice in a Competitive Market: A Dual Structure Approach & Analysis” is coauthored by Steve P. Fraser at Florida Gulf Coast University, Brian C. Payne at University of Nebraska at Omaha, and Scott Schatzle at Mutual Trust Advisory Group. In this article, the authors introduce and examine a composite, dual fee structure (CDFS) for financial planners that helps quantify the value of financial advice. They specifically separate financial planning (advice) fees based on total net worth (NW) from Investment Management (IM) fees based on assets under management (AUM), which are readily observable and pervasive in the marketplace. The authors state that with this knowledge, the financial value of the non-IM component of financial planning services can reduce perceived conflicts of interest by permitting financial planners to generate compensation for non-IM planning activities in a transparent manner, whether or not the client moves investable funds to the planner.

Thank you to those who make the journal possible, especially the referees and contributing authors. Over the past year, the following reviewers provided excellent reviews of the articles you enjoyed within the pages of Financial Services Review. I would like to send a special thank you to the many reviewers that have significantly contributed to the quality of our journal by providing timely and thorough reviews of the submissions to our journal.

Please consider submission to the Financial Services Review and rely on the style information provided to ease readability and streamline the review process. The Journal welcomes articles over the range of areas that comprise personal financial planning. While FSR articles are certainly diverse in terms of topic, data, and method, they are focused in terms of motivation. FSR exists to produce research that addresses issues that matter to individuals. I remain committed to the goal of making Financial Services Review the best academic journal in individual financial management and personal financial planning.

Best regards,
Stuart Michelson
Editor Financial Services Review
The relationship between objective financial knowledge, financial management, and financial self-efficacy among African American students

Kenneth Whitea,*, Narang Parkb, Kimberly Watkinsc, Megan McCoyd, Joycelyn Morris

department of Financial Planning, Housing, and Consumer Economics, University of Georgia, Dawson Hall, Athens, GA 30602, USA

School of Family and Consumer Sciences, Texas State University, 601 University Drive, San Marcos, TX 78666, USA

Department of Consumer Sciences, University of Alabama, 313 Adams Hall, Box 870158, Tuscaloosa, AL 35487, USA

Department of Personal Financial Planning, Kansas State University, 1324 Lovers Lane, 343M Justin Hall, Manhattan, KS 66502, USA

Department of Teaching and Learning, Florida International University, 11200 SW 8th Street, ZEB, Miami, FL 33199, USA

Abstract

Research consistently shows the positive associations of objective financial knowledge, management, and self-efficacy on college students’ financial literacy. However, there is a need for a more nuanced examination of the factors contributing to African American college students’ financial literacy. Using the National Student Financial Wellness Study and structural equation modeling, findings suggest that for African American students, objective financial knowledge is not directly or indirectly associated with financial self-efficacy. Only financial management is significantly associated with increased financial self-efficacy. These findings indicate that experiential learning may be effective for improving African American students’ financial literacy.

JEL classification: D10; D14; G53

Keywords: African American; Financial literacy; Financial knowledge; Financial management; Financial self-efficacy

*Corresponding author. Tel.: +1-706-542-4879; fax: 706-542-4397. E-mail: kjwhite@uga.edu
1. Introduction

Financial literacy is essential to increase sound financial decision-making and to reduce financial distress (Asaad, 2015; Huston, 2010; Scott, Vu, Cheng, & Gibson, 2018). Greater financial literacy leads to healthy behaviors such as budgeting, saving for emergencies, and investing for goals such as retirement (Henager & Cude, 2016). Given the critical nature of these skills, one might assume that researchers understand how financial literacy develops. However, research is limited by conflicting definitions and unclear paths to its development (Willis, 2008). What researchers do understand thus far is that both knowledge and confidence are critical components to developing financial literacy.

Objective financial knowledge is a necessary component of financial literacy. However, to be a financially literate individual, one must also possess self-efficacy, or confidence, in his or her abilities to perform financial tasks (Bandura, 2006). Individuals with higher levels of objective financial knowledge and financial self-efficacy are associated with sound financial management leading to increased financial well-being (Robb & Woodyard, 2011). The link between objective financial knowledge and financial self-efficacy as integral components of financial literacy is evident. So, why has it proven so difficult to teach people these skills?

Basic financial education classes should increase knowledge (Mielitz, MacDonald, & Lurtz, 2018) and literacy (Al-Bahrani, Weathers, & Patel, 2019). However, well-intentioned interventions may fall short for African American students. For example, Al-Bahrani et al. (2019) reported the returns on financial education are higher for Whites than persons of color (POC). Huston (2010) concluded that a one-size-fits-all approach to personal financial education is not effective and should instead be tailored to different demographics. If not tailored, financial education in its current form could increase the objective financial knowledge gap between Whites and POC. Although the personal finance literature has extensively documented the effects of objective financial knowledge and financial self-efficacy for college students, the literature is lacking when specifically addressing the roles of objective financial knowledge, financial management, and financial self-efficacy regarding African American college students’ financial literacy (Alhenawi & Elkhal, 2013; Lown, 2011).

Whereas many studies use financial literacy as an input variable to explore its influence on financial behavior, the purpose of this article is to explore differences in the paths to financial literacy for African American college students. We seek to examine three paths: (1) the path from objective financial knowledge to financial self-efficacy, (2) the path from objective financial knowledge to financial management, and (3) the path from financial management to financial self-efficacy. Our contribution is a comparison of African American college students to their peers in regards to objective financial knowledge, financial self-efficacy, and financial management experiences. Ultimately the study seeks to understand how African American college students become financially literate individuals. The article is organized as follows: Section 2 introduces the conceptual framework and hypotheses; Section 3 describes the data and measures; Section 4 presents the results; and Section 5 is the discussion, and Section 6 concludes the article.
2. Conceptual framework and hypotheses

2.1. The Huston framework of financial literacy

When defining what it means to be a financially literate individual, Huston (2010) presents two components, knowledge (objective financial knowledge) and application (financial management ability and financial self-efficacy). Huston (2010) carefully distinguishes objective financial knowledge as an integral component of financial literacy, but not equivalent to financial literacy. Objective financial knowledge is acquired through both formal financial education and and/or the experience of using financial concepts to manage one’s personal finances (financial management experience) (Bapat, 2019; Huston, 2010). Huston (2010) goes on to explain that application is a combination of ability and confidence to apply knowledge (e.g., financial self-efficacy; Bandura, 1997). According to Huston (2010), financially literate individuals know information (objective financial knowledge) and apply it appropriately (financial management) and confidently (financial self-efficacy). Financial self-efficacy is a necessary component of literacy; the question remains if financial self-efficacy is built through knowledge or experience. Please see Fig. 1 for a visual depiction of this operationalization of financial literacy.

2.1.1. Financial knowledge

The Huston (2010) framework has been used in other studies to highlight the importance of the link between objective financial knowledge and management (Alhenawi & Elkhal, 2013; Asaad, 2015; Henager & Cude, 2016; Seay, Kim, & Heckman, 2016; Seay, Preece, & Le, 2017). Research consistently shows that there is a positive relationship between objective financial knowledge and financial outcomes. As individuals’ objective financial knowledge increases, they are less likely to report over-indebtedness (Varum & Kolyban, 2014) and experience financial distress associated with paying bills (Scott, Vu, Cheng, & Gibson,
Conversely, they are more likely to report higher monthly income (Varum & Kolyban, 2014) and are more willing to take on investment risks (Chung & Park, 2015).

Examining the role of objective financial knowledge for African American students is critical for understanding the factors associated with this group’s financial literacy. Research notes that African Americans feel less financially knowledgeable than their White peers (Deenanath, Danes, & Jang, 2019; O’Connor, 2019) and are often less financially literate when compared with Whites (Killins, 2017). Mimura et al. (2015) conclude that parental influence was a significant factor in the objective financial knowledge and financial practices of college students who are first generation, POC, immigrant or children of immigrants. Factors such as a mother’s and father’s highest level of education are also positively correlated with a student’s objective financial knowledge (Chambers, Asarta, & Farley-Ripple, 2019). Given these factors, it is imperative to understand how objective financial knowledge develops and affects financial literacy among African American students.

2.1.2. Financial management

Sound financial management encompasses budgeting, saving, tracking, and spending money over time while taking into account future needs, risks, managing credit, and understanding long-term financial planning concepts such as tax, insurance, investing, retirement, and estate planning needs (Bapat, 2019; Henry, Weber, & Yarbrough, 2001; Spuhlera & Dew, 2019). Positive relationships exist between sound financial management and accumulated savings; negative associations exist between sound financial management and accumulated consumer debt (Spuhlera & Dew, 2019). Bapat (2019) found that objective financial knowledge, measured through the ability to answer personal finance related questions, is positively associated with financial management. Additionally, sound financial management is related to reductions in financial stress and increases in financial peace of mind and well-being (Spuhlera & Dew, 2019).

When it comes to financial management, African American students may be at a disadvantage. Research has demonstrated that African American students tend to graduate with more debt than their White peers and face more challenges in the management of credit card debt. Reality Education and Assets Partnership (REAP) found that 55% of African American students who have student loans graduate with a debt burden that is nearly twice
that of White graduates (Dorrance & McDaniel, 2009). It is important to explore if these financial management issues are an artifact of lacking objective financial knowledge or other issues related to socioeconomic factors.

2.1.3. Financial self-efficacy

Self-efficacy is an individual’s sense of confidence in their ability to perform a certain skill or task to obtain specific outcomes (Bandura, 1977, 2006). Financial self-efficacy then is one’s confidence in their financial decision-making and management ability (Bandura, 1977; Farrell, Fry, & Risse, 2016). According to Social Learning Theory, self-efficacy spurs individuals to confront difficult tasks, and success in these difficult tasks then expands the individual’s self-efficacy (Bandura, 1994). Applied to financial literacy research, there is a bidirectional relationship between self-efficacy and management behaviors. The more a person experiences the financial management behavior and succeeds (or learns from mistakes) the higher their self-efficacy will become. Thus, despite many studies using financial self-efficacy as an outcome variable, there is a strong argument that can be made for it to be a predictor variable.

Higher financial self-efficacy is linked to more productive financial behaviors and greater well-being (Amatucci & Crawley, 2011; Farrell et al., 2016). Research provides support that financial self-efficacy is important to saving behavior and increases in net worth (Asebedo & Seay, 2018). Students who are more confident in their financial decision-making and feel more knowledgeable engage in more healthy financial management (Deenanath, Danes, & Jang, 2019). Although financial self-efficacy is an important component of financial literacy, when self-efficacy is not grounded in appropriate knowledge it can result in overconfidence (McCoy et al., 2019). Overconfidence can be harmful and result in higher risk taking, less investment diversification, excessive borrowing, and may be a deterrent to seeking professional financial advice (Angrisani & Casanova, 2019; Atlas et al., 2019; Hauff & Nilsson, 2020; Kim, Lee, & Hanna, 2020; Merkle, 2017).

Previous studies on college students note financial self-efficacy to be related to positive outcomes like lower stress (Heckman, Lim, & Montalto, 2014; Lim, Heckman, Letkiewicz, & Montalto, 2014), higher subjective well-being, and negatively associated with credit hour reductions (Robb, 2017). Although race was included in two of these studies on college students (Heckman et al., 2014; Lim et al., 2014), to the authors’ knowledge, no study has directly explored how race impacts financial self-efficacy among college students.

2.1.4. Importance of examining race/ethnicity

Despite the lack of explicit studies on how different racial or ethnic groups vary in financial self-efficacy, there has been research that may suggest differences in financial self-efficacy by race/ethnicity. First, racial differences in rates of financial self-efficacy may stem from the differences in rates of mathematical self-efficacy. Alliman-Brissett & Turner (2010) found that perceived racism negatively impacted mathematical self-efficacy (i.e., the
self-efficacy related to math-related tasks and to pursue math careers) in African American youth. It is not a large leap to imagine that self-efficacy in math would be highly correlated to one’s self-efficacy with money (Almenberg & Widmark, 2011; Grohmann, Kouwenberg, & Menkhoff, 2015; Skagerlund, Lind, Strömbäck, Tinghög, & Västfjäll, 2018; Jayaraman, Jambunathan, & Counselman, 2018).

Second, Oliver and Shapiro (2013) describe how the “racialization of state policy” has led to a long legacy of wealth differences that have reinforced racial inequalities in the United States (p. 39). Socialization messages within African American families around how much wealth one can achieve may be shaped by these inequalities. Generations of barriers that prevented equal access to the means of generating wealth may limit African American’s financial self-efficacy.

Finally, an important component of financial self-efficacy is the vicarious experiences of financial management (Bandura, 1997). Bandura (1997) suggests that we develop self-efficacy through experiencing the behavior itself. Research shows that the African American community is disproportionately underbanked or unbanked (Breitbach & Walstad, 2014). Potentially, this has led to African American’s having fewer financial management experiences resulting in lower levels of financial self-efficacy.

There remains a large racial/ethnic wealth and income gap in the United States that may impact differences in financial literacy between African American and non-African American students (Hamilton & Darity, 2017). Differences in financial literacy are not an inherent trait of being one race or ethnicity per se, but instead are associated with financial experiences. Financial literacy then is tied to wealth or lack of wealth. Financial behaviors, such as paying bills on time, investing and saving for retirement, are limited for individuals with few financial resources to manage (Hamilton & Darity, 2017; Hamilton et al., 2015). In fact, if household income were equal, African American families would have a slightly higher savings rate than White families (Hamilton & Darity, 2017).

Although the literature may hint at differences between African American and non-African American students, there is not enough empirical data to presuppose a directional association between the components of Huston’s financial literacy framework and race. Therefore, the three hypotheses in this study were derived from the conceptual framework (Huston, 2010) and the extant literature to examine the relationships between objective financial knowledge, financial management, and financial self-efficacy (see Fig. 2).

**Hypothesis 1:** African American and non-African American students’ objective financial knowledge is positively associated with their financial self-efficacy.

**Hypothesis 2a:** Financial management is a mediating factor in the relationship between objective financial knowledge and financial self-efficacy among African American and non-African American students.

**Hypothesis 2b:** African American and non-African American students’ financial management is positively associated with their financial self-efficacy.

Based on these hypotheses, the conceptual model (Fig. 1) is used to explore the relationships of the components of financial literacy and compare the relationships by race.
3. Method

3.1. Data and sample selection

This study relies upon data collected at The Ohio State University through the 2014 National Student Financial Wellness Study (NSFWS). This survey is administered to undergraduate students \(N = 18,795\) from 52 participating two and four-year public institutions and four-year private higher education institutions across the United States. To learn more about the methodology of the Study on Collegiate Financial Wellness (SCFW), please see Montalto, Phillips, McDaniel, and Baker (2019). Questions relating to financial attitudes, financial management, and objective financial knowledge capture a picture of the overall financial literacy and wellness of undergraduate students in the United States. The original data sample size is 18,792. The sample includes 965 African American students and 13,697 non-African American students, excluding missing answers. To balance sample size, we drew random samples from the existing pools. First, we extracted several sets of sample combinations that are 350 samples for each group because structural equation modeling requires at least 350 samples to ensure the significant factor loadings for latent constructs (Hair, Black, Babin, & Anderson, 2014). Next, the sample size of each group was reduced after eliminating observations with missing answers. However, due to limitations with the data, we encountered difficulty extracting the same number of sample sizes for each group. We chose samples with a smaller difference in size between the two groups. The total sample size was 860, 394 for African American and 466 for non-African American.

3.2. Variables

Our model is constructed with three latent variables: financial knowledge, financial management, and financial self-efficacy. A latent variable is an underlying concept that cannot be observed or directly measured. Instead, it can be inferred by several indicators, or observed variables. The following section describes how we manifested the latent constructs with a set of indicator variables.

3.2.1. Financial self-efficacy

The outcome variable, financial self-efficacy, is a latent variable constructed by two observed indicators: confidence in finances and confidence in money management. Confidence in finances is measured by the item: “I am confident that I can manage my finances.” Respondents are asked to indicate 1 = strongly disagree, 2 = disagree, 3 = agree, or 4 = strongly agree. Confidence in money management is a variable measured by the item: “I manage my money well.” Respondents are also given four options to indicate 1 = strongly disagree, 2 = disagree, 3 = agree, or 4 = strongly agree.
3.2.2. Objective financial knowledge

Objective financial knowledge is a latent variable consisting of three observed variables. Each variable is measured by a question testing respondents’ objective financial knowledge (see Appendix A). The three questions have been widely used in prior studies (Al-Bahrani et al., 2019; O’Connor, 2019; Robb & Woodyard, 2011; Seay, Preece, & Le, 2017). The variables are coded as 1 if a respondent provides the correct answer, or 0 otherwise.

3.2.3. Financial management

Financial management is a latent variable manifested by three indicators. The financial management variable represents respondents’ normative financial behavior. The indicator variables are budgeting, tracking spending, and tracking transactions. The variables are measured by the following items: “I have a weekly or monthly budget that I follow (budgeting),” “I track my spending to stay within my budget (tracking spending),” and “I track all debit card transactions/checks to balance my account (tracking transactions).” Respondents are given four options to choose 1 = never, 2 = sometimes, 3 = frequently, or 4 = always.

3.3. Covariates

This study includes eight control variables: age, gender, employment, annual income, marital status, having child(ren), first generation status, and financial education. These socio-demographic variables are known to be associated with financial management and financial self-efficacy (Al-Bahrani et al., 2019; Alhenawi & Elkhal, 2013; Chambers, Asarta, & Farley-Ripple, 2019; Harrington & Smith, 2016; Henager & Cude, 2016; Tang & Peter, 2015; Varum & Kolyban, 2014; Wagner, 2019). Age is a numeric value. Gender is coded as 1 = female, or 0 = male. Employment is coded as a dummy variable indicating 1 = employed and 0 = not employed. The “employed” category includes respondents who are working full-time, part-time, or self-employed. Annual income is also coded dichotomously: 1 = above median income, or 0 = median income or less. Because there is no direct measurement for marital status, we use a proxy variable measured by an item asking, “Are you financially responsible for a spouse/partner?” Having child(ren) is coded as 1 if respondents have any financially dependent child or children, or 0 otherwise. First generation status is an indicator of parents’ education. It defines whether either parent completed a bachelor’s degree. First generation is coded as 1 = first generation student, or 0 = not first generation student. Finally, financial education indicates whether respondents attended any personal finance classes/workshops when they were in high school or in college. The variable is coded dichotomously (1 = yes, 0 = no).

3.4. Model analysis

The analytic procedure is as follows. First, we specify the model to be tested. The variables are selected from the available information within the data. The relationships among
the variables are hypothesized based on previous literature. Similar to Bapat (2019), we employed structural equation modeling (SEM) to test the hypothesized relationship among the variables of interest. SEM is a statistical technique that conducts confirmatory factor analysis and path analysis simultaneously. Confirmatory factor analysis (CFA) examines whether a latent variable is conceptually well represented by its observed indicators. The strength of relationship between each indicator variable and a latent variable is assessed by factor loading. Factor loadings greater than 0.5 are generally considered as high; however, 0.3 and 0.4 are minimally acceptable if the sample size is 350 or larger (Hair et al., 2014; Kline, 1994). Path analysis identifies the significance of hypothesized relationships among the latent variables. Path analysis helps understand the sequential associations of the variables. As structural equation modeling takes advantage of both latent variable analysis (i.e., CFA) and path analysis, it is useful when testing a conceptual model as a whole. While traditional regressions are powerful when analyzing the marginal effect of an independent variable (when holding other variables constant) on a dependent variable, they have limited ability in examining the sequential relationships among the relevant variables. Also, structural equation modeling minimizes the measurement errors (Bollen, 1989). The second hypothesis of this study is to examine the mediating role of financial management. Thus, we chose structural equation modeling as our analytic method because it is the most appropriate method to analyze our research questions.

To compare the results of African American to the results of non-African American students, we applied a group comparison option when conducting SEM. The path coefficients are standardized for comparison. The model was tested using Stata 15.

4. Results

4.1. Descriptive characteristics of respondents

Table 1 shows the demographic characteristics of the sample. The average age of African American students (27.02) is higher than that of non-African American students (23.68). The sample is skewed to female for both African American students (74%) and non-African American students (72%). For employment status, the percentage of working full-time, part-time or self-employed is higher for African American students (73%) compared with non-African American (69%). These results may indicate a necessity for African American students to provide more of their own financial support than their non-African American counterparts. Both African American students and non-African American students show a low rate of having a spouse or partner; however, more African American students (27%) are financially responsible for a child or children than their non-African American counterparts (14%). The descriptive statistics indicate more African American students (57%) than non-African American students (43%) are the first generation attending college. Financial education experience of African American students and non-African American is 49% and 42%, respectively. Regarding objective
financial knowledge, the percentage of correct answers for each question is higher in non-African American students. With regards to financial management, the occurrence of three management behaviors (i.e., have budget, track spending, or track account balance) are similar between African American students and non-African American students. Overall, financial self-efficacy is slightly higher for non-African American students.

4.2. Structural equation modeling results

Figs. 3 and 4 are the results of structural equation modeling. Latent variables are graphically expressed by ovals and observed variables are visually represented by rectangles. The set of covariates (e.g., age, gender, employment, annual income, marital status, having child

Table 1  Descriptive statistics of respondents (N = 860)

<table>
<thead>
<tr>
<th>Variables</th>
<th>African American (N = 394)</th>
<th>Non-African American (N = 466)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>Mean (SE)</td>
</tr>
<tr>
<td>Age</td>
<td>27.02 (10.89)</td>
<td>23.68 (7.03)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>26.40</td>
<td>27.90</td>
</tr>
<tr>
<td>Female</td>
<td>73.60</td>
<td>72.10</td>
</tr>
<tr>
<td>Employment status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>72.59</td>
<td>69.31</td>
</tr>
<tr>
<td>Not employed</td>
<td>27.41</td>
<td>30.69</td>
</tr>
<tr>
<td>Annual income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median or less</td>
<td>52.03</td>
<td>61.59</td>
</tr>
<tr>
<td>Above median</td>
<td>47.97</td>
<td>38.41</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Having spouse/partner</td>
<td>12.94</td>
<td>11.80</td>
</tr>
<tr>
<td>No spouse/partner</td>
<td>87.06</td>
<td>88.20</td>
</tr>
<tr>
<td>Having child(ren)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>26.90</td>
<td>13.95</td>
</tr>
<tr>
<td>No</td>
<td>73.10</td>
<td>86.05</td>
</tr>
<tr>
<td>First generation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>57.36</td>
<td>43.13</td>
</tr>
<tr>
<td>No</td>
<td>42.64</td>
<td>56.87</td>
</tr>
<tr>
<td>Financial education</td>
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<td></td>
</tr>
<tr>
<td>Yes</td>
<td>48.73</td>
<td>42.27</td>
</tr>
<tr>
<td>No</td>
<td>51.27</td>
<td>57.73</td>
</tr>
<tr>
<td>Objective financial knowledge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial knowledge1 (correct)</td>
<td>48.22</td>
<td>61.59</td>
</tr>
<tr>
<td>Financial knowledge2 (correct)</td>
<td>73.10</td>
<td>78.76</td>
</tr>
<tr>
<td>Financial knowledge3 (correct)</td>
<td>72.59</td>
<td>82.62</td>
</tr>
<tr>
<td>Financial management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Budgeting</td>
<td>2.68 (0.94)</td>
<td>2.58 (0.97)</td>
</tr>
<tr>
<td>Tracking spending</td>
<td>2.93 (0.88)</td>
<td>2.94 (0.94)</td>
</tr>
<tr>
<td>Tracking transactions</td>
<td>3.15 (0.91)</td>
<td>3.09 (1.05)</td>
</tr>
<tr>
<td>Financial self-efficacy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confidence in finances</td>
<td>3.08 (0.75)</td>
<td>3.09 (0.67)</td>
</tr>
<tr>
<td>Confidence in money management</td>
<td>2.91 (0.72)</td>
<td>3.04 (0.66)</td>
</tr>
</tbody>
</table>
(ren), first generation status, or financial education) are included in the pathways to control for the background characteristics.

In SEM, the goodness of the model is evaluated by several fit indices, including the $\chi^2$ statistic, the root mean square error of approximation (RMSEA), standardized root mean square residual (SRMR), and comparative fit index (CFI). Kline (2005) recommended at least these four indices should be reported. The model $\chi^2$ test should be statistically insignificant if the model fit is good; however, this rule does not apply to a large sample because the $\chi^2$ statistic is sensitive to sample size (Schermelleh-Engel, Moosbrugger, & Müller, 2003). Generally, the model is considered to be good if RMSEA is lower than 0.06, SRMR is less than 0.08, and CFI is higher than 0.90 (Hu & Bentler, 1999; Loehlin, 2004). The tested model statistics are $\chi^2 = 250.38$ ($df = 126$, $p < .001$), RMSEA = 0.048, SRMR = 0.038, CFI = .920. Based on the thresholds of goodness-of-fit indices, the model shows a good fit.

![Fig. 3. Results from the structural equation modeling of African American college students with standardized coefficients.](image)

**Note.** Control variables are age, gender, employment, annual income, marital status having child(ren), first generation, financial education. *$p < .05$, **$p < .01$, ***$p < .001$.

![Fig. 4. Results from the structural equation modeling of non-African American college students with standardized coefficients.](image)

**Note.** Control variables are age, gender, employment, annual income, marital status having child(ren), first generation, financial education. *$p < .05$, **$p < .01$, ***$p < .001$. 
results also demonstrate the significance of the hypothesized relationship among the latent constructs. First, the effect of objective financial knowledge on financial management is not significant ($\beta = 0.042, p = .636$). This indicates, for African American students, objective financial knowledge contributes little in forming positive financial management. Second, objective financial knowledge is also not significantly linked to financial self-efficacy ($\beta = 0.152, p = .069$). This means objective financial knowledge does not suffice to build financial self-efficacy for African American students. Third, financial management is greatly and positively associated with financial self-efficacy ($\beta = 0.580, p < .001$). In short, only financial management is effective to establish financial self-efficacy for African American students.

Fig. 4 shows the results for non-African American students. All factor loadings for latent constructs are fairly high and significant at the level of .001. The associations among the latent variables are found to be significant. First, objective financial knowledge is positively associated with financial management ($\beta = 0.158, p < .05$) and financial self-efficacy ($\beta = 0.153, p < .05$). This indicates, for non-African American students, higher objective financial knowledge is linked to more positive financial management behavior and higher financial self-efficacy. Second, financial management is positively related to financial self-efficacy ($\beta = 0.326, p < .001$).

5. Discussion

This study contributes to the literature by examining how objective financial knowledge, financial management, and financial self-efficacy are associated with African American college students’ financial literacy. The summary of results are found in Table 2. Results show that objective financial knowledge is positively associated with financial self-efficacy supporting Hypothesis 1 among the non-African American sample. However, when examining the link between objective financial knowledge and financial efficacy for only African American students, this association does not exist.

Similarly, for the non-African American sample, there is a significant indirect relationship from objective financial knowledge to financial self-efficacy mediated by financial management. Both objective financial knowledge and financial management are positively related to their financial self-efficacy. This provides support for both Hypothesis 2a and Hypothesis 2b. However, this relationship again differs for the African American students in the study. There is only a significant link from ‘financial management’ to ‘financial self-efficacy’.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>African American</th>
<th>Non-African American</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>Objective financial knowledge $\rightarrow$ Financial management</td>
<td>Not supported</td>
</tr>
<tr>
<td>H2a</td>
<td>Objective financial knowledge $\rightarrow$ Financial self-efficacy</td>
<td>Not supported</td>
</tr>
<tr>
<td>H2b</td>
<td>Financial management $\rightarrow$ Financial self-efficacy</td>
<td>Supported</td>
</tr>
</tbody>
</table>
These results suggest that financial management experience is important for African American students to attain financial self-efficacy.

The findings of this study appear to suggest that simply having objective financial knowledge is not as powerful a tool as providing experiences to counteract this difference in African American communities. It is important for African American students to manage finances to acquire the ability and confidence to become financially literate individuals.

6. Conclusions

The results of this study show it is important to not generalize findings of studies to all populations. More research is needed to explore between group differences to ensure that best practices are truly best for all groups. For instance, our study shows that an essential ingredient in financial education programs is a focus on building financial self-efficacy. For African American students, providing opportunities for learning through financial management experiences must be an important component of financial education (Henager & Cude, 2016; Robb & Woodyard, 2011). Thus, financial education programs focusing on experiential learning may enhance financial literacy among African American students and ultimately mitigate financial problems that individuals and families face (Huston, 2010). This is consistent with Tang and Peter (2015) who suggest that hands-on experience and application-orientated financial education is effective in improving the acquisition of objective financial knowledge.

Established university-based, peer-mentoring or counseling programs (e.g., the ASPIRE Clinic at the University of Georgia and PowerCat Financial at Kansas State University) are invaluable resources to increase the self-efficacy of African American students through financial management experiences. Providing financial education in its current form may increase the objective financial knowledge gap between White and African American college students. Although financial literacy is associated with positive financial outcomes, we must acknowledge that financial literacy alone does not influence positive or negative financial outcomes. Factors such as culture, family, economic, and institutional policies may result in individuals engaging in ineffective personal financial behaviors that disrupt their financial well-being (Huston, 2010).

This study highlights the importance of offering a variety of financial education instructional methods to make targeted financial outcomes accessible to a broader and more diverse range of students. It is important to note some of the study’s limitations. Due to the cross-sectional nature of the data, causations cannot be concluded from these results. Future research should focus on the use of longitudinal data or experimental designs to find direct causes. In addition, our findings suggest the need for experiential learning, yet an experimental design is needed to formalize the best practice suggestion. Furthermore, more research is needed to explore the relationship between objective financial knowledge, financial self-efficacy, and financial management experiences in African Americans to provide more insights in the underlying factors that cause
different results across racial groups. Current and future financial education curricula should focus not only on how individuals perform financial management behaviors but also how to help increase a person’s financial self-efficacy as this is an essential component of one’s ability to be financially literate. As aforementioned, there is a bidirectional relationship between financial self-efficacy and financial management behaviors. In the current study, we tested how objective financial knowledge, financial management, and financial self-efficacy, are associated with college students’ financial literacy across racial groups. Further research is needed to explore any potential for reverse causality in how we tested the relationship between these variables.

Despite these limitations, financial practitioners and educators can use these findings to create culturally responsive financial education programs to help increase financial self-efficacy and close the objective financial knowledge and literacy gap between African Americans and other races/ethnicities.

Note

1 In 2014, when the data were originally collected and released for use, it was titled NSFWS. The name was later changed to SCFW for subsequent data collection beginning in 2017.

Appendix A Financial knowledge items

<table>
<thead>
<tr>
<th>Financial knowledge questions</th>
<th>Scale</th>
</tr>
</thead>
</table>
| (1) 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? | 1 = More than today  
2 = Exactly the same as today  
3 = Less than today  
4 = Don’t know                                                                                     |
| (2) 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?                                                      | 1 = More than $102  
2 = Exactly $102  
3 = Less than $102  
4 = Don’t know                                                                                   |
| (3) 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? | 1 = 10-year repayment option  
2 = 20-year repayment option  
3 = 30-year repayment option  
4 = Don’t know                                                                                     |

References


SCFW. (2017). *Study on Collegiate Financial Wellness: 2017 Key Findings Report*. The Ohio State University, Columbus, OH. Available at https://cssl.osu.edu/posts/632320bc-704d-4eef-8bcb-87c83019f2e9/documents/2017-scfw-key-findings-report.pdf


Income more important than financial literacy for improving wellbeing

Tracey West\textsuperscript{a}, Michelle Cull\textsuperscript{b,*,} Dianne Johnson\textsuperscript{c}

\textsuperscript{a}Department of Accounting, Finance and Economics, Griffith University, Gold Coast, Queensland, Australia
\textsuperscript{b}School of Business, Western Sydney University, NSW, Australia
\textsuperscript{c}Department of Accounting, Finance and Economics, Griffith University, Gold Coast, Queensland, Australia

Abstract

As advocates of financial literacy education, it is a hard pill to swallow when data show little impact on financial behaviors. Unfortunately, expectations that university students with higher levels of financial literacy have reduced money management stress and positive financial behavior, leading to higher levels of financial wellbeing, were expunged in this study. We did find, however, that being older and having higher levels of income contributed most significantly and consistently to explaining better financial wellbeing. Proponents of financial literacy education should not despair but instead recognize the limits to transferring financial knowledge and set financial literacy and wellbeing goals based on evidence of what works. © 2021 Academy of Financial Services. All rights reserved.

\textit{JEL classification}: D1 Household Behaviour and Family Economics; I22 Educational Finance; Financial Aid; I240 Education and Inequality

\textit{Keywords}: Education; Financial wellbeing; Financial literacy; Income; University students

1. Introduction

What is more important to an individual; financial literacy or financial wellbeing? Sure, financial mistakes are costly, but to what extent do they impact on an individual’s level of satisfaction with their financial situation? Further, how can financial literacy interventions effectively improve wellbeing outcomes? Financial wellbeing therefore, is a topic of...
increasing importance to academics, public policy officials, educators, financial managers, and employers (CFPB, 2015). While there is a plethora of studies available that advocate for consumer protection through financial literacy interventions (Fernandes, Lynch, & Netemeyer, 2014) and policy support for financial literacy education in an attempt to increase economic participation, improve social inclusion and enhance economic health (ASIC, 2017; OECD, 2012), there has been less work done on what constitutes financial wellbeing or its role in overall wellbeing (Netemeyer, Warmath, Fernandes, & Lynch, 2018).

This study utilizes the financial wellbeing framework of Netemeyer et al. (2018) to measure the determinants of financial wellbeing of university students. University students are an important cohort of interest, and many institutions are discovering that first-generation, students of color, adults and military veterans are the “new majority” (Lyon & Matson, 2019). Thus, universities represent a diverse array of people with differing socio-economic backgrounds and are at a pivotal point in their life, making decisions that affect their financial futures.

Using a survey of 420 students from an Australian university in 2019, we quantify the impact of current money management circumstances, attitudes towards future finances and financial literacy on levels of financial wellbeing. Ordered logit results find that the financial wellbeing framework applied to our sample does not explain financial wellbeing particularly well. Financial literacy does not play an important role, but income does. These findings may be context specific, as students experience low and irregular incomes, which can lead to increased vulnerability to external shocks and uncertainty. However, many other workers experience irregular incomes due to the rise of the gig economy (Farrell & Greig, 2016; Kaine, Oliver, & Josserand 2017; Stewart & Stanford, 2017).

Accordingly, this paper is set out as follows. Section 2 provides an overview of the theoretical framework and a review of the literature. The data and methodology are discussed in Section 3. Results are presented in Section 4 and the paper concludes with a discussion in Section 5.

2. Background

There are a number of definitions of financial wellbeing that are being used in academic literature, industry reports and government policies (ANZ, 2018). However, due to the absence of a widely accepted definition and measure of financial wellbeing, efforts to examine the financial domain have been hampered (Netemeyer et al., 2018). Internationally, the Consumer Financial Protection Bureau (CFPB) report in 2015 provided a consumer driven definition of financial wellbeing as “a state of being wherein a person can fully meet current and ongoing financial obligations, can feel secure in their financial future, and is able to make choices that allow enjoyment of life” (p. 18). This definition has also been adopted by the OECD (OECD, 2020). The CFPB report highlights multiple factors that affect the level of financial wellbeing of an individual with a wide variation in how people in the United States feel about their financial wellbeing. Key findings were that having a savings safety
net had the strongest relationship to financial wellbeing, given that feeling financially secure is fundamental to the definition of financial wellbeing. Certain experiences with debt and credit, however, seem to have the strongest negative relationship with financial wellbeing. Individual characteristics were also factors associated with financial wellbeing; those with higher levels of education, older individuals and adults in better physical health tended to have higher levels of financial wellbeing (CFPB, 2015). Average financial wellbeing, however, appeared to be the same for men and women. Although financial circumstances were highly correlated with financial wellbeing scores, the report found that individuals with different experiences can arrive at the same score, suggesting that no single factor is responsible for, or indicative of, an individual’s level of financial wellbeing.

In Australia, research undertaken by Muir et al. (2017) used an ecological systems approach to explore financial wellbeing. Financial wellbeing was said to consist of three interrelated dimensions. The first was having adequate income to pay off debt, meet basic needs and cover unexpected expenses with some money left over. The second was feeling and acting in control of finances, and the third included feeling financially secure. Financial wellbeing has objective (savings) and subjective (how the person is feeling) components. Muir et al. (2017) use this lens to look at individual, household, family, peer-level, community, and social influences on financial wellbeing, and find that financial capability, financial inclusion, social capital, and economic resources (especially income) are among the strongest influencers of financial wellbeing. Thus, improvement in each of these four areas are likely to enhance a person’s financial wellbeing both in times of financial adversity and in the context of everyday money management. Similar to the (CFPB, 2015) research, having savings and building resilience for unexpected expenses were both important. In addition, CFPB research finds social capital to be significantly associated with financial wellbeing, that is, having support from others as well as access to resources if needed. Further, a study by Collins & Urban (2020) in the United States found financial well-being to generally follow the life cycle, increasing with income and savings levels as well as with age. They also found that levels of financial wellbeing were not strongly associated with financial literacy.

Recent contributions to developing a better understanding of financial wellbeing have applicability to university students. Netemeyer et al. (2018) suggests that the definition of financial wellbeing presented by the CFPB (2015) overweights current money management concerns. They argue that people under current money management stress can still expect to be financially better off in the future and explains prior studies of self-reported higher levels of financial wellbeing than would be expected giving current circumstances (Berman, Tran, Lynch, & Zauberman, 2016; Finke, Howe, & Huston, 2017; Johnson & Krueger, 2006). As such, individuals who perceive their circumstances to be modifiable will be more likely to engage in self-improvement actions (Summerville and Roese, 2008).

Consequently, Netemeyer et al. (2018) disentangled financial wellbeing into two related but separate constructs; current money management stress and expected future financial security, as shown in Fig. 1. The research of Netemeyer et al. (2018) was particularly interesting regarding the impact of income on financial wellbeing, as it was not found to be a direct positive predictor. Instead, income moderates the effect of current money management stress on wellbeing, and as income levels rise the negative effect of money management stress on an individual’s wellbeing dissipates. Holding constant other factors and the perceived
financial wellbeing constructs, income only increases overall wellbeing when current money management stress is high (Netemeyer et al., 2018). That is, current money management stress has a serious detrimental effect on wellbeing among low-income individuals. For low income earners, the focus should be on reducing debilitating current money management stress that is not something that increasing financial literacy could likely achieve.

For students, this framework is especially salient. Students can be optimistic about their future income prospects due to their human capital investment in the program of study. Thus, they may heavily weight the future and discount the present financial discomfort if seen as a short-term circumstance. Current research by Timmerman & Volkov (2019) investigates the impact of career choice and education level on an individual’s overall wealth by finding the present values of future earnings for various occupations and makes some interesting comparisons by trading off against the human capital investment required. For example, one would expect future incomes to be higher for doctors and dentists than human resource advisers, but the human capital investment is often also higher. As all students are more likely to be relatively low-income earners due to giving up income generating opportunities to study, it is important to quantify the extent to which financial literacy moderates current money management stress.

University campuses host a wide variety of students—from school leavers to career changers to employed professionals and international students. Accordingly, it can be
difficult to make assumptions about the typical student. However, for many, study accompa-
nies a period of reduced income and independent living for the first time, which provides a
financial challenge. Surveys often report that students struggle to afford basic study support
tools such as textbooks, for example (Dean & Forray, 2018; Senack, 2015).

There is a wide literature on the financial stress of students, usually originating out of the
United States, where student debts are similar to bank loans and total over $1.5 trillion
(Williams & Oumlilil, 2015). Australian students are less likely to experience hardships
cased by this style of student loan due to the income contingent nature of the Australian
government Higher Education Loan Program (HELP; West, 2020). However, the HELP stu-
dent debt still has the ability to hinder students’ future borrowing capacity and a deficit in fi-
nancial literacy can mean that these students are more likely to underestimate future student
loan payments and hence be more vulnerable to unexpected financial shocks postgraduation
(Artavanis & Karra, 2020). Evidence also suggests that student debt anxiety is a factor that
may affect the wellbeing of students. Harrison and Agnew (2016) found that when student
confidence in their education as an investment was higher, debt anxiety was lower. Having a
tertiary degree is linked to financial wellness by a higher magnitude than student debt is
linked to financial stress (Henager & Wilmarth, 2018). This distinction is important for stu-
dents to understand when making study decisions. These perceptions were also found to be
connected to subject choices. Business students had higher confidence in a return on their
education than that of social science students, a likely reflection of graduate salary expecta-
tions (Luthans, Luthans, & Chaffin, 2019; Peach & Yuan, 2017). On the matter of study
choice, Cull & Whitton (2011) survey 472 students in Sydney and find that financial knowl-
dge is dependent on field of study, income, and age. For example, science students scored
better on questions regarding interest, but regarding fees, tax and student debt knowledge,
income was a better predictor.

U.S. studies also point to poor financial behaviors demonstrated by college students. For
example, Mae (2009) found that over half of college students had four or more credit cards,
and 90% indicated using credit to pay for education expenses including text books, school
supplies, and commuter costs. In addition, many survey respondents appeared to use credit
cards to live beyond their means. Studies also found poorer behaviors among females.
Female students in the United States were likely to carry a higher number of credit cards, ex-
hibit more problematic credit card behaviors (e.g., not paying bills on time), and asking
parents for help to pay bills (Hancock, Jorgensen, & Swanson, 2013; Norvilitis, Szablicki, &
Wilson, 2003; Worthy, Jonkman, & Blinn-Pike, 2010). Australian females are similar. Ha
(2013) surveyed 257 students at universities in Melbourne and found that senior female stu-
dents had irresponsible patterns of credit card use while junior students had responsible pat-
ters. Many female students sought financial help from friends and family or approached
external sources of help such as financial counsellors, government, and non-government
agencies.

A further challenge to managing finances is the pressure to conform to social norms
through consumer spending that is particularly challenging for young adults (Georgarakos,
Haliassos, & Pasini, 2014; Spencer, Nieboer, & Elliott, 2015; Vaitilingam, 2016). Young
people are more likely to hold potentially destructive beliefs about money, with materialism
being a personality trait likely internalized early in life (Mentzer, Klontz, Klontz, & Britt,
2011; Richins, 2004) and personality found to be an important predictor of financial satisfaction (Tharp, Seay, Carswell, & MacDonald, 2020). Lifestyle aspirations spurred on by influence of various forms of media or peers are likely to increase young people’s reliance on debt (Fear and O’Brien, 2009). The introduction of new financial products such as Afterpay and Zip Pay have further exacerbated the spending on non-essential items by young people, with almost a quarter of Zip Pay customers under the age of 24 (Dutta, Singh, & Sultana, 2019). Students, therefore, may undertake risky financial behaviors, especially low-income students due to the limited availability of financial resources (Bester et al., 2008).

Finally, financial literacy researchers concur that a lack of knowledge of financial concepts before entering tertiary study contributes to an experience that can be financially stressful. Studies find that in general, young people, older people, women, and minority groups have lower levels of financial literacy (West & Worthington, 2018; Wilkins, 2018). Lusardi, Mitchell, & Curto (2010) found that financial literacy of young people was poor in the United States, leading to a long list of negative consequences. These consequences include problems with debt (Lusardi & Tufano, 2009), reduced stock market participation and risk taking (van Rooij, Lusardi, & Alessie, 2007; West & Worthington, 2014), lower likelihoods of choosing investments with lower fees (Hastings & Tejeda-Ashton, 2008), lower likelihoods of accumulating wealth and managing wealth effectively (Hilgert, Hogarth, & Beverly, 2003; Stango & Zinman, 2007) and lower likelihood of planning for retirement (Bongini & Cucinelli, 2019; Lusardi & Mitchell, 2006, 2007, 2009).

More recent studies in the United States continue to show alarmingly low levels of financial literacy among undergraduate students with Artavanisa and Karra (2020) finding a literacy rate of 39.5% in addition to a large gender gap with female students exhibiting considerably lower literacy rates (26%) than their male peers (56%). Compared with earlier studies in the United States, such as Chen and Volpe (1998), it seems that financial literacy has not improved and continues to limit the ability of students to manage their finances and make informed decisions.

Overall, the combined lack of financial knowledge and limited availability of financial resources for tertiary students may contribute to lower levels of self-reported financial well-being. Students with lower levels of financial literacy are more likely to mismanage their finances now and, in the future, contributing to poor financial behaviors that are prevalent in today’s society (Jorgensen, 2007). This is further supported by Philippas and Avdoulas (2020) who found that financially literate students have a 1.8 times higher possibility of having higher levels of financial well-being than financially illiterate students. They also found that the financial fragility of students had a significant impact on financial well-being with no financially fragile students showing higher levels of financial well-being.

This study contributes to the literature by applying the financial wellbeing framework of Netemeyer et al. (2018) to the Australian university student context. As the literature highlights, this cohort has particular financial challenges and are actively making decisions that affect financial futures. Accordingly, we hypothesize that expectations of the future play a more significant role in financial wellbeing outcomes than current financial stress, as students are likely to see their current situation as temporary. Thus, the financial wellbeing model may have different outcomes when applied to university students than the general population. We also consider gender differences in financial literacy and how this impacts
financial wellbeing. This study addresses these gaps in the literature and provides practitioners and educators with an understanding of where interventions are best targeted.

3. Data and methodology

This study applies the novel financial wellbeing framework as adopted from Netemeyer et al. (2018) to investigate the role of financial literacy in improving financial wellbeing outcomes. Data for this study was obtained from a survey of students from an Australian university in 2019, ethics approval (2019/160). A monetary incentive by way of a prize draw was provided to improve response rates (Yu et al., 2017); 420 students responded to the survey, providing a good sample size. However, it was only 0.9% of the total number of students enrolled at the university, even though all students were invited to participate via a broadcast email. When interpreting results, the relatively small sample size and distribution of the characteristics may not be representative of the larger tertiary student cohort. For example, 63% of respondents were female, while around 58% of university students at this institution were female. Further, the average respondent is aged 23 years or younger. This presents implications for interpretation and generalization of results, as it may be that financial knowledge is not well developed in young adults and difficult to detect and measure accurately. Table 1 provides further descriptive statistics of the sample. The average respondent is female, aged 23 or younger, earns under $20,000 a year, and is studying a subdegree qualification like a diploma, advanced diploma, or associate degree.

A fundamental aspect of financial wellbeing is the overall financial profile of a person or household. However, two people or two households with the same financial situations might perceive their circumstances differently. Perceived financial wellbeing, which consists of stress related to money management as well as feelings of security in one’s financial future, in fact, maps to financial wellbeing, as well as to overall subjective well-being (Netemeyer et al., 2018). We apply a the Netemeyer et al. (2018) financial wellbeing framework (as described in Fig. 1), given by

\[
FINSAT_i = \alpha_i + \beta_1 \text{CURRENT MONEY MANAGEMENT STRESS} + \beta_2 \text{FUTURE EXPECTATIONS} + \beta_3 \text{CONTROL} + \beta_4 \text{FINANCIAL LITERACY} + \mu_i
\]

where, CURRENT MONEY MANAGEMENT STRESS is a set of variables used to describe students’ current money management circumstances. The framework by Netemeyer et al. (2018) suggests that being late or making minimum payments on bills and credit cards, lack of self-control, materialism, and perceived financial self-efficacy are antecedents of current money management stress. We explore the relevance of a variety of indicators of current money management stress offered in the survey, and narrow down variables for inclusion in the regression through factor analysis. We include the variables in the analysis that are presented in Table 2.
An investigation of the descriptive statistics shows that paying bills is a problem for students. Over 50% of students regularly make only the minimum monthly payment on their credit cards or pay nothing (CCPAY) and find it difficult to cover expenses and pay bills (BILLS). A slightly lower proportion (43%), indicate that it is difficult to come up with $500 to cover emergency expenses (EMG500). These variables are coded into binary variables where 1 is equal to higher levels of financial stress, and an inverse relationship with financial wellbeing is predicted.

Lack of self-control is proxied by two variables, USEDEBT and SPENDMORE. Concerningly, 12.88% of respondents say they use debt so they do not miss out on student experiences, and 12.07% say they regularly spend more than they have by using credit or borrowing. The responses are coded so that a higher level equates to lacking self-control that is predicted to have an inverse relationship with financial wellbeing.

The factor analysis for a set of questions relating to materialism showed that MATIMP and MATHAP had the highest loadings on the first factor. The descriptive statistics are interesting. Just under 14% of respondents indicate that acquiring material possessions is an important achievement, while a much larger cohort (49.26%) indicate that they would be happier if they could afford to buy more things. No doubt the latter is representative of the constrained budgets of university students. A higher response level is expected to be associated with an inverse relationship with financial wellbeing.

### Table 1  Descriptive statistics

<table>
<thead>
<tr>
<th>Set of personal factors</th>
<th>Proportion (%)</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is your gender?</td>
<td>GENDER</td>
<td>0.63</td>
<td>0.48</td>
</tr>
<tr>
<td>0– Male</td>
<td></td>
<td>37.00</td>
<td></td>
</tr>
<tr>
<td>1– Female</td>
<td></td>
<td>63.00</td>
<td></td>
</tr>
<tr>
<td>What age category are you in?</td>
<td>AGEC</td>
<td>1.58</td>
<td>1.16</td>
</tr>
<tr>
<td>1– 23 or younger</td>
<td></td>
<td>52.05</td>
<td></td>
</tr>
<tr>
<td>2– 24 to 29</td>
<td></td>
<td>24.38</td>
<td></td>
</tr>
<tr>
<td>3– 30 to 39</td>
<td></td>
<td>16.44</td>
<td></td>
</tr>
<tr>
<td>4– 40 to 49</td>
<td></td>
<td>4.38</td>
<td></td>
</tr>
<tr>
<td>5– 50 to 59</td>
<td></td>
<td>2.19</td>
<td></td>
</tr>
<tr>
<td>6– 60 or over</td>
<td></td>
<td>0.55</td>
<td></td>
</tr>
<tr>
<td>What is your current annual income, including paid work,</td>
<td>INCOME</td>
<td>4.05</td>
<td>2.40</td>
</tr>
<tr>
<td>government benefits and other financial support?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1– Above $100,000</td>
<td></td>
<td>1.67</td>
<td></td>
</tr>
<tr>
<td>2– $80,000–$99,999</td>
<td></td>
<td>3.57</td>
<td></td>
</tr>
<tr>
<td>3– $60,000–$79,999</td>
<td></td>
<td>4.28</td>
<td></td>
</tr>
<tr>
<td>4– $40,000–$59,999</td>
<td></td>
<td>8.80</td>
<td></td>
</tr>
<tr>
<td>5– $20,000–$39,999</td>
<td></td>
<td>20.23</td>
<td></td>
</tr>
<tr>
<td>6– $1–$19,999</td>
<td></td>
<td>35.71</td>
<td></td>
</tr>
<tr>
<td>7– $0</td>
<td></td>
<td>4.76</td>
<td></td>
</tr>
<tr>
<td>What type of degree are you currently pursuing?</td>
<td>EDU</td>
<td>3.31</td>
<td>0.66</td>
</tr>
<tr>
<td>1– Preparation program</td>
<td></td>
<td>1.57</td>
<td></td>
</tr>
<tr>
<td>2– Diploma/Advanced Diploma/ Associate degree</td>
<td></td>
<td>70.08</td>
<td></td>
</tr>
<tr>
<td>3– Bachelor degree</td>
<td></td>
<td>23.62</td>
<td></td>
</tr>
<tr>
<td>4– Postgraduate degree</td>
<td></td>
<td>3.94</td>
<td></td>
</tr>
<tr>
<td>5– PhD</td>
<td></td>
<td>0.79</td>
<td></td>
</tr>
</tbody>
</table>
Perceived financial self-efficacy is related to control over one’s financial situation. Two variables are included as proxies: \textit{FINSTRESS} and \textit{CONF}. Alarmingly, only 7.33\% of respondents indicate that they do not feel stressed about their personal finances. Responses to the question regarding how confident they feel about managing their finances is contradictory. Only 3.37\% of respondents say that they do not feel confident, meaning that most of the population has some level of confidence with managing their finances. We expect a negative coefficient for \textit{FINSTRESS} and a positive coefficient for \textit{CONF}.

Table 2: Current money management stress descriptive statistics

<table>
<thead>
<tr>
<th>Current money management stress</th>
<th>Proportion (%)</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Late minimum payments:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When you get a credit card or other bill, do you usually:</td>
<td>\textit{CCPAY}</td>
<td>0.48</td>
<td>0.50</td>
</tr>
<tr>
<td>1– Make the minimum monthly payment/pay more than the minimum, sometimes pay nothing or miss the payment date</td>
<td>52.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0– Pay the full balance/someone else pays my bill</td>
<td>47.95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In a typical month, how difficult is it for you to do the following:</td>
<td>\textit{BILL}</td>
<td>0.50</td>
<td>0.50</td>
</tr>
<tr>
<td>To cover your expenses and pay all your bills?</td>
<td>50.26</td>
<td>49.74</td>
<td></td>
</tr>
<tr>
<td>1– Always/often/sometimes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0– Rarely/never</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To come up with $500 to cover emergency expenses?</td>
<td>\textit{EMG500}</td>
<td>0.57</td>
<td>0.50</td>
</tr>
<tr>
<td>1– Always/often/sometimes</td>
<td>43.43</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0– Rarely/never</td>
<td>56.57</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of self-control:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I use debt so I do not miss out on “normal” student experiences</td>
<td>\textit{USEDEBT}</td>
<td>1.60</td>
<td>0.71</td>
</tr>
<tr>
<td>1– Does not describe me</td>
<td>52.53</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2– Describes me very little/somewhat describes me</td>
<td>34.60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3– Describes me very well/describes me completely</td>
<td>12.88</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regularly spend more than I have by using credit or borrowing</td>
<td>\textit{SPENDMORE}</td>
<td>1.58</td>
<td>0.70</td>
</tr>
<tr>
<td>1– Does not describe me</td>
<td>54.43</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2– Describes me very little/somewhat describes me</td>
<td>33.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3– Describes me very well/describes me completely</td>
<td>12.07</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materialism:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some of the most important achievements in life include acquiring material possessions.</td>
<td>\textit{MATIMP}</td>
<td>1.81</td>
<td>0.66</td>
</tr>
<tr>
<td>1– Does not describe me</td>
<td>32.68</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2– Describes me very little/somewhat describes me</td>
<td>53.41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3– Describes me very well/describes me completely</td>
<td>13.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I’d be happier if I could afford to buy more things.</td>
<td>\textit{MATHAP}</td>
<td>2.41</td>
<td>0.64</td>
</tr>
<tr>
<td>1– Does not describe me</td>
<td>8.37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2– Describes me very little/somewhat describes me</td>
<td>42.36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3– Describes me very well/describes me completely</td>
<td>49.26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived financial self-efficacy.</td>
<td>\textit{FINSTRESS}</td>
<td>2.44</td>
<td>0.68</td>
</tr>
<tr>
<td>I feel stressed about my personal finances in general.</td>
<td>7.33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1– Does not describe me</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2– Describes me very little/somewhat describes me</td>
<td>41.08</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3– Describes me very well/describes me completely</td>
<td>51.59</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am confident I can manage my finances:</td>
<td>\textit{CONF}</td>
<td>2.55</td>
<td>0.56</td>
</tr>
<tr>
<td>1– Does not describe me</td>
<td>3.37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2– Describes me very little/somewhat describes me</td>
<td>38.46</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3– Describes me very well/describes me completely</td>
<td>58.17</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
FUTURE EXPECTATIONS is a set of variables used to describe the student’s behaviors that are likely to lead to a positive financial outcome. The framework by Netemeyer et al. (2018) suggests that perceived financial self-efficacy, positive financial behaviors, willingness to take investment risks and planning for the long term are antecedents for expected future financial security. We consider responses to several questions about the future that are pertinent to students as proxy for future expectations, as described in Table 3.

Two variables that serve as proxy for positive financial behaviours were selected from a set of questions based on factor analysis: PSAVE and PPLAN. Regularly adding to savings is identified by 46.32% of respondents and 58.64% plan ahead for major purchases. Higher scores are predicted to positively relate to financial wellbeing.

The highest response to a single category for willingness to take financial risks is “I am not willing to take any financial risks” (36.93%). However, 42.93% of respondents did choose a category of willingness to take financial risks to various degrees. A high response is expected to relate positively to financial wellbeing.

Finally, planning for the long term is represented by PLAN. The longer the time period selected, the more positive an impact on financial wellbeing. While 29.33% of students are only planning for the next few months, a large portion (70.67%) of them are looking years ahead.

### Table 3  Future expectations descriptive statistics

<table>
<thead>
<tr>
<th>Future expectations</th>
<th>Proportion (%)</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive financial behaviors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I add to my savings on a regular basis.</td>
<td>PSAVE 2.31 0.72</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1—Does not describe me</td>
<td>15.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2—Describes me very little/somewhat describes me</td>
<td>38.48</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3—Describes me very well/describes me completely</td>
<td>46.32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I plan ahead for major purchases.</td>
<td>PPLAN 2.54 0.60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1—Does not describe me</td>
<td>5.31</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2—Describes me very little/somewhat describes me</td>
<td>35.75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3—Describes me very well/describes me completely</td>
<td>58.94</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Willingness to take investment risks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Which of the following statements comes closest to describing the amount of financial risk that you are willing to take with your spare cash? That is, cash used for savings or investment.</td>
<td>FRISK 2.40 1.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1—I never have any spare cash</td>
<td>20.14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2—I am not willing to take any financial risks</td>
<td>36.93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3—I take average financial risks expecting average returns</td>
<td>29.26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4—I take above-average financial risks expecting to earn above-average returns</td>
<td>10.31 42.93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5—I take substantial financial risks expecting to earn substantial returns</td>
<td>3.36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plan for money long-term</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In planning for saving and spending, which of the time periods are most important?</td>
<td>PLAN 3.53 1.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1—Longer than 10 years</td>
<td>5.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2—The next 5 to 10 years</td>
<td>15.14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3—The next few years</td>
<td>30.77</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4—The next year</td>
<td>19.71</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5—The next few months</td>
<td>29.33</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
CONTROL is a set of constant personal characteristics, including demographics, socioeconomic status, and financial literacy. Studies show that gender, income, education, age, and financial literacy are related to financial outcomes (Lusardi & Mitchell, 2011). The descriptive statistics of GENDER, AGEC, INCOME, and EDU are presented previously in Table 1. Table 4 provides detailed information about the financial literacy variable(s). As financial literacy is an assessment of objective knowledge of financial concepts, represented by responses to the “big three” questions on compound interest, inflation and diversification, it is included as a control and not a predictive variable so as not to confuse the constructs with a correlation with financial literacy.

The responses to the three financial literacy questions in Table 4 are of interest. “No” is the correct answer for all three questions. Students generally do well on the first question regarding compound interest (FINLC), with 70.95% of respondents correct. However, only 45.71% of students responded correctly for the second question on inflation (FINLI) and 34.29% were correct for the third question on diversification (FINLD). Respondents to this survey underperform the general population, measured by responses to the same questions in the Household, Income, and Labor Dynamics in Australia (HILDA) survey (Wilkins, 2018). For comparison purposes, 85.5% of the Australian population select the correct answer for the compound interest question, 69.8% for the inflation question, and 74.9% for the diversification question (Wilkins, 2018). We sum the responses to create a single financial literacy score (FINLITSCORE). Those with a score of 3 responded correctly to all three questions, which is just under a quarter of respondents (24.05%).
Finally, the dependent variable of interest is FINSAT. FINSAT is the response to “On a scale of 1 to 10, with 10 being totally satisfied, all things considered, how satisfied are you with your financial situation?” Fig. 2 provides the distribution of responses. The mean is 5.35 (SD = 2.48), indicating that overall respondents are more satisfied than not with their financial situation. Due to the ordered nature of this variable, we employ an ordered logit model for analysis. This analytical technique is appropriate as the dependent variable is discrete (that is, can only take the values of 1 through 10) and the values in each category have a meaningful sequential order (West & Worthington, 2014). The ordered logit model estimates an underlying score as a linear function of the independent variables and a set of cut-points (Cameron & Trivedi, 2009), and the probability of observing outcome \( i \) corresponds to the probability that the estimated linear function plus random error is within the range of the cut-points estimated for the outcome:

\[
\Pr(\text{outcome}_j = i) = \Pr(k_{i-1} < \beta_1 x_{ij} + \beta_2 x_{2j} + \ldots + \beta_k x_{kj} + u_j \leq k_i)
\]

where \( u_j \) is logistically distributed in the ordered logit, \( x_{kj} \) is a vector of control variables with estimated coefficients \( \beta_1, \beta_2, \ldots \beta_k \) and cut-points \( k_1, k_2, \ldots k_{k-1} \), where \( k \) is the number of possible outcomes, \( k_0 \) is taken as \(-\infty\), and \( k_k \) is taken as \(+\infty\). The estimated coefficients \( \beta \) and the cut-point parameters are obtained using maximum likelihood methods. The sign of the estimated coefficients can be immediately interpreted as determining whether the dependent variable increases with the independent variables (Cameron & Trivedi, 2009).

### 4. Results

Table 5 provides the odds ratios and standard errors of eight ordered logit regressions. The \( F \)-tests for all models rejected the null hypothesis that all slope coefficients are zero at the 0.001 level, implying that they are appropriate for predicting financial wellbeing. The eight models are variants on the financial wellbeing framework and omit sets of variables to
Table 5  Ordered logit results for financial wellbeing

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Expected sign</th>
<th>1 Odds ratio</th>
<th>2 Odds ratio</th>
<th>3 Odds ratio</th>
<th>4 Odds ratio</th>
<th>5 Odds ratio</th>
<th>6 Odds ratio</th>
<th>7 Odds ratio</th>
<th>8 Odds ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCPAY</td>
<td>–</td>
<td>0.666</td>
<td>1.220</td>
<td>1.340</td>
<td>0.709</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.277</td>
<td>0.562</td>
<td>0.625</td>
<td>0.298</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BILL</td>
<td>–</td>
<td>0.595</td>
<td>0.670</td>
<td>0.620</td>
<td>0.572</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.245</td>
<td>0.294</td>
<td>0.275</td>
<td>0.237</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EMG500</td>
<td>–</td>
<td>0.240 ***</td>
<td>0.289 **</td>
<td>0.303 **</td>
<td>0.248 ***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.105</td>
<td>0.133</td>
<td>0.139</td>
<td>0.109</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USEDEBT</td>
<td>–</td>
<td>1.563 *</td>
<td>1.606 *</td>
<td>1.698 *</td>
<td>1.604 *</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.418</td>
<td>0.442</td>
<td>0.472</td>
<td>0.431</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPENDMORE</td>
<td>–</td>
<td>0.500 *</td>
<td>0.482 *</td>
<td>0.479 **</td>
<td>0.502 **</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.141</td>
<td>0.143</td>
<td>0.141</td>
<td>0.141</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATIMP</td>
<td>–</td>
<td>2.519 **</td>
<td>2.296 **</td>
<td>2.290 **</td>
<td>2.519 **</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.801</td>
<td>0.777</td>
<td>0.778</td>
<td>0.800</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATHAP</td>
<td>–</td>
<td>0.717 *</td>
<td>0.700</td>
<td>0.697</td>
<td>0.717 *</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.208</td>
<td>0.211</td>
<td>0.211</td>
<td>0.208</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FINSTRESS</td>
<td>–</td>
<td>0.620 **</td>
<td>0.740</td>
<td>0.737</td>
<td>0.621 **</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.208</td>
<td>0.265</td>
<td>0.261</td>
<td>0.207</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONF</td>
<td>+</td>
<td>1.318</td>
<td>1.561</td>
<td>1.563</td>
<td>1.321</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.419</td>
<td>0.572</td>
<td>0.574</td>
<td>0.421</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSAV</td>
<td>+</td>
<td>2.046 ***</td>
<td>1.444</td>
<td>1.502</td>
<td>2.054 ***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.306</td>
<td>0.436</td>
<td>0.453</td>
<td>0.307</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPLAN</td>
<td>+</td>
<td>1.355 *</td>
<td>0.991</td>
<td>0.963</td>
<td>1.352 *</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.229</td>
<td>0.324</td>
<td>0.316</td>
<td>0.229</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FRISK</td>
<td>+</td>
<td>1.816 ***</td>
<td>1.576 **</td>
<td>1.526 *</td>
<td>1.795 ***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.190</td>
<td>0.311</td>
<td>0.302</td>
<td>0.191</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLAN</td>
<td>+</td>
<td>0.755 **</td>
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Notes: Models specified as follows:
1. CURRENT MONEY MANAGEMENT STRESS + CONTROL
2. CURRENT MONEY MANAGEMENT STRESS + FUTURE EXPECTATIONS + CONTROL
3. CURRENT MONEY MANAGEMENT STRESS + FUTURE EXPECTATIONS + CONTROL + FINANCIAL LITERACY
4. CURRENT MONEY MANAGEMENT STRESS + FUTURE EXPECTATIONS + CONTROL + FINANCIAL LITERACY
5. CURRENT MONEY MANAGEMENT STRESS + CONTROL + FINANCIAL LITERACY
6. CURRENT MONEY MANAGEMENT STRESS + FUTURE EXPECTATIONS + CONTROL + FINANCIAL LITERACY
7. CURRENT MONEY MANAGEMENT STRESS + CONTROL + FINANCIAL LITERACY
8. CURRENT MONEY MANAGEMENT STRESS + CONTROL + FINANCIAL LITERACY
test for predictive power. The signs of the odds ratio indicate the effect on financial well-being. If the estimate is positive, then an increase in the dependent variable necessarily decreases the probability of being in the lowest financial wellbeing category and increases the probability of being in the highest financial wellbeing category. A summary of the models tested is provided in Table 5.

Comparison of the pseudo $R^2$ shows the model with the most explanatory power is Model 3 (0.176), that includes all variables except FINLITSCORE. All coefficients are positive in this model, with the significant factors including EMG500, USEDEBT, SPENDMORE in the set of current money management stress factors, MATIMP and FRISK in the future expectations set, and no significant factors in the set of control variables. Within the set of current money management stress variables, EMG500 is highly significant and positive across all four models it is included in. Positive responses to this binary variable indicate issues with accessing emergency funds, so the positive relationship with financial wellbeing is puzzling as we were expecting a negative association. Other variables like USEDEBT, SPENDMORE, MATIMP, MATHAP, and FINSTRESS vary in significance across models but were all positive, when negative signs were expected. We draw the conclusion that current financial stress, while a significant determinant of financial wellbeing, is not inversely related. Therefore, students under weigh financial stress when asked to quantify their level of financial wellbeing, suggesting that other factors are more important.

We sense what other factors are more important when examining the set of future expectations indicators. For the set of future expectations, PSAV, PPLAN, FRISK, and PLAN had very significant positive coefficients when the current money management stress variables were excluded from the model, as well as strong coefficients. When the current money management stress variables were included (Models 3 and 4), all but FRISK lost significance. We infer from this that people who are willing to take financial risk have an innate understanding of the time value of money that translates into confidence in their financial futures.

Finally, of the set of personal attributes, INCOME is significant in five out of eight models, and AGEC is significant in three out of eight models. This makes logical sense, as higher incomes, which are associated with being older, overcome barriers to perceived wellbeing by facilitating choice and lifestyle purchases. For example, higher incomes afford people to both purchase medicine and groceries, while people living hand-to-mouth have to trade-off between necessities. This finding contributes to discussions that a good income affords many benefits: financial stability, enables future planning, facilitates acting on money beliefs, and practice making financial decisions. Interestingly, FINLITSCORE is only significant in Model 5 (as the only factor in the model) and Model 8 (only includes control variables). Both of these models have low explanatory power.

Given the focus on financial literacy in the hypothesis, we conducted further tests of the FINLITSCORE as the dependent variable. Results of the ordered logit model, marginal effects of the highest level (Outcome 3), and an ordered logit retaining a sample of those that scored the highest level are provided in Table 6. These models answer questions as to what factors are likely to contribute to having a high financial literacy score. The marginal effects of the highest outcome provide more consistency with our original expectations. CCPAY and USEDEBT were significant with negative coefficients. People with higher levels of financial literacy, therefore, pay their bills on time and do not use debt. FRISK is also
positive and significant, providing further evidence that people willing to take financial risk have a good level of financial knowledge. GENDER has a negative association that is well supported by the literature that females score less well on questions of financial literacy than men.

Our analysis concludes that financial literacy and financial wellbeing are not related constructs. However, we do find that good money habits like saving and planning contribute to higher levels of financial wellbeing, but mostly when current money management circumstances are excluded. When both data sets are included together, current financial stress dominates as a determinant of financial wellbeing. Importantly though, current financial stress is not the single determinant of financial wellbeing, and respondents seem to include

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their preparedness for the future into their level of financial wellbeing. This is especially sa-
lient for university students who expect their level of income to increase in the future as a
result of graduating with a university qualification and ability to commit to working longer
hours once their studies are completed.

These findings contribute to the literature on financial wellbeing and the application of
the Netemeyer et al. (2018) financial wellbeing framework, as specified and with the limits
of the data. For educators and practitioners, we highlight the importance of good financial
savings habits, financial risk-taking and income in achieving higher levels of financial well-
being in clients and students. Finally we note that these findings may be context specific, as
students experience low and irregular incomes, which can lead to increased vulnerability to
external shocks and uncertainty. However, many other workers experience irregular incomes
due to the rise of the gig economy. Proponents of financial literacy education should perse-
vere, recognizing the limits to transferring knowledge and set evidence-based goals for fi-
nancial literacy education.

5. Discussion and conclusion

The financial wellbeing of students is of concern to universities both to facilitate learning
and to prepare them for future financial decision-making as participants in the economy. As
the increase in outstanding student debt and student loan defaults has raised concerns regarding
the value of higher education outcomes and the consequences of over-indebtedness for
young borrowers (Artavanisa & Karra, 2020; Mueller & Yannelis, 2019), it could further be
argued that universities have a moral obligation to support students in managing their finan-
ces. Financial literacy education seems an appropriate solution. However, if financial liter-
acy is well proxied by the big three questions, then knowledge alone will not achieve the
intended outcome. After all, understanding the concept of compound interest is of little use
if living hand-to-mouth or if economic choice is confined due to household arrangement.
Therefore, public policy makers and educators that advocate for financial literacy interвен-
tions should add strategies for improving incomes to their arsenal. The playing field is not
level, government safety nets are often inadequate, and non-participation in education and
work can be intergenerational. However, to see more informed financial decision-making
and to improve wealth and wellbeing outcomes would benefit many, and these factors are
arguably more important.

The findings of this study, while currently limited to one Australian university, provide
valuable insights into the financial wellbeing of university students and can be used to
inform future actions to specifically improve the wellbeing of university students. The
impact of income on student wellbeing and student welfare is significant. Not only does an
increase in income contribute to student wellbeing financially, but it may also assist in
improving student grades by minimizing stress for those at the lower end of the income
scale. While financial literacy education has traditionally been the response to improving
university students’ financial wellbeing, this study has shown that for students on lower
incomes, this this alone will not improve the financial wellbeing of students. A call to action
for more novel approaches to financial wellbeing from both universities and the government that address the needs of students on significantly lower levels of income is needed. This might include universities providing cheaper accommodation and meals for lower income students through subsidies or vouchers or providing more jobs to students on campus. Other initiatives such as collaborating with industry to provide more cadetships, scholarships, and paid internships to students may also be beneficial.

Government welfare policies also need to reconsider the way that income is distributed so that university students are not penalized for furthering their education. For example, in Australia, as it currently stands, a young university student’s access to welfare is directly linked to parental income, regardless of whether they remain in the family home or need to relocate to attend university, or in fact whether the parent or parents are even providing financial support to the student. In comparison, a young individual who has completed school but does not attend university is entitled to higher levels of welfare regardless of their parental income or whether they are living at home or not. Innovative reform might include the provision of additional financial assistance to low income university students that is offered in conjunction with financial literacy education, or maybe tax incentives could be introduced for parents and spouses who provide financial support to dependents as they attend university. Further research is needed to investigate the feasibility of such suggestions and extensions of this study at other institutions, along with qualitative studies would assist in realizing the true extent of the impact of low incomes on financial wellbeing of university students.

Acknowledgements
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References


The effect of risk literacy and visual aids on portfolio choices among professional financial planners

Meghaan R. Lurtz¹, Michael G. Kothakota¹,⁎, Stuart J. Heckman¹, Kristy Archuleta²

¹Department of Personal Financial Planning, Kansas State University, 312 Justin Hall, 1324 Lovers Lane, Manhattan, KS 66505, USA
²Department of Financial Planning, Housing & Consumer Economics, University of Georgia, 205 Dawson Hall, Athens, GA 30605, USA

Abstract

Financial planners and their clients come together regularly to discuss financial decisions, which are inherently risky. Yet, financial planning research has not explored the impact of risk literacy (i.e., objective numeracy)—the ability to understand and interpret probabilistic trade-offs—and graph literacy on client-planner decision-making quality. This study uses an experimental design to test financial planners’ risk literacy and their ability to select the most resilient portfolio based on whether they were given probabilistic information and a visual representation or only probabilistic information. Results indicate that visual representation do help financial planners determine the appropriate choice, but risk literacy does not. Implications for financial planners and future research in this area are discussed. © 2021 Academy of Financial Services. All rights reserved.

Keywords: Financial planners; Risk literacy; Decision-making; Client communication; Experimental design

1. Risk literacy among professional financial planners

Making risky choices is central to professional financial planning. The majority of financial decisions involve some risk. Professional financial planners create financial plans and present financial information to help clients make financial decisions in the presence of risk. Research from the field of judgment and decision-making highlight the importance of the concept known as risk literacy, which is defined as “the ability to accurately interpret and act on information...
about risk” and is a synonym for statistical numeracy (Cokely, Gailesc, Schulz, Ghazal, & Garcia-Retamero, 2012, p. 26). In the same way previous studies point out the need for risk literacy in the medical profession so doctors can better assist patients in making medical decisions involving risk (e.g., surgeries, new treatments, or new drugs), is the need for risk literacy is also in financial planning. Compared with the average consumer, professional financial planners are educated in risk and deal with probabilistic outcomes on a regular basis (e.g., chance of disability, Monte Carlo simulation results of adequacy of retirement funds, etc.). This suggests professional financial planners may possess a higher level of risk literacy.

Understanding the risk literacy of financial planners is a critical step in the development of the financial planning profession because financial planners help clients make better financial decisions. Financial planners that go through the Certified Financial Planner (CFP) certification process are required to learn about risk. For example financial knowledge topics, including D22, D23, and E34, specifically address risk in the areas of insurance and investments. In addition, CFP professionals learn the seven-step financial planning process, which inherently includes the discussion of risk with clients, reflecting the steps found with the Skilled Decision theory framework.

Another aspect of risk literacy and enhancing understanding of risks stems from visual representations of risk. Previous research in financial literacy indicates visual representation of financial concepts allows for better processing of financial information (Kothakota & Kiss, 2020). Specifically, groups that have historically underperformed on financial literacy showed a much larger increase in financial literacy when the literacy concept is explained visually. Properly formatted visualizations may assist financial planners and their clients in understanding portfolio risk. Most visualization practice in the financial services industry have been applied to more complex concepts, such as bond duration and convexity or accounting analytics (Rodriguez & Kaczmarek, 2016).

Moreover, a growing body of literature suggests that while there is an expectation professionals who deal with risk on a regular basis have a high degree of risk literacy, this is not always the case. Other professions, such as surgeons and senior-level police officers (Garcia-Retamero, Cokely, Wicki, & Joeris, 2016; Garcia-Retamero & Dhami, 2013), do not always exhibit high risk literacy. Subsequently, an objective of this study is to extend the risk literacy research to a new profession by examining the risk literacy of professional financial planners (hereafter referred to as financial planners for convenience). The research question is: Does risk literacy and visual representation of a risk-related scenario help financial planners to select an appropriate portfolio?

2. Literature review

Risk literacy can be defined as “the ability to accurately interpret and act on information about risk” (Cokely et al., 2012, p. 26) and has a well-researched history in judgment and decision-making (Lurtz & Heckman, 2018). Risk literacy is separate and distinct from similar constructs such as: subjective numeracy, risk perception, and financial literacy. Subjective numeracy is how a person feels about numerical information and their perception of their ability to use or understand numerical information (Gamliel, Kreiner, & Garcia-Retamero,
Risk perception is also subjective and relates to one’s ability to accurately understand the risks associated with a behavior or an event (Roszkowski & Davey, 2010). Financial literacy has both an objective and subjective component as it is a combination of knowledge (objective) and perceived ability to apply one’s knowledge (subjective; Huston, 2010). Risk literacy is a solely objective measure of statistical numeracy. Objective numeracy can be related to numeric skills, including basic arithmetic and statistics (Garcia-Retamero & Galesic, 2010; Gamliel et al., 2016). Risk literacy in this investigation is the statistical, objective numeracy and will be referred to as risk literacy throughout the remainder of the study. As an example, testing individual risk literacy may involve calculating the probability of an event occurring, such as how often a die loaded to land on “6” should happen on a given number of rolls.

Ongoing work by researchers involved in the development of risk literacy measures have proposed a framework known as Skilled Decision Theory (see Cokely, Feltz, Ghazal, Allan, Petrova, & Garcia-Retamero, in press). The theory highlights visual aids and risk literacy as the two constructs that, “support skilled decision making both directly and indirectly through metacognitive effects” (p. 34). This theory details what individuals need (e.g., visual aids and risk literacy) to make skilled decisions and how these constructs impact the way in which individuals deliberate, build confidence, comprehend, and feel (affect) when making decisions (Cokely et al., in press). The literature review focuses on risk literacy, visual aids, and the studies that have applied these important constructs to financial planning.

2.1. Risk literacy

Risk literacy has been used to investigate the ways professionals understand probabilities and how they then, in turn, help others to understand or work with that information (e.g., surgeons and how they engage with clients when making surgical decisions; Garcia-Retamero, Cokely, Wicki, & Hanson, 2014). A few studies have been published looking at risk literacy and financial planning topics. These studies have found that higher risk literacy is linked to better insurance decision-making, higher net worth, a desire for shared financial decision-making, and lower risk tolerance (Campara, Paraboni, da Costa, Saurin, & Lopes, 2017; Garcia-Retamero & Galesic, 2013; Petrova, van der Pligt, & Garcia-Retamero, 2014; Smith, McArdle, & Willis, 2010).

2.2. Visualization and visual aids

Visualization is a wide and growing field encompassing studies that investigate the impact of data visualization and constructs such as spatial ability and graph literacy. Spatial ability refers to one’s capability to form mental representations and/or manipulate these representations of objects in one’s mind (Hegarty & Kozhevnikov, 1999). Studies of visual-spatial skill and numerical skill find a positive correlation between visual-spatial ability and numerical ability (Hegarty & Kozhevnikov, 1999; Tosto et al., 2014). Graph literacy is the ability to understand information that has been presented graphically and make decisions or draw conclusions based on that information (Okan, Galesic, Garcia-Retamero, 2016; Shah &
Freedman, 2011) and has been linked to higher levels of education (Galesic & Garcia-Retamero, 2011). Data visualization is the field of study provides insight into just how information can be presented to enhance understanding (Knafl, 2015).

Research on the usefulness of visual aids in financial planning, such as mind-mapping and the Happiness Risk/Reward Pyramid, have assisted financial planners and their clients to better communicate about decisions across all seven steps of the personal financial planning process (Rouillier, 2011; Van Zutphen, 2010). A powerful visual aid used by financial advisors, coaches and therapists to help clients connect with their future and plan over a life span takes a tape-measure that the client cuts and manipulates to represent the life that they have yet to live (Klontz, Kahler, & Klontz, 2016). Narrowing the focus to just portfolio risk, a study using FinVis, built to help financial planning clients visualize portfolio decisions—found that individuals using the software (1) improved decision-making, (2) increased learning and reduced ambiguity, and (3) increased confidence in understateing the financial decisions they were making (Rudolph, Savikhin, & Ebert, 2009). These results are similar to the results from Garcia-Retamero, Cokely, Wicki, & Joeris, (2016) who found that low-numerate surgeons when provided with an icon describing the risks associated with a surgery were not only more accurate choosing the correct assessment of risk, but also spent more time making decisions. This literature points to how visual aids can increase confidence, understanding, and impact resulting decision quality.

3. Theoretical framework

Skilled Decision Theory details the decision-making process through which “novices” or non-experts and experts travel through to arrive at a well-informed or skilled decision (Cokely et al., in press). The theory was developed based on numerous previous studies of how average individuals as well as experts process and arrive at a decision, and what can be done to influence arrival at a “skilled decision,” across a wide range of contexts (e.g., surgery, insurance, or precautionary health) (Cokely et al., in press). As such, the theory organizes the decision-making process linearly.

The decision-maker begins the decision process with a certain amount of risk literacy and/or the use of visual aids (Fig. 1). Visual aids may range in type or style but are tools that help individuals understand probabilities, percentages, and proportions. Other constructs include deliberation, confidence, comprehension, and affect, each having a relationship with the use of visual aids and risk literacy. The deliberation construct is thinking about the problem at hand. Both indiosyncratic risk literacy and visual aids/tools may help or hinder individual understanding of the problem. Confidence follows deliberation. The confidence construct is related to one’s confidence in one’s knowledge and one’s confidence in their ability to carry out any subsequent behavior related to the decision. Confidence is influenced by visual aids and risk literacy. Comprehension is the next construct and it is also influenced by visual aids and risk literacy. Visual aids and one’s level of risk literacy impact comprehension; high-risk literacy and use of a visual aid would make comprehending a risky decision easier as opposed to low risk literacy and no visual aid. Affect, which pertains to how
“good” or “not good” a person feels about their decision-making ability is only influenced by risk literacy. The final construct, decision quality, is related to comprehension and affect. Essentially, the best decisions are the ones we understand and that we feel good about.

Moreover, Skilled Decision Theory is an appropriate theory for investigating risk literacy and decision-making in financial planners. The theory organizes how both expert and non-experts make decisions. Financial planners can be considered “expert” decision-makers. It is their job to help “non-expert” decision-makers (i.e., clients) to arrive at quality financial decisions. Expert decision-makers are assumed to use this decision-making process even if they do not work with another individual.

The study posits that within the financial planning process, financial planners and clients are regularly going through the decision-making process outlined by Skilled Decision Theory. The financial planning process (Appendix 1) promotes ongoing dialogue—deliberation between the client and the practitioner. Scenario planning, like going over a market crash or likelihood of taking an early retirement, includes steps two through four of the financial planning process, which takes clients to a point where they are willing to implement (Step 5). Furthermore, this could be interpreted as evidence that the client and the planner have, at the same time, inadvertently moved through Skilled Decision Theory, where they become confident, they understand (i.e., comprehension), and they feel good (i.e., affect) about moving forward to implementation.

The current study did not test for the constructs that are ultimately related to decision quality (i.e., comprehension and affect), rather it focused solely on visual aids and risk literacy. Previous investigative work on risk literacy in other professions also focused solely on visual aids and risk literacy, and used Skilled Decision Theory as a theoretical framework (Garcia-Retamero et al., 2016; Garcia-Retamero & Dhami, 2013). Moreover, even without a direct theoretical connection from visual aids and risk literacy to decision quality, it is assumed that investigating the impact these two constructs alone still provide insight into decision-making ability and needs of financial planners as a first step. Furthermore, CFP Board registered financial planning education programs place an emphasis on risk literacy and often use visual aids in teaching materials. This additional, formalized education may assist CFP professionals to deliberate, build confidence, gain comprehension and handle affect by way of the seven-step financial planning process.
Utilizing Skilled Decision Theory as a framework and previous literature as motivation for this study, five hypotheses were developed:

**Hypothesis 1:** Financial planners who are Certified Financial Planner (CFP) professionals will have higher risk literacy than financial planners lacking the CFP designation.

**Hypothesis 2:** Use of a visual aid will be positively associated with having selected the correct risk portfolio.

**Hypothesis 3:** Risk literacy will be positively associated with having selected the correct risk portfolio without use of a visual aid.

4. Method

4.1. Sample

To gather data for this study, a 79-item survey was emailed to 106 U.S.-based financial planners via three sources: (1) an advisor-only forum (advisorheads.com), (2) a list-serve created and maintained by a popular financial planning practitioner-blogger, and (3) personal emails to financial planners. Personal emails were limited in number, six emails in total. Advisors from all three sources received the same email explaining the project and inviting them to complete the questionnaire. Participants were not incentivized to participate, but participation was made simpler by only requiring them to click on the link provided to them in the invitation email. The computer-based questionnaire was administered in English and included basic demographic characteristics, firm characteristics, professional qualifications, financial literacy, and risk literacy. Response rate from the forum, Listserv, and personal emails combined totaled 65%. Of those completed, less than 5% had missing items and those that had missing items were deleted (Fowler, 1995). All told, 69 completed surveys were part of the research sample.

4.2. Experimental design and dependent variable

The experimental design of the current study is based on the work by Garcia-Retamero et al. (2016) who studied surgeons. The current design is similar in the following ways: (1) both tested risk literacy scores; (2) an almost identical icon array was used as a visual representation of the risk; (3) both tested the accuracy in answering a probability question; and (4) both were asked a question related to their domain of expertise. However, the studies were dissimilar in the type of risk presented. Negative outcomes in surgery are death or other complications, whereas portfolio risk is not directly related to death. Also, the question posed to the surgeons had known probabilities, whereas the type of market events posed to the financial planners in the current study are less precise (Taleb, 2004).

Financial planners were randomly assigned to one of two survey instruments. One group received only written probabilistic information and the other received written probabilistic
information plus a visual aid. Using the given information, participants were asked a specific question about the likelihood of failure for a portfolio given conditions similar to the Great Recession, a time period resulting in prolonged capital market decline. The text-only format asked the participant to calculate which of the two portfolios would be more resilient given the proposed market conditions:

You have a client who is fearful of another Great Recession affecting their portfolio. Based upon the fact-finding you have done you have narrowed the possible portfolio strategies to two. The first portfolio strategy is an asset allocation that is based upon an investment management strategy you have been using for years, while the second is based upon a newer investment strategy. You stress test the portfolios using 100 simulations. Portfolios using the first strategy failed the client’s goals 27 times. Compared with the first portfolio, the new strategy resulted in seven fewer failures. Which portfolio strategy do you use?

In the second condition, the respondent was given the same question, but the success and failure of the portfolios was also represented by a visual aid comprised of an icon array (Fig. 2). As such, the condition being applied in this study was the presence, or lack thereof, of the icon array. The outcome of interest or dependent variable was the correct choice of portfolio given the situation. This was identified as the portfolio failing the fewest number of times.

For the purposes of this study, if the respondent were in the non-visual aid condition, they were coded as “0.” If they were in the visual aid condition, they were coded as 1. If the respondent chose the correct portfolio, they were coded as 1 for correct answer, and 0 if they chose incorrectly.

4.3. Independent variable of interests

Risk literacy was measured using the Berlin Numeracy Test (BNT; Cokely et al., 2012). The BNT is a psychometrically valid survey, which measures risk literacy and has been used
on various populations (www.riskliteracy.org). This test has been used in over 15 countries and has been shown to be both valid and reliable (Cokely et al., in press; Schwartz, Woloshin, Black, & Welch, 1997). Previous work differentiated risk literacy as a unique predictor of ability to understand and work with probabilities even after controlling for intellectual ability and numerical literacy (Låg, Bauger, Lindberg, & Friborg, 2014). The BNT has since become the strongest predictor of an individual’s ability to assess and understand everyday risk (Cokely et al., 2012).

All seven questions were asked in this survey, as used in the more comprehensive risk literacy tests. The analysis only used the four asked on the pen and paper BNT. This more closely aligns with other studies of surgeons (Garcia-Retamero, 2016) and the general population (Cokely et al., 2012). This measure is scored as a 0–3 variable based upon the number of correct responses. Categories were collapsed with scores of 0 and 1 = low numeracy, 2 and 3 = moderate numeracy, and 4 = high numeracy.

The CFP certification was a self-reported measure. Participants indicated whether or not they held the certification. Thus, a binary variable of CFP certification was used. If an individual held the CFP certification, they were coded as a 1, and if not, they were coded as 0. No other demographic variables were used in the final regression.

4.4. Demographic variables

Table 1 outlines demographic variable descriptive statistics according to treatment. Demographic characteristics included gender, CFP certification, title, compensation method, firm type, education, personal income, and specialty. Compensation structures included: (1) assets under management (AUM), (2) AUM fees and flat fees, (3) combination of salary, profit share, and commission, (4) commission and AUM fees, (5) hourly and flat fees, (6) hourly, (7) flat, and (8) AUM fees. Firm types included: (1) commercial bank advisor, (2) independent B/D affiliations, (3) independent registered investment advisor (RIA) of varying sizes, (4) brokerage firms, and (5) wire-houses. Professional qualifications included education and professional specialties, such as financial planning and investment management, financial planning only, or life planning.

5. Analyses

Descriptive analysis was conducted using R, in conjunction with the IDE Exploratory.io. Univariate and bivariate tests were conducted using R in conjunction with RStudio. Regression was conducted using R and RStudio, including the “tidy” packages (Wickham, 2018).

First, to determine if the group presented with the visual aid was similar to the group presented without a visual, a t-test across risk literacy levels by condition was conducted. To investigate whether or not a visual representation of portfolio risk increased accuracy in assessing and selecting the most resilient portfolio, parametric bootstrap logistic regression was conducted. Both parametric and non-parametric bootstrap analyses were run and produced similar results.
Table 1  Descriptive statistics of sample

<table>
<thead>
<tr>
<th>Variable</th>
<th>Visual</th>
<th>No visual</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>percent</td>
<td>percent</td>
</tr>
</tbody>
</table>

**Gender**

- Male 97.50% 91.30%
- Female 2.50% 4.35%
- Rather not say 0.00% 4.35%

**Certified Financial Planner (CFP)?**

- Yes 50.00% 53.62%
- No 50.00% 46.38%

**Title**

- Junior Financial Advisor 3.50% 13.04%
- Assistant Financial Advisor 3.50% 4.35%
- Broker/Financial Advisor 32.14% 26.09%
- Senior Advisor/Firm Owner 46.43% 47.83%
- Senior Financial Advisor 14.29% 8.70%

**Compensation method**

- AUM fees and flat fees 10.71% 17.39%
- AUM fees only 10.71% 4.35%
- Combination of salary, profit share, and commission 10.71% 17.39%
- Commission and AUM fees 46.43% 30.43%
- Hourly and flat fees 7.14% 0.00%
- Hourly, flat fees, and AUM fees 14.29% 26.09%

**Advisor channel**

- Commercial Bank Advisor 3.57% 5.88%
- Independent B/D affiliation, large (>15) 3.57% 3.92%
- Independent B/D affiliation, small (<10) 17.86% 21.57%
- Independent RIA, large 10.71% 7.84%
- Independent RIA, medium 10.71% 7.84%
- Independent RIA, small 28.57% 33.33%
- Large Regional Brokerage Firm 21.43% 11.76%
- Large wire-house 3.57% 7.84%

**Higher education**

- Masters 28.57% 30.43%
- PhD, Masters 7.14% 4.35%
- PhD 3.57% 4.35%
- No higher education/chose not to respond 60.71% 60.87%

**Income**

- $0–$20,000 7.14% 4.35%
- $20,001–$50,000 3.57% 13.04%
- $50,001–$100,000 17.86% 17.39%
- $100,001–$200,000 21.43% 21.74%
- $200,001–$300,000 17.86% 30.43%
- $300,001–$400,000 7.14% 4.35%
- $400,001–$500,000 7.14% 0.00%
- $500,001–$600,000 3.57% 0.00%
- $600,001–$700,000 3.57% 3.92%
- $900,001–$1,000,000 0.00% 4.35%
- $1,000,001–$1,500,000 3.57% 0.00%

(continued on next page)
Therefore, parametric bootstrap was used in this study. Parametric bootstrap provides narrower confidence intervals and more power than non-parametric bootstrap (Adjei & Karim, 2016). Bootstrap logistic regressions have been used in social science and the medical field to estimate a population by resampling the observations (Fitrianto & Cing, 2014). The independent variables included whether or not the participant was a CFP certificant and the financial planners’ BNT score. The dependent variable was whether or not the financial planner selected the most resilient portfolio. Given the small sample size, a bootstrap logistic regression was also conducted. To obtain robustness with respect to logistic regression, the observations were resampled at random specific intervals (Fitrianto & Cing, 2014). In this case, at each iteration 10% of observations were resampled, for a total of four iterations. The more iterations, the higher the standard error and model specification is more difficult as the number of iterations increases. The suggested number of iterations is calculated by taking the number of observations in the sample and dividing by the minimum variable requirement for the type of regression used, which in this case is 18. Five iterations are the maximum number of resamples recommended (Fitrianto & Cing, 2014).

6. Results

In terms of risk literacy, most participants had moderately high risk literacy. The mean risk literacy score for financial planners was 2.20 \((SD = 0.99)\). The Cronbach’s \(\alpha\) for the BNT was .79. The following groups were compared with see if they contained similar profiles: (1) CFP status and (2) risk literacy. Crosstab information (Table 2) indicated 44.44% of non-CFP holders had “low” risk literacy compared with 21.43% of CFP holders. One-third (33%) of non-CFP holders had “medium” risk literacy, compared with 50% of CFP certificants. Those respondents in the “high” group were 22.23% for non-CFP holders and 28.57% for CFP holders.

A \(\chi^2\) test of CFP certificant status and choosing the correct portfolio was conducted. Results indicated that choosing the correct portfolio was not significantly different and independent of whether the participant was a CFP certificant or not. Results in Table 3 indicate a \(p\)-value of 0.16.

Of participants who received the portfolio information with no visual, 64% of participants chose the correct portfolio (Table 4). For participants who received the portfolio information and a visual representation, 87% chose the correct portfolio. A \(\chi^2\) test was conducted.
indicating a significant difference \((p = .016)\) and having the visual aid increased accuracy. A robustness check using a \(t\) test for the percentages was also conducted, confirming the results of using the count data from the \(\chi^2\)-test.

6.1. Bootstrap logistic regression

Parametric bootstrap logistic regression results are presented in Table 5. Results indicated that participants in the group that saw the visual representation had 2.45 times \((p = .03)\) greater odds of choosing the correct portfolio. Holding a CFP certificate \((p = .25)\) nor possessing numeracy \((p = .29)\) were significant in selecting the correct portfolio. Moreover, these results do not support Hypothesis 1 and 3, but does provide support for Hypothesis 2. Visually presented information had a significant and positive impact on correct portfolio selection.

Univariate models were run with each independent variable in the full model. Results are similar to the multivariate model and are contained within Tables 6, 7, and 8. Whether or not a participant was a CFP certificant was not significant as it relates to selecting the correct portfolio \((p = .26)\). Numeracy was also not significant in the univariate model \((p = .35)\) as it relates to selecting the correct portfolio. Whether the participant received a visual aid was significant \((p = .02)\) and had 2.65 greater odds of choosing the correct portfolio.

7. Discussion

The research question was: Does risk literacy and visual representation of a risk-related scenario help financial planners to select an appropriate portfolio strategy? In short, risk literacy did not impact appropriate portfolio strategy, but visual representation did.
investigate this question, the study measured risk literacy using the BNT and an experimental design, which consisted of a randomly assigned visual aid component.

High risk literacy may be related to the unique nature of financial planners’ work, as it is inherently involved with discussing, understanding, and measuring risk. The study suggests those planners who further their education and obtain the CFP certification have higher risk literacy scores. The type of work, education, and use of the seven-step process may be related to higher levels of risk literacy among those who hold a CFP certification. On the other hand, it is also important to recognize that this finding may also be a selection effect, and those with higher risk literacy scores opt-in to obtaining CFP certification.

Selecting the correct portfolio was not linked to risk literacy, education, or professional certification as demonstrated by the logistic regression. This may be due to a small sample size, the convenience nature of the sample, or a commonality of industry training (e.g., Series 7, 63 and/or 65 exam). Unlike Garcia-Retamero et al. (2016), this study found that risk literacy was not linked to the likelihood of choosing the appropriate portfolio strategy, which could be an artifact of testing risk literacy in financial planners. Said another way, a reason for investigating risk literacy in financial planners was to examine how risk literacy in financial planners may be different from that of other professionals (e.g., surgeons or high-level police officers). Financial planners, by way of their training on portfolio selection, may still be able to select the right portfolio regardless of risk literacy. Another possible reason for this finding is that risk literacy and the knowledge needed to select the correct portfolio are not one in the same as originally thought by the researchers. Lastly, it is important to remember that this group, as a whole, was very risk literate. Therefore, the sample may not have enough variation to detect the importance of risk literacy.

Although these findings differ from previous work in this area, it can be argued that the findings in this study still support the new theoretical framework of Skilled Decision Theory (Cokely et al., in press). Financial planners may ultimately choose to become financial planners not only due to their natural ability to understand risk, but also due to their education and training. Either way, financial planners’ higher levels of risk literacy cannot be ignored.

Table 4  $\chi^2$ test of participants’ risk portfolio on condition

<table>
<thead>
<tr>
<th>$\chi^2$</th>
<th>Degree of freedom</th>
<th>$p$-Value</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.84</td>
<td>1</td>
<td>0.016**</td>
<td>0.19</td>
</tr>
</tbody>
</table>

Significance levels *$p < .10$, **$p < .05$, ***$p < .01$. 

Table 5 Results for bootstrap logistic regression on portfolio selection ($n = 69$)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>$SE$</th>
<th>$p$</th>
<th>OR</th>
<th>Lower CI</th>
<th>Upper CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>1.01</td>
<td>0.54</td>
<td>0.62</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Certified Financial Planner (CFP)</td>
<td>−0.38</td>
<td>0.42</td>
<td>0.25</td>
<td>0.61</td>
<td>0.26</td>
<td>1.42</td>
</tr>
<tr>
<td>Risk literacy</td>
<td>0.02</td>
<td>0.20</td>
<td>0.29</td>
<td>1.17</td>
<td>0.87</td>
<td>1.58</td>
</tr>
<tr>
<td>Visual aid</td>
<td>0.94</td>
<td>0.39</td>
<td>0.029**</td>
<td>2.45</td>
<td>1.28</td>
<td>5.04</td>
</tr>
</tbody>
</table>

Source: Four resampling intervals. CFP = Certified Financial Planner; OR = Odds Ratio; CI = confidence interval. Significance levels *$p < .10$, **$p < .05$, ***$p < .01$. 

and the use of visual aids, which was the only significant predictor of the correct portfolio selection, does demonstrate the importance of visual aids for risk decisions—perhaps even in high risk literacy populations.

### 7.1. Implications

This study demonstrates visual icons help individuals at all levels of risk literacy to improve their decision-making. Financial planners, even CFP certificants, may want to test themselves and then take pro-active steps to become better at interpreting and explaining risk information. Financial planning programs registered with the CFP Board may wish to start adding a component of visual aid literacy to their curriculums. Larger regulatory financial institutions, like the Security and Exchange Commission (SEC) as well as Financial Industry Regulatory Authority (FINRA), may want to request that financial planners, in addition to measuring client’s risk tolerance, also display risk-reward tradeoffs in a visual format.

Financial planners, especially those acting as fiduciaries, can consider using visual techniques in their workflow process. This information will not only help the financial planner to assess what they should be discussing when they discuss risks with clients, but also how they explain recommendations and actions taken as it relates to risk. Investing in financial software that utilizes visual best practices may also be advantageous. Displaying information graphically during reviews and illustrating portfolio stress tests via charts may be useful in helping clients comprehend what advisors are attempting to communicate.

### 7.2. Limitations

There are limitations inherent in this study. First, the sample is small and has less power than it would have if the sample were larger. This has implications for the results and a

Table 6  Results for bootstrap logistic regression of Certified Financial Planner (CFP) status on portfolio selection ($n = 69$)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>SE</th>
<th>$p$</th>
<th>OR</th>
<th>Lower CI</th>
<th>Upper CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>1.09</td>
<td>0.25</td>
<td>&lt;0.01***</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>CFP</td>
<td>0.46</td>
<td>0.41</td>
<td>0.26</td>
<td>1.58</td>
<td>−0.34</td>
<td>1.25</td>
</tr>
</tbody>
</table>

*Source:* Four resampling intervals. CFP = Certified Financial Planner; OR = Odds Ratio; CI = confidence interval. Significance levels *$p < .10$, **$p < .05$, ***$p < .01$.

Table 7  Results for bootstrap logistic regression of risk literacy on portfolio selection ($n = 69$)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>SE</th>
<th>$p$</th>
<th>OR</th>
<th>Lower CI</th>
<th>Upper CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.65</td>
<td>0.7</td>
<td>0.36</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Risk literacy</td>
<td>0.13</td>
<td>0.14</td>
<td>0.35</td>
<td>1.14</td>
<td>−0.15</td>
<td>0.41</td>
</tr>
</tbody>
</table>

*Source:* Four resampling intervals. CFP = Certified Financial Planner; OR = Odds Ratio; CI = confidence interval. Significance levels *$p < .10$, **$p < .05$, ***$p < .01$. 
more robust sample may have different conclusions. Bootstrap logistic regression can increase standard errors, but this was limited by limiting the number of iterations. However the sample mirrors the population of financial planning advisors in two key ways. Participants in the study were mostly male (94.12%) with high incomes, which are consistent traits of financial planners based on recent industry research (Tharp, Lurtz, Melitz, Ammerman, & Kitces, in press). This could have had an impact on the insignificance of risk literacy, resulting in different findings than past research. However, this may also point to the fact that financial planners possibly have received more education geared toward understanding and interacting with probabilities (i.e., risk literacy) than the general population.

Overall, 30.43% of the sample scored low on the risk literacy assessment. Financial planners’ style of work, deliberating, and working with the client to understand risk, may also drive up risk literacy scores. Financial planners may, in general, have higher risk literacy than some other professional groups due to the way their education and the practice of financial planning, is conducted. However, as this was administered online, with no time limit, the participants could have answered using online calculators or internet searches. In addition, this was a convenience sample drawn from willing participants through Listservs and email lists known by the researchers. While most financial planners will choose portfolios based upon a variety of factors, the portfolio selection task in this study was simple, constrained, and narrowly defined.

7.3. Future research directions

To our knowledge, this study is the first of its kind in financial planning research. Findings suggest that further exploration with a larger, more diverse sample may result in different findings that could reflect previous work conducted with other populations. Testing other types of visual aids utilizing the same probabilistic information could lead to a better understanding of best practices for visual aid use. It would also be helpful to uncover how, if at all, risk literacy does increase or change as financial planners grow in their careers and position. The same could be said for clients of financial planners: Does working with a financial planner increase risk literacy skill? Finally, future research would also be enhanced by measuring the other constructs of Skilled Decision Theory.

7.4. Conclusion

Literature from judgment and decision-making highlights the importance of risk literacy and visual aids in making decisions. This study (1) compares risk literacy levels of financial

Table 8 Results for bootstrap logistic regression of visual aid on portfolio selection (n = 69)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>SE</th>
<th>p</th>
<th>OR</th>
<th>Lower CI</th>
<th>Upper CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.83</td>
<td>0.26</td>
<td>&lt;0.01***</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Visual aid</td>
<td>0.97</td>
<td>0.41</td>
<td>0.02**</td>
<td>2.65</td>
<td>1.18</td>
<td>4.21</td>
</tr>
</tbody>
</table>

Source: Four resampling intervals. Significance levels *p < .10, **p < .05, ***p < .01.
planners to previously published studies of risk literacy levels and (2) replicates the study by Garcia-Retamero et al. (2016) that investigated risk literacy and the effect of visual aids among surgeons. This study contributes to the literature by (1) investigating risk literacy levels among financial planners, and (2) examining the effect of visual aids on portfolio choices among financial planners. The findings provide support for skilled decision-making theory (Cokely et al., in press) as well as previous work conducted by Garcia-Retamero et al. (2016) and Kothakota & Kiss (2020), which suggest the use of visual aids in financial planning is useful and potentially necessary. Not all visual aids are created equally, however, and a poorly constructed visual, like a simple verbatim task description, may not help in explaining risks to clients. While this study only investigated the use of an icon array, the direct application to understanding portfolio failure risk is something financial planners address every day.

In summary, financial planners help clients make appropriate financial decisions that involve risk and the need to interpret probability appropriately. While most financial planners in this study scored moderate or high in risk literacy, the combination of a visual aid and written probabilistic information versus only written probabilistic information significantly helped planners choose the appropriate portfolio strategy.

Appendix 1

The seven-step financial planning process

1. Understanding the Client’s Personal and Financial Circumstances
2. Identifying and Selecting Goals
3. Analyzing the Client’s Current Course of Action and Potential Alternative Courses of Action
4. Developing the Financial Planning Recommendation(s)
5. Presenting the Financial Planning Recommendation(s)
6. Implementing the Financial Planning Recommendation(s)
7. Monitoring Progress and Updating

Adapted from the CFP Board of Standards (www.cfp.net)

Berlin numeracy test traditional paper and pencil format

Instructions: Please answer the questions below. Do not use a calculator but feel free use the space available for notes (i.e., scratch paper).

1. Imagine we are throwing a five-sided die 50 times. On average, out of these 50 throws how many times would this five-sided die show an odd number (1, 3, or 5)?
2. Out of 1,000 people in a small town 500 are members of a choir. Out of these 500 members in the choir 100 are men. Out of the 500 inhabitants that are not in the choir 300 are men. What is the probability that a randomly drawn man is a member of the choir? _____ % (please indicate the probability in percentage)
3. Imagine we are throwing a loaded die (6 sides). The probability that the die shows a 6
is twice as high as the probability of each of the other numbers. On average, out of these 70 throws, how many times would the die show the number 6? _____

4. In a forest 20% of mushrooms are red, 50% brown, and 30% white. A red mushroom is poisonous with a probability of 20%. A mushroom that is not red is poisonous with probability of 5%. What is the probability that a poisonous mushroom in the forest is red? _____%

Scoring = Count total number of correct answers.
Correct answers: 1 = 30; 2 = 25; 3 = 20; 4 = 50.

References


Garcia-Retamero, R., Wicki, B., Cokely, E. T., & Hanson, B. (2014). Factors predicting surgeons’ preferred and actual roles in interactions with their patients. Health Psychology, 33(8), 920.


Enumerating the value of financial advice in a competitive market – a dual structure approach and analysis†

Steve P. Frasera,*, Brian C. Payneb, Scott Schatzlec

aLutgert College of Business, Florida Gulf Coast University, 10501 FGCU Boulevard South, Fort Myers, FL 33965, USA
bCollege of Business Administration, University of Nebraska at Omaha, 6708 Pine Street, Mammel Hall 228G, Omaha, NE 68182, USA
cMutual Trust Advisory Group, 23190 Fashion Drive P203, Estero, FL 33928, USA

Abstract

This paper introduces and examines a composite, dual fee structure (CDFS) for financial planners that helps quantify the value of financial advice. Our structure specifically separates financial planning (advice) fees based on total net worth (NW) from Investment Management (IM) fees based on assets under management (AUM), which are readily observable and pervasive in the marketplace. Doing so facilitates quantifying the value of this financial advice in a competitive market setting. Knowing the financial value of the non-IM component of financial planning services can reduce perceived conflicts of interest by permitting financial planners to generate compensation for non-IM planning activities in a transparent manner, whether or not the client moves investable funds to the planner. © 2021 Academy of Financial Services. All rights reserved.

JEL classification: G29

Keywords: Financial planning; Advisory fees

1. Introduction

The financial services industry continues to be the nexus of ongoing discussions among federal and state regulators, credentialing entities, and financial institutions, concerning
what constitutes the fiduciary relationship between providers and clients. Underlying this dialogue is the nature of the compensation paid to the agent by the client—commission, flat fee, fee-only, fee-based, or some combination of approaches (Opiela 2006 and MacKillop 2017). The predominant methodology for many Registered Investment Advisors (RIAs) is fee-only, where agents charge a percentage on the level of clients’ assets under management (AUM). Many of these RIAs focus primarily on the function of investment management (IM), in which case fees are more directly correlated with AUM, but also include planning services for the broader portfolio. This is an oft used argument suggesting the interests of RIAs are aligned with their clients’ as both parties gain or lose value together. This model is certainly not absolute, and a common example of where this model may have a potential conflict is when a planner might recommend a client use AUM to pay off a mortgage. The right recommendation might be to pay off the debt, yet using AUM to do so will reduce advisor compensation in this scenario since the AUM declines by the amount of the mortgage debt paid off. In contrast, many agents working at broker-dealers (BD) are paid on commission, as is also the case with those selling stocks, bonds, or insurance and annuity products. While this latter approach may indeed be a lower-cost approach for some clients, it is not necessarily clear if and whether there is a line between fees associated with completing a transaction and fees paid for financial planning or advice. The further alternative case where professionals are “dual-registered” as both RIAs and BDs certainly does not clarify the situation (Haslem 2010).

No matter the compensation approach, research suggests that advisors do not always act in clients’ best interests. Hoechle et al (2018), in a study of financial advisors working for banks, suggest advisors recommend transactions that are most profitable for the bank, and that independent clients performed better than advised clients. Similarly, Egan (2019) reports the incentives of brokers do not align with clients. Perhaps most alarming, Cheng and Kalenkoski (2018) report that more than 20% of clients have no idea how their advisors are paid.

The purpose of this research is not to solve the fiduciary debate. Instead, we seek to examine a potential methodology to determine, or price, the value of financial planning. More specifically, we seek to separate the value of financial advice from the presumed cost of managing an investment portfolio. Knowing the value of this advice in a competitive market is critical to provide greater transparency to clients and help planners understand the value of the expertise and service they provide. In this paper, we introduce and examine a composite, dual-fee structure (CDFS) for financial planners. We hypothesize that pricing standard investment management activities competitively within the market permits the creation of a reasonable pricing strategy for planning services. Our structure specifically separates financial planning (advice) fees from IM fees that are often subsumed in a single AUM fee. This approach may reduce or perhaps limit perceived potential conflicts of interest by providing a mechanism where financial planners can be compensated for planning efforts whether or not the client moves investable funds to the planner for the planner to manage.
2. Previous research

There is limited research that specifically addresses advisor fees outside of the impact of fees on investor returns. It is well documented that higher management fees are associated with lower investor returns (Fama & French, 2010). Fees and investor returns are naturally a zero-sum game: a dollar paid in fees is a dollar less that investors receive in returns (SEC, 2014). However, there is some literature that addresses what clients might be looking for from financial planners, as well as some survey work sampling the various fee structures used by advisors of different types. We review some of the salient literature in each space next.

Bae and Sandager (1997) examine characteristics that consumers sought from financial planners. They find that clients primarily seek advice on retirement funding, investment growth, and reducing taxes. Most simply want a comprehensive review of their situation. Furthermore, they find only 20% of survey respondents preferred a planner be compensated by commissions from sales exclusively. Statman (2000) suggests financial planners are investor managers, and they focus too little on the value they contribute as managing investors and too much on clouding the fees they charge for those contributions. Finke, Huston, and Winchester (2011) find that wealth is the strongest predictor in the decision to pay for financial advice. They find those with at least a college degree are more likely to hire an expert; however, those who perceive they have a better understanding of financial issues are less likely to pay for financial advice. Seay et al (2017) suggests clients with different characteristics (e.g. demographic and income levels) may align themselves with different advisor compensation structures. Cheng and Kalenkoski (2018) survey investors to ascertain how their advisors are compensated and find 27% of clients perceive their advisors are compensated by charging a percentage of investable assets, 16% commissions, 18% some combination of fees and commissions, and 15% a flat/hourly fee. Restating their startling result; more than 20% respond they had no idea how their advisors are paid. In summary, investors overwhelmingly do not know how, or how much, they are paying advisors.

Particularly relevant for this research, it is unlikely clients know for what they are paying—financial advice or transaction costs? Lahtinen and Shipe (2018) review ADV data from 2009 to 2015 and find virtually all portfolio management investment companies charge a percentage of AUM while financial planning services companies use fixed and hourly fees most often. The authors conclude that fee structures are not homogeneous and vary depending on the services offered by the firms. Kitces (2017) suggests the average percentage of AUM charged may be 1%, but that the median fee for high-net-worth clients is closer to 0.50%. Furthermore, he reports the results of an Inside Information survey suggesting that the all-in fee, or the total fee that includes transaction costs as well as the costs of underlying products, is closer to 1.65%. In summary, it is perhaps not surprising that with the complexity of fee structures found across the financial services profession, not only do investors not know how their advisors are compensated, they surely are not likely to understand the value of financial planning relative to investment management activities.
3. Methodology and data

We initially outline and describe a basic dual-fee structure before we discuss how such a structure might be utilized or optimized. The purpose of this composite structure is to both value, and potentially allow an advisor to charge for, financial planning advice separately from any IM fees that may be collected for managing AUM (or any commissions earned associated with selling a particular product). The goal is to develop an approach and structure such that the fee schedule adequately compensates the planner for the value provided to the client and separates this advice charge from the broader AUM fee. Under many fee-only mechanisms where fees are charged as a percentage of AUM, the assumption is the greater the amount of assets, the greater the scope of planning work. While there is likely some positive correlation between investable wealth and planning requirements, the relationship is not always so straightforward. Two clients with similar levels of total wealth might have very different planning needs. Here we address this challenge by distinguishing between total wealth, and investable wealth. We use a client’s net worth (NW) as a proxy for their total wealth, which we posit is a better representation for the financial planning effort associated with the client’s financial situation than simply the level of the client’s investable assets, captured as AUM.

In our introductory model, we consider the asset universe to include the following asset classes: stocks (S), bonds (B), real estate (RE), and business ownership (proxied here by private equity, PE). The sum of these assets represents a client’s NW at time “t” as shown in Eq. (1). For simplicity purposes, we assume a client’s investable assets are equal to AUM, modeled here as simply containing stocks and bonds (Eq. 2). The non-AUM portion of NW is modeled by asset classes likely held by high net worth clients. Specifically, this portion of the portfolio includes additional assets, such as a home (Real Estate, RE) and portion of a business (Private Equity, PE). When we substitute Eq. (2) in Eq. (1), we get the final result in Eq. (3).

\[
NW_t = S_t + B_t + RE_t + PE_t \quad \text{Eq. (1)}
\]

\[
AUM_t = S_t + B_t \quad \text{Eq. (2)}
\]

\[
NW_t = AUM_t + RE_t + PE_t \quad \text{Eq. (3)}
\]

Each of the NW and AUM portfolios will increase or decrease based on the respective returns of the underlying asset classes \((R_x)\), where “x” represents the underlying asset class. The value of the portfolios at time “t + 1” is found by Eq. (4) for AUM and Eq. (5) for NW.

\[
AUM_{t+1} = S_t(1 + R_{S,t}) + B_t(1 + R_{B,t}) \quad \text{Eq. (4)}
\]

\[
NW_{t+1} = AUM_{t+1} + RE_t(1 + R_{RE,t}) + PE_t(1 + R_{PE,t}) \quad \text{Eq. (5)}
\]

The focus of this analysis is on the fees associated with these portfolios. We first model the traditional, single, fee-only approach used by many advisors in Eq. (6):
where \( j \) represents the number of tiers in the (regressive) fee tier structure and \( \omega_j \) is the fee level in tier \( j \). Advisors using this model charge a single fee, \( \omega_j \), which covers services associated with their investment management function as well as some level of financial planning service. Similarly, we can model the CDFS fee in component parts as follows:

\[
CDFS \text{ Fee}_t = \sum_k \varphi_k IM_{k,t} + \sum_l \theta_l NW_{l,t}
\]

Eq. (7)

where \( k \) and \( l \) are analogous to \( j \), and \( \varphi \) and \( \theta \) permit differential fee levels for the IM and NW components. It is important to note the value of IM in Eq. (7) is equivalent to the level of AUM in Eq. (6). We change the identifying variable name to highlight that the IM fee, \( \varphi_k \), in Eq. (7) is different from the single fee, \( \omega_j \), in Eq. (6). While both are charged as percentage of AUM, the IM fee, \( \varphi_k \), used in Eq. (7) represents the investment management function only.

Assuming a financial planner provides the same services under either fee structure, in a competitive market it must be true that the fees are equal as depicted in Eq. (8).

\[
AUM \text{ Fee}_t = CDFS \text{ Fee}_t
\]

Eq. (8)

\[
\sum_j \omega_j AUM_{j,t} = \sum_j (\varphi_j IM_{j,t} + \theta_j NW_{j,t})
\]

Eq. (9)

Substituting Eqs. (6) and (7) into Eq. (8) yields Eq. (9). We can currently approximate \( \omega \) from what is observed in marketplace by fee-only planners. We can also approximate \( \varphi \) using so-called robo advisor fees, which arguably represent the latest innovation for providing the most basic investment management functions. The resulting question is then the determination of the fee schedule for \( \theta \). Doing so represents the mechanism for quantifying the value of financial advice using this approach.

If we allow \( \omega \), \( \varphi \), and \( \theta \) to be a single weighted fee value representing a multitiered, regressive fee schedule as detailed later, then Eq. (9) leads to the following for any given year \( t \).

\[
\theta = \frac{(\omega - \varphi)AUM}{AUM + RE + PE}
\]

Eq. (10)

In portfolios consisting solely of stocks and bonds, Eq. (10) shows the value of financial advice is intuitive, and captured simply as the difference between robo-advisor (IM) fees and the (observable) AUM-only fee, or \( \theta = \omega - \varphi \). However, when other assets—such as real estate (RE) or business ownership (PE)—become part of the broader portfolio, NW increases and the value of \( \theta \) is no longer as static and straightforward. In fact, there are as many unique solutions for \( \theta \) as there are unique client portfolios. Additionally, as implemented later in this analysis, \( \theta \) can adjust over time due to the front-loaded nature of the planning function.\(^2\)
While perhaps true, it is not practical to conclude that the value of financial advice varies infinitely with each individual portfolio. An advisor would spend far too much time creating fee schedules if she tailored each one according to individual clients’ asset mixes. Instead, it is appropriate to base $\theta$ on some characterization of averages or expected outcomes over time. Due to the countless values for the NW fee schedule $\theta$, we conduct a simulation to help us quantify one example of such an acceptable schedule. Doing so in turn helps us calculate the value of financial advice in a competitive marketplace.

The NW and IM fees we introduce in the CDFS both follow a parallel, similar regressive structure. Much like many fee-only or fee-based charges based on AUM, both fees here are charged at lower marginal rates as the benchmark (i.e., AUM and NW) rises. The rate charged for IM increases at various breakpoints of AUM. For example, the IM fee might be 50 basis points (bps) on the first $250,000 of AUM and decrease as AUM levels rise. This rate is assumed to be charged and collected in perpetuity if AUM is under the advisor’s care. Doing so clearly aligns client and planner interests by benefiting both when the portfolio grows, but it also recognizes the decreasing marginal effort for the advisor as the portfolio grows larger. The NW fee is similarly structured, but instead based on the client’s net worth.

We further suggest that the effort involved in financial planning is not uniform over time. For financial advisors who practice comprehensive financial planning, the initial workload involved with a new client is significantly more demanding in the first year as the planner develops a way forward for a client across all the financial planning areas (e.g., cash flows and debt service, risk and insurance, investment, tax, and estate planning). To account for this non-linear workflow, we assume the full initial financial planning fee is charged the first year at the scheduled rate. Subsequent years are charged at a reduced rate; this analysis uses a rate that is one-half the bps rate used the first year in our initial illustration. This approach allows the client to pay directly for financial planning and to see how much they are paying for that support initially (and over time if they choose to do so) while remaining independent of IM fees. The percentage reduction of the planning fee during subsequent time periods is just one “lever” that can be adjusted by individual planners/firms based on the level and complexity of planning services offered. This decomposition of fees also allows the planner to charge a lower, more market competitive IM-only fee.

Our simulation sets the value of financial planning (the NW fee, or $\theta_j$) as the delta between the “all-in,” single, AUM model fee ($v_j$), and the emerging robo-advisor IM-only fee ($\varphi_j$). We evaluate the impact of these assumptions over time, and as importantly, the analysis here identifies these “levers” that firms and advisors may adjust for their specific practices. In addition to the degree of the reduction of the NW fee in subsequent years, an additional lever is the determination of the level of the individual fees (and breakpoints) charged for each component of the CDFS.

Table 1 shows the NW, IM, and AUM breakpoints and regressive fee structure, respectively, for both the dual fee CDFS (that includes NW and IM) and the single fee-only (AUM) structures analyzed here. The setup is basic and straightforward, yet it provides sufficient insights that generalize to fee structures with more complexity (e.g., breakpoints). The values for the IM component recognize that in a competitive market there is a base cost for advisors to profitably manage investable assets. Fortunately, the advent of so-called robo-advisors have revealed that these costs can be relatively low. A brief survey of multiple
robo-advisors shows a range of fees from $0 (“free”) to almost 90 bps annually. There are many factors in play when setting these fees. For example, Charles Schwab Inc., which offers free advisory services, mandates its recommended portfolios contain non-trivial cash positions that the firm then uses to generate “fees” from the spread between the rates paid on this cash and what the firm can charge to lend the funds. Brenner and Meyll (2020) suggest robo-advisors are a valid alternative for investment advice. Overall, the non-scientific middle of the range for IM-only fees appears to be approximately 40 bps. We subjectively assess an additional 10 bps on smaller investment portfolios (below $250,000) to recognize the lack of scale for a typical individual planner, which is supported by Uhl and Rohner (2018). Per the regressive approach, we reduce the bps fees by 10 bps as the IM portfolio grows above $2 million and has the lowest marginal IM fee at 30 bps for this example. In all cases the “Fee on max” value is simply the bps fee multiplied by the maximum portfolio value in that row, added to any previous fee on max value. Having generated this IM fee structure based on a rather objective approach in terms of market competition and economies of scale, we can now deductively generate the fee structure for the planning fee (NW component). We use this fee structure to inform us about the market value of providing financial planning and advice to clients. The fee structure shown in Table 1 provides reasonably comparable overall initial fees for clients when controlling for the complexity of the planning activities.

A common refrain of financial planning is recognizing that all clients are unique. It is quite possible, and even more likely, that there might be significant variation among clients’ relative values of net worth (NW) and investable assets, or AUM. The size and scope of clients’ AUM and NW is the focus of further analysis, a third potential “lever.” If a client’s AUM represents their entire NW, say early in their career when their net worth may consist solely of assets in a 401(k) plan, the breakdown of the planning fee versus IM fee may likely

Table 1 Fee breakpoints

<table>
<thead>
<tr>
<th>Net worth (NW) component*</th>
<th>Plus</th>
<th>Investment Management (IM) component</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum</td>
<td>Maximum</td>
<td>Fee (bps)</td>
</tr>
<tr>
<td>$ —</td>
<td>$ 500,000</td>
<td>60</td>
</tr>
<tr>
<td>$ 500,000</td>
<td>$ 2,500,000</td>
<td>50</td>
</tr>
<tr>
<td>$ 2,500,000</td>
<td>$ —</td>
<td>40</td>
</tr>
</tbody>
</table>

Panel A

Dual fee structure

Panel B

Fee-only (IM-only)

<table>
<thead>
<tr>
<th>Minimum</th>
<th>Maximum</th>
<th>Fee (bps)</th>
<th>Fee on max</th>
</tr>
</thead>
<tbody>
<tr>
<td>$ —</td>
<td>$ 250,000</td>
<td>120</td>
<td>$ 3,000</td>
</tr>
<tr>
<td>$ 250,000</td>
<td>$ 2,000,000</td>
<td>90</td>
<td>$ 18,750</td>
</tr>
<tr>
<td>$ 2,000,000</td>
<td>$ —</td>
<td>60</td>
<td></td>
</tr>
</tbody>
</table>

*Note the NW Fee is reduced to 50% of the Year 1 NW fee due to upfront planning work. This table depicts the parallel, regressive fee structures used in the simulation. Panel a depicts the two components of the consolidated dual-fee structure (CDFS) and panel B depicts the single, and more widely used asset under management (AUM)-based fee.
Table 2  Target versus simulation statistics (10-year horizon)

<table>
<thead>
<tr>
<th>Asset class</th>
<th>Returns (annual)</th>
<th>Risk (annual)</th>
<th>Correlations (desired/simulated)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Desired</td>
<td>Simulated</td>
<td>Desired</td>
</tr>
<tr>
<td>Stock</td>
<td>5.60%</td>
<td>5.52%</td>
<td>14.30%</td>
</tr>
<tr>
<td>Bond</td>
<td>3.10%</td>
<td>3.10%</td>
<td>3.42%</td>
</tr>
<tr>
<td>Real estate</td>
<td>5.80%</td>
<td>5.79%</td>
<td>11.07%</td>
</tr>
<tr>
<td>Private equity</td>
<td>8.80%</td>
<td>8.76%</td>
<td>20.17%</td>
</tr>
<tr>
<td>Monte Carlo runs</td>
<td>10,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This table shows the target and simulated values for risk and return inputs used in the Monte Carlo simulation. Results are shown for all asset classes used in the simulation as well as the correlation of those inputs. Target values come from JP Morgan 2020 long-term capital market forecast.
differ from that of a client where the level of AUM is significantly less than their NW, for instance, as they approach or have entered the retirement phase and own real estate and/or a small business interest. The ratio of NW to AUM will serve as a proxy for the delta in the IM fee versus financial planning fee in this analysis. In other words, as the AUM decreases relative to total NW, a planning fee schedule becomes more relevant than an IM fee schedule, causing the planning fee to increase and the IM fee to decrease. To see these impacts, we investigate the variance of planning and IM fees for three clients: a young client in the accumulation phase, a near-retirement client with some remaining work years but planning for the transition to retirement, and a retired client in the spending phase. We then add three levels of the relationship that cover this spectrum of the ratio between AUM and NW: one where NW equals the level of AUM, one where NW is 1.5X the amount of AUM, and finally where NW is 2X the client’s AUM.

Our quantitative approach involves simulating the dual fee structure properties over the relevant time period for each of our clients: 40 years for the young client (accumulation phase), 20 years for the client transitioning to retirement (transition phase), and 10 years for the retired client (spending phase). Essentially, we construct our CDFS by first setting the IM fee component comparable to robo-advisors as discussed above. We then consider a first-year planning fee that when added to the IM fee, is equivalent to the typical AUM fee found in the industry. We then run a simulation to examine the behavior of the component fees over various investment periods, recalling that the planning fee is adjusted downward in year two in our initial illustration. Running the simulation over time requires some further assumptions:

- Recall a client’s total wealth is represented by their net worth (NW).
- To recognize the positive relationship between investment horizon and portfolio riskiness, the initial asset allocation of the IM portion of the client’s NW is assumed to differ among these three profiles. For the IM component of the portfolio we generate a generic stock/bond allocation of 80/20, 60/40, and 40/60 for our respective clients.
- A client’s NW is comprised of AUM assets (modeled with stocks and bonds and denoted by IM) and other assets. These other assets are modeled to be initially split evenly between real estate (RE) and private equity (PE) asset classes (representing home ownership and small business interests, respectively).
- Portfolios are rebalanced annually back to the original weights, but only for stocks and bonds. Because real estate and private equity are less liquid and likely held longer, they are not rebalanced but instead left to “drift” with their associated returns. To calculate fees, we simulate returns of the four asset classes using the J.P Morgan (JPM) 2020 market forecast values for returns, risk, and pairwise correlation between these asset classes.
- To ensure proper return co-movement, we utilize a Cholesky decomposition to generate the respective asset class returns over time. Table 2 shows the target return, risk, and correlation values for the asset classes investigated here over a 10-year period, as well as the distribution of the mean values for these statistical properties over the relevant time periods using 10,000 Monte Carlo runs.

Again, the intent of our analysis is not to generate a debate about the specific fee levels or breakpoints selected; we use what we believe to be within the range of fees generally representative of the industry. Instead, the focus of this investigation is to introduce a framework
and mechanism for truly valuing the financial advising expertise that planners provide to clients, separate from the oft-used single AUM fee that likely subsumes a financial planning effort, and observe the behavior of the component fees over time.

4. Results

In this section we report the results of our dual fee analysis both initially, and over a longer investing period. Table 3 shows the impacts of the fee breakpoints and values we depict in Table 1, as a snapshot at the initial planning point in time. Specifically, based on the simple θ structure proposed, it quantifies the annual fees clients would pay (and planners would receive) under the CDFS (NW and IM) versus the Fee-Only Structure (AUM) in those respective rows per Eqs. (6) and (7). Once again, while client profiles are literally limitless, we present three different profiles for illustration purposes: those in preretirement (accumulation), transition (approaching retirement soon), and spending (in retirement) phases. Within each of those profiles, we further analyze three different ratios of NW to IM for a total of nine potential client scenarios. As one example, Client A is assumed to be in the accumulation phase with a NW of $600,000. We then further delineate this NW as follows, recalling that AUM in the CDFS is designated as IM: NW = IM = $600,000 (column 1), NW ($600,000) = 1.5 × IM ($400,000) (column 2), and NW ($600,000) = 2 × IM ($300,000) (column 3). The portion of the NW portfolio not comprised of IM is an evenly allocated between the real estate (RE) and private equity (PE) asset classes. We contend—with support from practicing planners—that the IM effort is generally the same among all of these client profiles; however, we also contend that of these three client profiles, the planning effort is likely most complex for Clients A3, B3, and C3 as these clients have asset classes not composed of stocks and bonds that the planner must consider when developing a holistic financial plan. Along similar lines, Clients B and C have higher NW, but again we offer the possibility that their net worth can have varied compositions in terms of stocks, bonds, real estate, and private equity analogous to the ratios described for Client A. Within Clients B and C, we again contend that the planning effort increases as the AUM to NW ratio decreases.

What Table 3 demonstrates is that by assessing reasonable (and consistent) IM fee structure or θ, under a dual-fee structure and also for a fee-only (AUM) structure, ω, as in Table 1, it is possible to come up with the financial planning fee component of the CDFS for the NW portion of the portfolio. We posit this financial planning fee serves as a proxy for the value of financial advice. Specifically, the differences among the CDFS are almost negligible in relation to the all nine clients’ overall NW (see the penultimate row entitled “As % of NW” for the difference in the CDFS Fee vs. Fee-Only fee). Notably, these percentages monotonically creep upward as the sub client groups’ investable assets diminish as a fraction of net worth. That is, as NW held outside of stocks and bonds increases, so do the relative fees, at least initially. We think this is reasonable, as increased non-investment assets (assumed here to be real estate and private business interests) require additional planning efforts, all else equal, which the planner should be compensated for as part of the initial
Table 3  Initial fee example

<table>
<thead>
<tr>
<th></th>
<th>Client A (accumulation)</th>
<th>Client B (transition)</th>
<th>Client C (spending)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Net worth</td>
<td>$600k</td>
<td>$600k</td>
<td>$600k</td>
</tr>
<tr>
<td>Investable assets</td>
<td>$600k</td>
<td>$400k</td>
<td>$300k</td>
</tr>
<tr>
<td>Panel A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CDFS</td>
<td>6,150</td>
<td>$5,350</td>
<td>$4,950</td>
</tr>
<tr>
<td>Panel B</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single AUM</td>
<td>6,150</td>
<td>$4,350</td>
<td>$3,450</td>
</tr>
<tr>
<td>Panel C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fee difference, initial</td>
<td>$—</td>
<td>$1,000</td>
<td>$1,500</td>
</tr>
<tr>
<td>As % of NW</td>
<td>0.00%</td>
<td>0.17%</td>
<td>0.25%</td>
</tr>
<tr>
<td>Planning effort</td>
<td>Same</td>
<td>More</td>
<td>Same</td>
</tr>
</tbody>
</table>

This table depicts the initial fees for three different client profiles (Client A, B, and C) each with three ratios of net worth (NW) to investable assets (IA). Panel a shows the fees for the consolidated dual-fee structure (CDFS) and panel B shows the fees for the single, and more widely used asset under management (AUM)-based fee. Panel C highlights the difference between the two fee structures.
planning effort. We have summarized this position by labeling the relative planning effort required of the client with less investable assets (“Same” – columns 1, 4, and 7) compared with the respective clients with identical net worth but less investable assets (“More” – columns 3, 6, and 9). Nevertheless, these differences are only at most 25 bps of total initial net worth at the beginning of the client-advisor relationship.

Importantly, this decomposition of the overall fee into two components, one of which is comparable in function to the common, single fee-only AUM that is pervasive today, we have deductively determined the value of the planning function that occurs above and beyond the act of solely managing investments. In doing so, we now allow planners and clients more transparency in what they are providing and buying, respectively. Additionally, this approach provides planners a mechanism that can help them separate and distinguish their services such that they might address a larger number of clients’ needs. That is, planners can now price and offer more tailored services for a client who might need only IM help or perhaps only broader planning assistance. Under a single fee-only model with one AUM fee structure, clients might think they are overpaying for planning that might not be required (columns 1, 4, and 7 in Table 3). The CDFS allows planners to respond to them with the IM fee schedule in Table 1 that will compete with the so-called robo-advisors. Additionally, if clients need significant financial planning help that is broader than investment management, planners can price it “fairly” in the market using the CDFS methodology. If a client includes an asset or asset class as part of their NW, then the advisor must plan around that asset or asset class and charge for it commensurately. However, planners cannot consider assets that they do not know to exist, so clients should not pay for this effort, nor should the advisor be expected to consider such assets in the overall plan.

As many planners recognize, the financial planning effort for most clients is heavily front loaded. That is, more often than not, formulating the initial comprehensive financial plan involves collecting data about a client’s financial position, assessing a client’s goals and risk profile, analyzing a client’s financial position, and recommending potential actions to meet the client’s objectives can involve much more time and effort in the onboarding process than implementing and monitoring the plan in subsequent years. This fact motivates our next analysis, a corollary to the CDFS dual-fee structure, which is a fee feature that recognizes the lesser planning effort required in subsequent years. Specifically, we next evaluate the fee impacts assuming financial planning component fee associated with the NW fee schedule is reduced by 50% after the initial year. In other words, instead the of the 60, 50, and 40 bps fee schedule shown in Table 1, the fee schedule changes to 30, 25, and 20 bps of NW for every year beyond the initial year. The IM fee schedule does not change, which remains consistent and competitive with the robo-advisor approach. Extending this analysis over the investment lifetime of our example clients, we also aggregate the cumulative fees each client pays over their investment lifetime under the different fee approaches.

Table 4 contrasts the impacts of our two different fee approaches across time for the different client profiles described previously. Specifically, we simulate 10,000 random time series of asset class returns and compare the average overall fees under the CDFS with the AUM fee-only structure for each of our nine profiles. All values are in nominal dollars. Panel A depicts the NW and IM fees for Year 1 and Year 2 for the CDFS. Panel B depicts the same fees for the AUM model. We also aggregate the fees over the respective investment
Table 4 Fee and portfolio results over time

<table>
<thead>
<tr>
<th></th>
<th>Client A (accumulation)</th>
<th>Client B (transition)</th>
<th>Client C (spending)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Net worth</td>
<td>$600k</td>
<td>$600k</td>
<td>$600k</td>
</tr>
<tr>
<td>Investable assets</td>
<td>$600k</td>
<td>$400k</td>
<td>$300k</td>
</tr>
<tr>
<td>Stock/bond allocation</td>
<td>80/20</td>
<td>60/40</td>
<td>40/60</td>
</tr>
<tr>
<td>Investment period (years)</td>
<td>40</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>Panel A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Year 1 fee, total</td>
<td><strong>$6,433</strong></td>
<td>$5,634</td>
<td>$5,224</td>
</tr>
<tr>
<td>2) NW fee</td>
<td>$3,657</td>
<td>$3,680</td>
<td>$3,692</td>
</tr>
<tr>
<td>3) IM fee</td>
<td>$2,776</td>
<td>$1,934</td>
<td>$1,513</td>
</tr>
<tr>
<td>4) Year 2 fee, total</td>
<td><strong>$4,761</strong></td>
<td>$3,929</td>
<td>$3,501</td>
</tr>
<tr>
<td>5) NW fee</td>
<td>$1,888</td>
<td>$1,916</td>
<td>$1,929</td>
</tr>
<tr>
<td>6) IM fee</td>
<td>$2,873</td>
<td>$1,993</td>
<td>$1,552</td>
</tr>
<tr>
<td>7) Lifetime fees</td>
<td>$424,971</td>
<td>$395,972</td>
<td>$378,350</td>
</tr>
<tr>
<td>8) NW fees</td>
<td>$169,219</td>
<td>$226,115</td>
<td>$253,945</td>
</tr>
<tr>
<td>9) IM fees</td>
<td>$525,752</td>
<td>$169,061</td>
<td>$123,609</td>
</tr>
<tr>
<td>10) Terminal portfolio</td>
<td>$3,331,780</td>
<td>$5,885,393</td>
<td>$7,168,093</td>
</tr>
<tr>
<td>11) Terminal IM portfolio</td>
<td>$3,331,780</td>
<td>$1,983,897</td>
<td>$1,315,850</td>
</tr>
<tr>
<td>Panel B</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12) Year 1 fee, total</td>
<td><strong>$6,453</strong></td>
<td>$4,559</td>
<td>$3,610</td>
</tr>
<tr>
<td>13) Year 2 fee, total</td>
<td><strong>$6,672</strong></td>
<td>$4,702</td>
<td>$3,714</td>
</tr>
<tr>
<td>14) Lifetime fees</td>
<td>$543,514</td>
<td>$380,365</td>
<td>$294,398</td>
</tr>
<tr>
<td>15) Terminal portfolio</td>
<td>$3,017,940</td>
<td>$1,969,382</td>
<td>$1,452,884</td>
</tr>
</tbody>
</table>

This table depicts the fees for three different client profiles (Client A, B, and C) each with three ratios of net worth (NW) to investable assets (IA). Panel a shows the fees for the consolidated dual-fee structure (CDFS) and panel B shows the fees for the single, and more widely used asset under management (AUM)-based fee. IM = Investment Management.
period for each client group. Finally, we present the terminal portfolio values for each client group, net of fees, decomposed into the NW and IM components for the dual-fee structure. Notably, for comparison purposes, it is appropriate to compare only the “Terminal IM Portfolio” under the CDFS dual-fee structure with the “Terminal Portfolio Value” under the AUM fee-only structure when NW = IM (columns 1, 4, and 7). This is the case because we assume a client’s NW is comprised of IM (modeled with stocks and bonds) and potentially other assets. For clients represented in columns 2, 3, 5, 6, 8, and 9, these additional assets are modeled as evenly split between real estate and private equity asset classes. To the extent a client’s NW calculation includes non-appreciating real assets or property (e.g., autos, boats) instead of the real estate and private equity as we depict here, the portion of the NW portfolio not including IM is likely overstated. Accordingly, the level of the planning fee values in subsequent years after the first year are biased in the direction of assumed returns for real estate and private equity. This treatment highlights the importance of determining the appropriate NW for a client and whether (and how) those assets should be modeled to grow. Additionally, in all other client scenarios (columns 2, 3, 5, 6, 8, and 9), the CDFS assesses fees both on NW and IM, whereas the AUM only fee is assessed on only the IM. Put another way, in the AUM model, there are no fees assessed against the real estate or private equity holdings since they are not part of AUM.

Analyzing Table 4 provides opportunities for planners and clients to better grasp the potential impact of a separate financial planning and IM fee, or what we call $\theta$ in our model, against a single AUM, or $\omega$, fee structure. By examining Year 1 fees, one can see the breakdown of financial planning fees and an IM fee component compared with the single AUM fee. Recall, this illustration by design will result in the CDFS fee roughly equivalent with the single AUM model fee. This is an appropriate comparison where NW = IM (columns 1, 4, and 7). Not surprisingly, the Year 2 fees for these cases result in lower total fees due to the reduction in our illustration of the financial planning fee in subsequent years. Again, these NW fees for Year 2 and beyond are assessed at 50% of the initial fee schedule shown in Table 2. To the extent our assumptions about the non-linear form of the holistic planning function hold, this would represent a cost savings to the client and perhaps a reduction in revenue for the planner. The timing and scope of the reduction in a planning fee are clearly variable levers included in the overarching $\theta$ fee schedule that are at the disposal of planners when thinking about implementing a CDFS. The insight from the visibility of the two fee components could be a catalyst for a valuable conversation between planner and client. This distinction in fees perhaps highlights, and potentially quantifies, what some clients might perceive as the overpayment of advisors in a single AUM model. Alternatively, it could provide an opportunity for advisors to demonstrate their value above and beyond an IM function.

There are some additional observations that emerge upon further examination of Table 4. While the CDFS we illustrate necessarily results in a lower Year 2 fee for the CDFS, this is true only when NW is equal to IM. As expected, line 1 is approximately equal to line 12 in this case, while line 4 is substantially less than line 13 for columns 1, 4, and 7. In contrast, the relationship changes when the ratio of NW to IM is greater than one. When NW is greater than IM—that is, the portfolio consists of more than just stocks and bonds (AUM including mutual funds and ETFs)—fees at the end of Year 1 will no longer be
approximately the same due to the fact the planning fee ($\theta$) is based on the client’s NW, which includes assets not included in the IM portfolio (where IM and single AUM fees are charged). Consider the nature of the fees across the NW to IM spectrum for each Client A. Now the total fee (revenue) in Year 1 is greater under the CDFS than in the single AUM model. Line 1 is greater than line 12 in column 3. These observations hold across each of the other client types.

The behavior of lifetime fees when comparing various clients are another result worth analyzing. Some planners might consider the 50% discount to Year 2 and beyond NW fees as an excessive “penalty” for still having to conduct the implementation, monitoring, and recommendation functions. Again, looking at Client A—as the observations hold for the others as well—we can compare the lifetime fees between the CDFS (line 7) and AUM (line 14). Although the CDFS fee is initially larger than the AUM fee for Year 1 and then smaller for Year 2 as described above, over the 40-year investing lifetime of these particular clients, the overall CDFS fees outpace the AUM fees. Specifically, under the CDFS approach, the NW fees (line 8) increase while IM fees (line 9) decrease as the initial net worth is composed more of non-investable assets and less of stocks/bonds. Additionally, under our construct the annual fees are taken from IM (i.e., stocks/bonds) under the CDFS model, which obviously reduces their compounded value over time, generating even lower IM fees than they would if other asset classes were sold to support the fees. Thus, we find that the value of financial advice, as represented by the NW fee in line 8, increases as the proportion of IM decreases in an otherwise common-sized portfolio. This result is appropriate if one believes that the financial planning demands are higher for portfolios consisting of assets beyond stocks and bonds.

It is also insightful that for these various clients, implementing a CDFS approach in the long-run generates comparable or even increased lifetime (nominal) fees relative to an AUM only approach, despite the fact that the IM are markedly different for the latter two clients in each of our client profile categories A, B, and C. In other words, accounting for all components of NW and conducting holistic financial planning based on these components can jointly generate comparable lifetime fees even when charging market competitive IM-only fees and implementing a planning fee schedule that recognizes the reduced level of effort after creating the initial plan. Thus, despite the almost-countless possibilities for establishing an appropriate $\theta$ fee schedule, we demonstrate a simple example that could hold in a competitive market environment.

To make a caveat or limitation abundantly clear, the lifetime fee levels presented in Table 4 are reliant upon the various asset classes’ performance, which we simulate 10,000 times using the JPM market assumptions (see Table 2). Under these assumptions, the additional value of a portfolio that includes real estate and private equity becomes apparent. The difference in ending portfolio values (line 10) is stark for Client A1 (stock/bond only) and Client A3 (stock/bond/real estate/private equity). The former generates an ending portfolio worth $3.3 million net of fees versus $7.1 million for the latter. While we did not plan for or anticipate this result in designing this analysis, it is worthwhile noting the value of diversification is substantial under the return forecasts from JPM. Additionally, our simple rebalancing assumptions for stocks and bonds coupled with the no rebalancing approach to real estate and private equity obviate some of the benefits of planning that could occur with more
sophisticated approaches (e.g., see Blanchett and Kaplan, 2013), for examples of these benefits, or gamma).

Clearly planners and firms could, and should, examine adjusting all the “levers” introduced here that are suitable for their practice: different fee levels, breakpoints, and subsequent reduction of planning or NW fee component after Year 1. However, assuming similar regressive fee structures and market competition deterring any significant deviations from relatively comparable advising and IM pricing, the general results from our analysis should hold for more complex fee structures.

5. Implications for planners

The analysis of the proposed CDFS in lieu of a single AUM fee structure can prove valuable for financial advisors and clients alike. Advisors only performing IM functions under the single AUM model are getting pressure to compress their fees today with the advent of robo-advisors. This trend has led traditional asset managers to expand their services to include more holistic and customized financial planning services, often to justify their fees. The CDFS provides an avenue for advisors to price the financial planning effort separately from the investment management function, effectively solving the problem of how to structure $\theta$ fairly. Such an approach provides greater transparency and could allow clients to hold advisors more accountable for planning support likely obfuscated by the single, fee-only AUM models found at most RIA firms (Mazzoli and Nicolini 2010). Should advisors maintain some reduction of the planning fee component of the CDFS, planners could show that there is indeed a non-linear effort associated with the initial onboarding and financial planning function. Moreover, such a dual fee structure might provide two additional benefits to planners and clients. First, it allows for the planning services to be priced, and more importantly, charged separately from any IM fee allowing for a framework to charge for services—even when assets are not moved to the advisor for management, or what Kitces (2013) suggests could be growing the “slice of the pic”. Secondly, the CDFS allows for some level of financial planning complexity by more adequately compensating advisors when financial planning efforts are based on NW and not solely AUM.

A further benefit of this framework is that a CDFS could potentially reduce the conflict of interest, or at least can reduce the immediate sense of urgency faced by many advisors, to increase AUM. For example, a prudent recommendation might be for a client to use investments assets to pay down a mortgage. However, a fee-only planner might be disinclined to make such a recommendation as the planner’s compensation would be reduced. In contrast, a planner using a form of the CDFS could make the recommendation knowing that any reduction in compensation due to the reduction in AUM would be offset by the presence of a planning fee associated with the client’s NW. Thus, the planner is not forced to choose between maintaining compensation (AUM-only) or providing sound financial advice. Again, the CDFS provides a mechanism to be compensated separately for financial planning, and that such an effort is based on an essential fundamental characteristic of planning, notably understanding the NW of the client.
Implementation of a CDFS is not without its challenges. First, establishing a client’s net worth, or at least the net worth used as a base for fees, is never as straightforward as it might appear. The decision to exclude certain assets, or even to value assets where there is little liquidity, is difficult. However, we suggest the value of these required initial and in-depth conversations with clients will only result in a stronger planner-client relationship as well as a more holistic and effective financial plan. Second, the challenge of $\theta$. Setting the appropriate net worth and asset breakpoint levels for each fee schedule, and the associated fees charged at each level, will need to be determined. Those in this paper, while realistic, are admittedly a basic example for illustration purposes. While challenging to set them perfectly, it is essential for an advisor/firm to analyze what makes sense for their practice. It can only be beneficial for the firm to fully investigate the investment management (or AUM) cost within their own firm. Such an exercise will help them price their investment management operations appropriately, and such an exercise can lead to competitive—yet hopefully profitable—breakpoints and fees. The firm can then in turn move to assessing the scope and magnitude of their broader financial planning services and fees. If, and to what level, a planning fee might be reduced would also need to be accomplished. Here again, this approach, and the accompanying conversation with clients, might make an advisor more attractive to potential clients.

When a client does choose to move assets to the planner, the firm could charge a single, blended fee to ease in operationalizing the concept. The mere discussion of the component aspects will improve client-planner communication. For firms in which financial planning is their comparative advantage over investment management, the CDFS provides a viable option to provide and market those services as a standalone alternative. We also suggest the introduction of a CDFS can lead to new research opportunities. Specifically, researchers can look to better set, and perhaps optimize, both the level and breakpoints of the CDFS schedule. These two variables are just two of the levers available to planners. So, too, more research will be needed to determine what might be the appropriate reduction in the NW component fee after the first year, or initial onboarding of a client. Finally, it will be important to determine whether, and how, a CDFS might change given different client profiles (the ratio of NW to IM) beyond the nine illustrated in this introductory model. We leave these efforts for further research.

There is a myriad of compensation structures available for financial planners, and certainly no one compensation scheme is best for all situations. However, we posit that a composite, dual fee structure like that proposed here is worth investigating by all advisors/firms who perform holistic financial planning services over and above investment management services. Such an examination would provide more transparency to clients, more appropriate pricing for services provided, and perhaps even reduce conflicts of interest. We find that under reasonable return assumptions, such a fee structure can result in comparable fees and portfolio impacts as the pervasive AUM structure. All these outcomes would improve the nature of the fiduciary relationship. Perhaps such an effort can improve on the awareness of the nearly 20% of clients identified by Cheng and Kalenkoski (2018) who have no idea what for what services or advice they are paying. The benefits of pursuing such an approach likely far outweigh the costs, for planners and clients alike.
Notes

1. We use the term financial planning in lieu of financial advice to distinguish when advice might be provided incidental to the sale of a product.

2. In this analysis \( \theta \) reduces to \( \theta/2 \) for each year after the initial planning activities occur.

3. Annual advisor and trading fees are paid from stock and bond (IA) asset returns. In sum, at the end of each year of analysis, either stocks or bonds are relatively overweight. IM fees are paid from the overweight asset, and then the necessary remainder is sold and used to purchase the underweight asset to bring the stock-bond asset mix back to its original weighting scheme. Transactions or trading fees are assessed at \$9.95 \times 2 \) for a roundtrip buy-sell transaction. The remaining portion of the NW portfolio is assumed to grow at the appropriately weighted rate of private equity and real estate.

4. These mean values become even more aligned between the simulation and target values over our 20- and 40-year time periods discussed later in the study. Based on the numerical similarity between the simulated and target measures (return, risk, and pairwise correlations), we are confident the simulated returns sufficiently represent the potential future returns based on the 2020 JPM Capital Market Assumptions.

5. We depict only mean values for parsimony purposes. All distributional data are available upon request.

6. This analysis assumes planners would assess negative equity assets (e.g., a home that is underwater) as having a zero value for net worth.

References


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1. In "The Relationship between Objective Financial Knowledge, Financial Management, and Financial Self-efficacy Among African American Students" by White, Park, Watkins, McCoy, and Morris, the authors suggest _____ may be most useful to help African American students' increase their financial literacy levels.
   a. a traditional introductory course on personal finance
   b. a series of university sponsored personal finance workshops
   c. better crafted student loan seminars
   d. experiential learning opportunities

2. In White, Park, Watkins, McCoy, and Morris, which of the following is/are associated with African American college students’ financial self-efficacy?
   a. objective financial knowledge only
   b. financial management only
   c. both objective financial knowledge and financial management
   d. none of the above

3. In White, Park, Watkins, McCoy, and Morris note that higher self-efficacy affects the following:
   a. saving behavior
   b. increases in net worth
   c. healthy financial management
   d. all of the above

4. In “Enumerating the Value of Financial Advice in a Competitive Market – A dual Structure Approach and Analysis” by Fraser, Payne & Schatzle, all but which of the following do the authors suggest is a potential advantage of a Consolidated Dual-Fee Structure (CDFS)?
   a. A CDFS can improve the transparency in pricing for separate services
   b. A CDFS can quickly and completely solve the fiduciary debate
   c. A CDFS recognizes the scope of financial planning complexity
   d. A CDFS can reduce the incentive for planners to increase AUM

5. In Fraser, Payne & Schatzle, the Consolidated Dual-Fee Structure (CDFS) proposed and illustrated in the study identifies various “levers” a planner or planning firm might consider and adjust to suit their specific practice. Which of the following do the authors suggest should be considered when operationalizing a CDFS?
   a. The break points and respective fees for each of the parallel, regressive fee structures
   b. The percentage reduction in the planning fee after the initial year
   c. The size and scope (ratio) of Net Worth (NW) to Investable Assets (AUM)
   d. All of the above are important considerations when implementing a CDF
MANUSCRIPT SUBMISSIONS and STYLE

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