

Financial Advice Use and Saving for Children's College Education: A Propensity Score Matching Approach

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This study examines the effects of financial advice on college-saving decisions using data sets from the 2009 and 2012 U.S. National Financial Capability Study. After controlling for self-selection bias through propensity score matching, the findings show that receiving financial advice is associated positively with the likelihood of saving for children's college education. Other findings reveal that seeking specific types of financial advice relating to savings/investment, insurance, and tax planning is positively associated with a household's decision to allocate money for their children's postsecondary education. The ensuing discussion highlights that policies incentivizing households to seek financial advice could promote college savings and contribute to reduction in student loan dependence.

Keywords: college savings, education, financial advice, propensity score matching, student loan debt

Many U.S. households do not save for their children's college education (Lusardi, 2011). The 2018 National Financial Capability Study (NFCS) reports that the percentage of Americans saving for college education has declined from 41% in 2015 to 38% in 2018 (Lin et al., 2019). At the same time, the cost of college attendance continues to increase, often at a rate exceeding inflation (McMahon, 2012). Furthermore, state and local financial support for higher education also experienced declines in committed funding (Oliff et al., 2013). These trends in college education have placed increased pressure on U.S. households to save for their children's college education.

It is believed that the lack of college savings contributes to the heavy reliance on student loans for college education in the United States (Michaud & O'Brien, 2018). Currently, American households owe over 1.6 trillion USD in student-loan debt (Federal Reserve, 2020). There is concern that the alarming dependence on student loans to finance college education could have adverse repercussions on the U.S. economy and households (Avery & Turner, 2012). Studies also show that student debt is related negatively to the

well-being of households (Henager & Wilmarth, 2018; Kim & Chatterjee, 2019; Korankye & Kalenkoski, 2021a, 2021b; Pearson & Lee, 2022). For example, the literature documents that student debt limits the performance of positive financial behaviors, including stock and home ownership (Korankye & Guillemette, 2021; Letkiewicz & Heckman, 2018; Mountain et al., 2020). The current student loan environment has given rise to discussions surrounding the possible ways to reduce the reliance on student loans for college education. Promoting positive financial behaviors toward college savings may provide a means for the reduction of student loan dependence.

The Role of Financial Advice

To encourage saving for college education, financial advisory services may offer a solution. Navigating the complexities of the current financial environment challenges households to prioritize saving for college. This is further exacerbated by inadequate financial knowledge among U.S. households (Inderst & Ottaviani, 2010) and the prevalence of behavioral biases that may result in sub-optimal financial decisions (Collins, 2012; Fischer & Gerhardt, 2007).

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To successfully navigate the complex financial environment, households have the option to seek professional financial advice. Studies such as Bluethgen et al. (2008) and Fischer and Gerhardt (2007) have shown that financial advice can be invaluable for individuals with low levels of financial literacy. Research has also shown that financial advice is associated with positive financial behaviors, such as having a retirement savings goal, having emergency savings, and investing in financial securities (Alyousif & Kalenkoski, 2017; Fan, 2021; Kim et al., 2018; Marsden et al., 2011). Xiao and Porto (2016) have also shown that receiving financial advice, particularly those relating to investments and tax planning, is associated with financial satisfaction.

To augment the existing studies on financial advice and behavior, the current study examines the empirical relationship between financial advice and college-saving decisions of households using nationally representative data from the 2009 and 2012 U.S. NFCS. Furthermore, the study examines associations between five types of financial advice (debt counseling, savings/investments, mortgage/loan, insurance, and tax planning) and the college-saving behavior of households. This study also addresses the endogeneity issues associated with financial advice, taking into consideration the self-selection bias that arises from the differences between users and nonusers of financial advice. For instance, Collins (2012) observes that individuals with more education, a higher income, and more financial knowledge have a higher likelihood of seeking financial advice. Calcagno and Monticone (2015) support this viewpoint, stating that the demand for financial advice is low for individuals who need it the most, such as those with low levels of financial literacy. Consequently, this study estimates a propensity score analysis treatment effects model to correct for biases in model estimators due to the potential nonrandomness of the selection process. Studies such as those by Marsden et al. (2011), Kim et al. (2018), and Yao et al. (2020) estimate similar models to handle the perceived self-selection problem relating to financial advice.

Literature Review and Hypotheses

Financial Advice and Financial Behavior

Research findings on financial advice and behaviors have been mixed, with some studies reporting nega-

tive financial outcomes (Mountain, 2015; Mullainathan et al., 2012; Yao et al., 2020). However, several studies suggest that financial advice is beneficial, particularly when the interests of both the professional financial advisor and client are aligned (Finke, 2013; Pearson, 2020; Winchester & Huston, 2014). The benefits of financial advice cannot be overemphasized given the widespread nature of financial illiteracy among the populace (Lusardi & Mitchell, 2007) and the possibility of making costly financial decisions (Tokar Asaad, 2015). Prior studies have shown that financial advice is associated with financial behaviors, such as retirement savings, emergency savings, financial asset investments, cash flow management, life insurance, and goal setting and attainment (Alyousif & Kalenkoski, 2017; Finke et al., 2009; Hii et al., 2022; Hudson & Palmer, 2014; Kim et al., 2018; Marsden et al., 2011; Moreland, 2018).

Kim et al. (2018) examined the relationship between financial advice and retirement savings behavior. Using 2010 and 2013 data from the Survey of Consumer Finances, their study made the distinction between obtaining advice from a financial planner and other professionals. The results showed that using a financial planner is related positively to the decision to have a retirement savings goal. In their main empirical model, the results for using other professionals, such as brokers, bankers, and accountants did not result in any statistically significant relationships with having retirement as a savings goal.

Alyousif and Kalenkoski (2017) examined the effect of seeking financial advice on six different kinds of financial behaviors, including emergency savings, determining the amount needed for retirement, avoiding payday loans, and financial asset investments. Using the 2009 NFCS, they examined the relationship between five types of financial advice and each respective financial behavior. Their results showed that the effect of financial advice depends on the type of advice that individuals receive. For example, the authors found that seeking savings/investment advice is related positively to emergency savings, investing in financial assets, and calculating the needed amount for retirement savings, but related negatively to overindebtedness. For tax planning advice, they found a positive association with only one type of financial behavior: investment management.

Focusing on low-income households, Hudson and Palmer (2014) used data from the 2010 Survey of Consumer Finances to study the association between seeking formal financial advice and financial behaviors relating to savings and managing cash flow. The savings behaviors examined included whether the respondent owned a savings account, saved monthly, and possessed certificates of deposit. The behaviors relating to managing cash flow included whether the respondent owned a checking account, paid loans on time, and spent more than their income. Creating an index for each financial behavior, the authors show that among low-income households, receiving formal financial advice increased the likelihood of having higher savings and cash-flow management scores relative to receiving informal financial advice.

In relation to life insurance, Finke et al. (2009) observed that financial advice is related positively to having life insurance. Utilizing data from the 2004 Survey of Consumer Finances, the authors found that receiving financial advice from a financial planner or broker increased the likelihood of having adequate life insurance compared to those who did not receive professional financial advice. The results supported the notion that financial advice is a valuable intervention mechanism for encouraging households to make appropriate insurance decisions.

Some studies have linked financial advice to goal setting and attainment. For instance, Marsden et al. (2011) provided evidence showing that financial advice is related to setting long-term goals. Winchester and Huston (2014) suggested that individuals who receive expert financial advice are more likely to achieve their financial goals. When the control beliefs of individuals are studied, Winchester and Huston (2014) found that individuals with low control beliefs are less likely to make progress toward their financial goals compared to individuals with high control beliefs. However, the authors observed that the provision of expert financial advice to individuals with low control beliefs makes those individuals more likely to achieve their financial goals compared to those with high control beliefs. Although control beliefs can make some individuals less likely to achieve their goals, the results of Winchester and Huston (2014) suggested that professional financial advice makes such individuals more capable of realizing their financial goals.

Factors Associated With College Saving

Saving for children's college education is an example of a long-term financial goal that households can set and strive to achieve. However, many of the studies that document the influential role of financial advice on consumers' financial decisions and outcomes have not examined the relationship between financial advice and the decision to save for children's college education. As noted above, the literature has focused largely on retirement savings goals (Kim et al., 2018), multiple financial behaviors other than college savings (Alyousif & Kalenkoski, 2017; Hudson & Palmer, 2014; Marsden et al., 2011), and life insurance holdings (Finke et al., 2009), resulting in a literature gap.

Several studies that have examined the factors associated with college savings have not sufficiently addressed the role of financial advice (Bogan, 2015; Korankye & Kalenkoski, 2021c; Steelman & Powell, 1991). Using data from the 2015 NFCS, Korankye and Kalenkoski (2021c) examined the effects of socioeconomic, preference, and financial-knowledge factors associated with the decision of parents to save for college. They observed that several factors, including financial fragility, homeownership, health insurance ownership, risk preferences, subjective financial knowledge, and financial literacy, are associated with the decisions of parents to save for their children's education. Other studies have underscored the relevance of family composition, parental financial support, and child characteristics such as age and academic performance in promoting college savings (Bogan, 2015; Lefebvre, 2004; Steelman & Powell, 1991).

The effects of financial advice on several financial behaviors have been examined in the literature. Correspondingly, several studies have also examined the unique factors that may influence parents' decisions to save for their children's postsecondary education. However, the current literature has not well established a link between financial advice and college savings. To the authors' knowledge, this is the first study to bridge this gap in the literature while also considering selection bias issues and correcting for endogeneity.

Hypothesis

Standard economic theory posits that individuals have preferences and can select the goods and services that

maximize their satisfaction, subject to budget and other constraints. Individuals who seek financial advice may have positive attitudes toward their finances and may be more likely to include college savings in their basket of goods and services. Human capital theory suggests that households are willing to save for the college education of their children when they perceive the marginal cost of education to be less than or equal to the marginal benefit of education (Becker, 1993). The quantity–quality model of fertility (Becker, 1960) also suggests that parents derive satisfaction from child services, which can result in an increase in child quality and increased investment in education. However, studies have shown that individuals may be subject to behavioral biases, resulting in behaviors that prevent utility maximization (Pompian, 2012). To overcome the likelihood of making sub-optimal decisions due to these biases, households may engage in financial advice (Finke, 2013; Kim et al., 2018; Shapira & Venezia, 2001).

Individuals who receive financial advice may be motivated to adopt positive financial behaviors, such as saving for college, because they are more likely to recognize the benefits. Peress (2004) indicates that there are "increasing returns to information," suggesting that households who engage in the search for costly information are more likely to make utility-maximizing investment decisions, such as saving for college. Such households can make optimal allocations of resources over the life cycle (Finke, 2013; Pearson & Guillemette, 2020).

Accordingly, this study tests the hypothesis that financial advice is related positively to the decision to save for college education. Given their quest for positive financial behavior, all else being equal, those who seek financial advice are expected to exhibit higher likelihoods of saving for children's college education when compared to those who do not.

Methods

Data

This study used pooled cross-sectional data sets from the 2009 and 2012 state-by-state versions of the NFCS. The NFCS is a triennial survey conducted under the auspices of the Investor Education Foundation of the U.S. Financial Industry Regulatory Authority. The

survey collected nationally representative sample data on American households and their financial behavior, financial capabilities, and socioeconomic characteristics. A total of 28,000 and 25,509 individuals responded to the 2009 and 2012 surveys, respectively. The sample for this study was limited to respondents who reported having one or more children ($N = 18,655$).

We selected the 2009 and 2012 waves for two reasons. First, the two waves contained the complete sets of financial advice variables needed for this study. Second, we combined the two data sets to increase the sample size for the empirical analyses. Research has shown that larger samples reduce the uncertainties associated with the unknown parameters to be estimated (Westfall & Henning, 2013).

Dependent Variable

The dependent variable is college savings. This variable was obtained from the survey question: "Are you setting aside any money for your children's college education?" It was coded as 1 if the respondent answers affirmatively, 0 otherwise.

Explanatory Variables

The key explanatory variable pertains to whether the respondent has received financial advice from a financial professional. The survey question related to receiving financial advice came from the question: "In the last 5 years, have you asked for any advice from a financial professional about any of the following?" The respondent could select five types of financial advice, including debt counseling, savings/investments, mortgage/loan, insurance, and tax planning. A dummy variable is created and assigned a value of 1 if a respondent has received one of the types of financial advice, and coded 0 otherwise.

This article included race, marital status, age, educational attainment, number of children, household income, employment status, homeownership, health insurance, financial risk, subjective financial knowledge, financial literacy, and a year dummy as standard controls. Race was coded as 1 if the respondent is White and 0 otherwise. Marital status equaled 1 if the respondent is married and 0 otherwise. Age was included in the study to account for preferences associated with the different

phases of the life cycle. It was measured in six categories, with a dummy variable created for each category. The minimum and maximum age categories are 18–24 and >65, respectively. The reference category is 65 and over.

The educational attainment of the respondent was measured in four categories, including high school or less, some college, college, and postgraduate. A dummy variable was created for each category, with the reference category being high school or less. The number of children was measured as a categorical variable, with dummies created for one, two, three, and four or more children. The reference category is one child. The respondent's total household income was measured as a categorical variable, with four categories in total. These categories range from income of less than \$50,000 to income of \$150,000 or more. The reference category is income less than \$50,000. Employment status was measured as a categorical variable, with dummies created for the self-employed, employed full-time, employed part-time, homemaker, student, sick or disabled, and retired. The reference group is unemployed. Homeownership was measured as a dummy variable, coded as 1 if the respondent is a homeowner and 0 otherwise. Health insurance was measured as a dummy, coded as 1 if the respondent owns health insurance and 0 otherwise.

Financial risk preference was measured as a categorical variable, comprising low (1–3), medium (4–7), and high (8–10) willingness to take financial risks. A dummy variable was created for each category, with low-risk preference as the reference category. Subjective financial knowledge represents respondents' perception of overall financial knowledge. It was categorized as low (1–3), medium (4), and high (5–7), with a dummy created for each category. The reference group has low subjective financial knowledge.

Financial literacy, measured as a continuous variable, was obtained by adding the correct responses to five financial literacy questions. These questions centered on interest rates, inflation, bond pricing, numeracy, and risk diversification. A dummy variable for survey year, coded as 1 if the survey was conducted in 2012 and 0 if the survey was carried out in 2009, was included to account for time-specific unobserved factors.

Data Analyses

This study estimated logistic regression model for college saving as follows:

$$\Pr(Y = 1) = \Phi(\beta_0 + \beta_1 A + \beta_X X)T$$

where Y is a dichotomous outcome variable indicating the savings decision of households for children's college education, A indicates whether financial advice is received, and X is a matrix of other explanatory variables with the corresponding coefficient, β_X . The parameter of interest to be estimated is β_1 , which is the coefficient for the impact of financial advice on college-saving decisions.

Estimating the β_1 coefficient using standard regression models could bias the estimates due to the prevalence of selection bias associated with financial advice. The receipt of financial advice is not random, given the room for endogeneity issues to bias the estimates. Resolving these endogeneity issues calls for utilizing techniques, such as randomized experiments, instrumental variables, and treatment effects. We resorted to treatment effect estimators in this study because we lacked experimental data and valid instruments.

Treatment effects use observational data to estimate the causal effect of a treatment (receiving financial advice) on an outcome (college-saving decisions). This technique makes the outcome and treatment independent by conditioning on covariates. In this study, we used propensity score matching to estimate the average causal effects of financial advice on college-saving decisions in the population.

Propensity score matching estimators compare the outcomes of similar observations “with the sole exception of their treatment” (financial advice) status (StataCorp, 2015a). For instance, we could select a respondent who seeks financial advice and select a respondent of the same age who does not seek financial advice and compare their college-saving decisions. Given that this study includes many covariates, the matching estimators allow us to use a similarity measure that measures the closeness of two observations. The estimators use propensity scores to match each respondent to comparable observations, thereby eliminating the self-selection effect. The

propensity score matching algorithms include one-to-one matching with and without replacement, one-to-many matching, Mahalanobis matching, Euclidean matching, radius caliper matching, kernel matching, and stratification matching.

Propensity score matching prunes unmatched observations, and this may cause imbalance, model dependence, and bias if the wrong matching estimator is selected (King & Nielsen, 2019). For this reason, our study used one-to-one matching with replacement and employed weighted regression techniques based on propensity score weights for the empirical analysis. We also estimated the model using naïve regression, which ignores treatment effects for comparison purposes.

Propensity score matching has certain assumptions that must be satisfied. One of those is the ignorable treatment assumption, which requires the absence of hidden confounders and the inclusion of all relevant sets of explanatory variables in the estimated model (Lane et al., 2012). This assumption could be difficult to satisfy in the sense that there may be unidentified covariates that could bias the estimates (Garrido et al., 2014). The inclusion of a rich set of covariates in our model helps to minimize the adverse impact of the ignorable treatment assumption. Other important assumptions for using propensity score matching require that overlap and covariate balance are satisfied. We present the overlapping and balancing evidence under the sub-section on overlap and covariate balance. Further explanations of the treatment effect estimators could be found elsewhere (Abadie & Imbens, 2016; Gouda et al., 2016; Imai & Ratkovic, 2014).

Results

Descriptive Statistics

Table 1 provides the descriptive statistics of the dependent and explanatory variables, including *t* test results for individuals with college savings compared to individuals without college savings. The summary statistics highlight that only one-third of the full sample reported having college savings. This aligns with the notion that college savings are generally low among Americans (Lusardi, 2011). About 57% of the respondents have received some type of financial advice relating to either debt counseling, savings/investment, mortgage/loan, tax planning, or insurance. More respondents who have received some

form of financial advice have college savings (69%) compared to their counterparts without college savings (50%).

The descriptive statistics for the other explanatory variables in Table 1 show that approximately 70% of the respondents are married, 63% are White, 28% have at least a college degree, 62% are homeowners, 63% are below age 45, and 42% have one child. The *t* test results show that college education savers are different from noncollege education savers. For instance, more married households save for college (76%) than their counterparts without college savings (67%). Similarly, more college degree holders have college savings (27%) compared to those without college savings (14%).

In addition to Table 1, we show the summary statistics for the treated and control groups for the unmatched and matched samples in Table 2. The results indicate that the means for the treated and control groups in the matched sample are close but not exact. This is expected, given that matching relies on propensity scores that are weighted based on each covariate's importance (Tao et al., 2010). For instance, 76% of the married respondents in the matched sample are in the treatment group (received financial advice), while 77% of them belong to the control group (no financial advice). Similarly, 71% and 72% of Whites in the matched sample belong to the treatment and control groups, respectively.

Table 2 also shows the propensity score logit coefficient estimates for receiving advice. The results reinforce the notion that users of financial advice differ from nonusers. For example, those likely to receive financial advice tend to have a high income and more education. They are also likely to be homeowners, risk-tolerant, working, and financially literate.

Overlap Test and Covariate Balance

Both overlap and balance tests are useful for checking the unbiasedness of our estimates from the treatment effects (Drukker, 2016; StataCorp, 2015b; Stuart, 2010). The overlap assumption ensures that every subject could receive any treatment level (Drukker, 2016). Figure 1 shows a distribution of propensity scores across the control and treatment groups for checking the overlap assumption. The graph in Figure 1 shows that the

TABLE 1. Summary Statistics for the Dependent and Explanatory Variables

	Full sample ^a	Has college savings ^a	No college savings ^a
Dependent variable: college savings	0.3380		
Main explanatory variable			
Received financial advice	0.5678	0.6915	0.5047***
Other explanatory variables			
Married (Yes = 1)	0.6987	0.7645	0.6651***
Age			
18–24	0.0745	0.0807	0.0713
25–34	0.2502	0.2656	0.2424**
35–44	0.3028	0.3157	0.2962*
45–54	0.2411	0.2422	0.2406
55–64	0.0967	0.0775	0.1065***
>65	0.0347	0.0183	0.0430***
White race (Yes = 1)	0.6250	0.6055	0.6350**
Education			
High school or less	0.3330	0.2087	0.3964***
Some college	0.3822	0.3487	0.3993***
College	0.1814	0.2671	0.1376***
Postgraduate	0.1034	0.1755	0.0666***
Number of children			***
One	0.4217	0.4215	0.4218
Two	0.3435	0.3658	0.3321***
Three	0.1484	0.1443	0.1504
Four or more	0.0865	0.0684	0.0957***
Household income			
Less than \$50,000	0.4668	0.2765	0.5639***
\$50,000 to less than \$100,000	0.3386	0.3879	0.3134***
\$100,000 to less than \$150,000	0.1227	0.1930	0.0868***
\$150,000 or more	0.0719	0.1426	0.0359***
Employment status			
Self-employed	0.0827	0.0962	0.0759***
Employed full-time	0.4706	0.5661	0.4218***
Employed part-time	0.0880	0.0889	0.0874
Homemaker	0.1627	0.1316	0.1786***
Student	0.0249	0.0233	0.0258
Permanently sick or disabled	0.0354	0.0129	0.0470***
Retired	0.0515	0.0359	0.0594***
Unemployed	0.0842	0.0451	0.1041***
Homeownership (Yes = 1)	0.6208	0.7490	0.5554***
Health-insurance ownership (Yes = 1)	0.7963	0.8895	0.7487***
Financial risk preference			
Low	0.3571	0.2052	0.4346***
Medium	0.4625	0.5300	0.4280***
High	0.1804	0.2648	0.1374***
Subjective financial knowledge			
Low	0.1017	0.0462	0.1300***
Medium	0.1774	0.1299	0.2017***
High	0.7209	0.8238	0.6684***

(Continued)

TABLE 1. Summary Statistics for the Dependent and Explanatory Variables (Continued)

	Full sample ^a	Has college savings ^a	No college savings ^a
Financial literacy (0–5)	2.9847	3.2336	2.8576***
<i>N</i>	18,655	6,483	12,172

Note. Data source is the 2009 and 2012 state-by-state data set from NFCS. Survey weights are applied. The *t* tests are performed for individuals with college savings versus those without college savings. The mean values are shown, but not the standard errors. Year dummy is included, but not shown.

p* < .05. *p* < .01. ****p* < .001.

^aAll values are percents, except indicated otherwise.

degree of overlap is satisfactory for almost every treated individual because there is a comparison person with a similar propensity score.

We also checked covariate balance using standardized mean differences (% bias) (Garrido et al., 2014) and reported the results in Table 2 for the matched and unmatched samples. A standardized mean difference greater than 10% may suggest an imbalance (Benedetto et al., 2018). Based on this criterion, we conclude that the matched sample indicates good balance because the standardized mean differences in our matched sample fall below 10%.

Generally, the results suggest that the potential outcomes are independent of the treatment and that the treatment is randomly assigned. Thus, we can contrast the treatment sample with the control sample, allowing causal inferences. The treatment group represents those who received financial advice, while the control group represents those who did not receive financial advice.

Regression Results

Table 3 provides the logistic regression estimates of college savings on financial advice for the matched and unmatched samples. While the analyses focus on the matched sample, the results from the unmatched sample are shown for comparison purposes. Accounting for self-selection into seeking financial advice, Table 3 shows that those who receive financial advice have 36.06% (*p* < .001) higher odds of saving for college education compared to those who do not receive advice. Without accounting for self-selection bias, the results indicate that the odds of saving for a college education are 40.93% (*p* < .001) greater for those who receive advice than for those who do not. The results from a robustness check using alternative matching algorithms in Table 4

also show that respondents who receive financial advice have higher odds of saving for college education than those who do not receive advice. The findings indicate that financial advice positively impacts the college-saving decisions of American households.

In addition to the results for financial advice, control variables such as age, educational attainment, number of children, household income, homeownership, financial risk preferences, and subjective financial knowledge show statistically significant relationships with college-saving decisions. For instance, the odds of saving for college among American adults aged 18–24, 25–34, 35–44, 45–54, and 55–64 years are 5.71 (*p* < .001), 3.76 (*p* < .001), 3.14 (*p* < .001), 2.55 (*p* < .001), and 1.45 (*p* < .01) times that of adults aged 65 and over, respectively. This suggests that the effect of age on college savings appears curvilinear, emphasizing life cycle effects.

The results for educational attainment show that the odds of saving for college among those whose educational status is some college, college, and postgraduate are 1.33 (*p* < .001), 2.09 (*p* < .001), and 2.42 (*p* < .001) times that of those with high school or less education, respectively. Thus, households with more education appear to understand the benefits of postsecondary education and are willing to save for their children's education compared to those with less education.

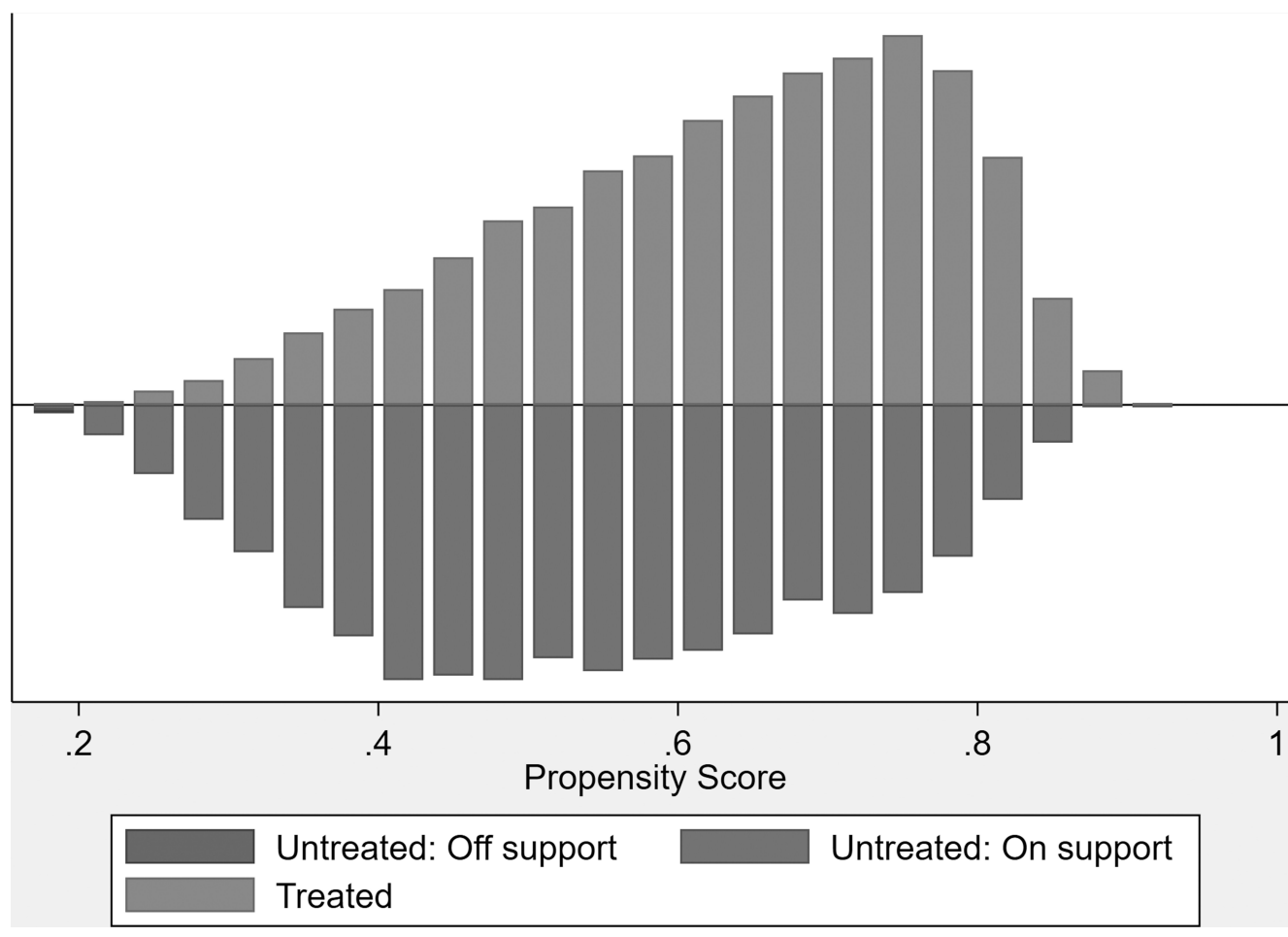
Regarding the number of children, our results show that the odds of saving for college among respondents with three and four or more children are 0.85 (*p* < .01) and 0.64 (*p* < .001) times that of those with one child, respectively. This suggests that households with more children may have more financial constraints, which could limit their ability to save for their children's education.

TABLE 2. Summary Statistics of Matched and Unmatched Samples—Propensity Score Matching

	Unmatched sample ^a			Propensity score logit coefficients	Matched sample ^a		
	Advice	No advice	% bias		Advice	No advice	% bias
<i>P</i> score	0.6351	0.5370	66.7		0.6351	0.6351	0.0
Married (Yes = 1)	0.7591	0.6553	23.0	0.1110**	0.7591	0.7691	-2.2
Age							
18–24	0.0522	0.0786	-10.7		0.0522	0.0504	0.7
25–34	0.2370	0.2425	-1.3	0.1393	0.2370	0.2264	2.5
35–44	0.3105	0.3181	-1.6	0.0830	0.3105	0.3099	0.1
45–54	0.2565	0.2426	3.2	-1.544	0.2565	0.2679	-2.6
55–64	0.1051	0.0880	5.8	-1.605	0.1051	0.1081	-1.0
>65	0.0387	0.0303	4.6	-0.776	0.0387	0.0373	0.8
White race (Yes = 1)	0.7123	0.6929	4.3	-0.0393	0.7123	0.7188	-1.4
Education							
High school or less	0.2140	0.3786	-36.7		0.2140	0.2148	-2
Some college	0.3220	0.3453	-4.9	0.2573***	0.3220	0.3232	-2
College	0.2919	0.1922	23.4	0.4865***	0.2919	0.2984	-1.5
Postgraduate	0.1721	0.0839	26.6	0.5848***	0.1721	0.1636	2.6
Number of children							
One	0.4149	0.4193	-9		0.4149	0.4136	0.3
Two	0.3547	0.3409	2.9	-0.0111	0.3547	0.3676	-2.7
Three	0.1485	0.1497	-3	0.0180	0.1485	0.1439	1.3
Four or more	0.0819	0.0901	-2.9	0.0395	0.0819	0.0749	2.5
Household income							
Less than \$50k	0.3559	0.5578	-41.4		0.3559	0.3475	1.7
\$50k to < \$100k	0.3788	0.3021	16.2	0.2106***	0.3788	0.3878	-1.9
\$100k to < \$150k	0.1568	0.0959	18.4	0.2134***	0.1568	0.1583	-0.5
\$150k or more	0.1086	0.0443	24.4	0.4711***	0.1086	0.1064	0.8
Employment status							
Self-employed	0.0980	0.0643	12.4	0.5469***	0.0980	0.0866	4.2
Employed full-time	0.5168	0.4253	18.4	0.2148**	0.5168	0.5399	-4.7
Employed part-time	0.0876	0.0922	-1.6	0.2688***	0.0876	0.0893	0.6
Homemaker	0.1413	0.1966	-14.8	0.0892	0.1413	0.1349	1.7
Student	0.0204	0.0273	-4.6	0.1109	0.0204	0.0200	0.2
Permanently sick/disabled	0.0260	0.0431	-9.3	0.1633	0.0260	0.0259	0.0
Retired	0.0534	0.0472	2.8	0.2199*	0.0534	0.0531	0.1
Unemployed	0.0565	0.1041	-17.6		0.0565	0.0503	2.3
Homeownership (Yes = 1)	0.7260	0.5551	36.2	0.3177***	0.7260	0.7337	-1.6
Health insurance (Yes = 1)	0.8588	0.7548	26.6	0.2195***	0.8588	0.8636	-1.2
Financial risk preference							
Low	0.2945	0.4393	-30.4		0.2945	0.3058	-2.4
Medium	0.5067	0.4300	14.4	0.2829***	0.5067	0.5254	-9
High	0.1988	0.1306	18.5	0.4792***	0.1988	0.1831	4.2
Subjective fin. knowledge							
Low	0.0748	0.1346	-19.6		0.0748	0.0716	1.1
Medium	0.1506	0.2011	-13.3	0.0768	0.1506	0.1452	1.4
High	0.7746	0.6643	24.7	0.2434***	0.7746	0.7832	-1.9
Financial literacy (0–5)	3.3428	2.7733	41.6	0.1372***	3.3428	3.3825	-2.9
<i>N</i>	11,107	7,548			4,208	4,265	

p* < .05. *p* < .01. ****p* < .001.^aAll values are percents, except indicated otherwise.

Figure 1. Distribution of propensity scores across treatment and control groups.



The results for household income show a positive association with college savings. Specifically, the odds of saving for college among those with household incomes from \$50,000 to less than \$100,000, \$100,000 to less than \$150,000, and \$150,000 or more are 1.57 ($p < .001$), 2.20 ($p < .001$), and 3.64 ($p < .001$) times that of those with household income below \$50,000. This indicates that households with low incomes are financially disadvantaged, making it less likely for them to save for college.

For respondents with medium and high financial risk preferences, their odds of saving for college are 1.76 ($p < .001$) and 2.00 ($p < .001$) times that of their counterparts with low-risk preferences, respectively. Finally, the odds of saving for college among respondents with medium and high subjective financial knowledge are, respectively, 1.33 ($p < .01$) and 1.79 ($p < .001$) times that of those

with low subjective financial knowledge. This suggests that risk preferences and subjective financial knowledge matter in a household's decision to save or not to save for college.

Additional Analyses on Five Types of Financial Advice

The literature has shown that the effect of financial advice on financial behavior depends on the type of advice respondents receive (Alyousif & Kalenkoski, 2017). Fortunately, the data sets we utilize in this study provide information on five types of financial advice respondents received. These types include debt counseling, savings or investments, mortgage/loan, insurance, and tax planning. We take advantage of this opportunity and provide further insight into the effect of financial advice on college-saving decisions by performing sensitivity analyses using the matched sample for financial advice.

TABLE 3. Logistic Regression Estimates of College Savings on Financial Advice

	Unmatched sample	Matched sample
Key explanatory/ treatment variable		
Received financial advice	1.4093*** (0.0520)	1.3606*** (0.0504)
Other explanatory variables		
Married (Yes = 1)	0.9309 (0.0419)	0.9967 (0.0463)
Age (versus >65)		
18–24	8.0361*** (1.1721)	5.7080*** (0.9148)
25–34	4.2593*** (0.5585)	3.7609*** (0.5481)
35–44	3.3964*** (0.4367)	3.1391*** (0.4508)
45–54	2.8656*** (0.3657)	2.5525*** (0.3637)
55–64	1.7389*** (0.2231)	1.4520** (0.2060)
White race (Yes = 1)	0.8750** (0.0342)	0.9328 (0.0371)
Education (versus High school or less)		
Some college	1.2181*** (0.0595)	1.3270*** (0.0656)
College	1.8297*** (0.0964)	2.0899*** (0.1110)
Postgraduate	2.0266*** (0.1293)	2.4208*** (0.1582)
Children (versus one)		
Two	0.9684 (0.0385)	0.9536 (0.0377)
Three	0.8550** (0.0453)	0.8511** (0.0457)
Four or more	0.6883*** (0.0475)	0.6429*** (0.0459)
Household income (versus < \$50,000)		
\$50k to < \$100k	1.7589*** (0.0817)	1.5716*** (0.0740)
\$100k to < \$150k	2.8437*** (0.1746)	2.1976*** (0.1350)
\$150k or more	4.5985*** (0.3449)	3.6453*** (0.2728)
Employment status (versus Unemployed)		
Self-employed	1.3261** (0.1238)	1.2471* (0.1213)
Full-time	1.1828* (0.0928)	1.0945 (0.0875)
Part-time	1.3568** (0.1253)	1.2636* (0.1186)
Homemaker	1.1620 (0.0997)	1.1733 (0.1024)
Student	1.2725 (0.1707)	1.5004** (0.1996)
Permanently sick or disabled	0.6780** (0.1007)	0.4763*** (0.0795)
Retired	1.1562 (0.1431)	0.9852 (0.1295)
Homeownership (Yes = 1)	1.5745*** (0.0694)	1.6074*** (0.0724)
Health-insurance ownership (Yes = 1)	1.4321*** (0.0781)	1.4089*** (0.0789)
Financial risk preference (versus low)		
Medium	1.6794*** (0.0693)	1.7641*** (0.0725)
High	2.0804*** (0.1098)	2.0026*** (0.1073)
Subjective financial knowledge (versus low)		
Medium	1.3756*** (0.1108)	1.3261** (0.1081)
High	1.9114*** (0.1370)	1.7913*** (0.1300)
Financial literacy (0–5)	0.9793 (0.0145)	1.0211 (0.0153)
<i>N</i>	18,655	8,473

Note. Data source is the 2019 and 2012 state-by-state data set from the U.S. National Financial Capability Study.

* $p < .05$. ** $p < .01$. *** $p < .001$. Year dummy is included in each model.

The results shown in Table 5 reveal that debt counseling and mortgage/loan advice are the only types of financial advice that do not have statistically significant relationships with college savings. All the other types of financial advice show positive and statistically significant relationships with college savings when controlling for the self-selec-

tion of seeking financial advice, demographic factors, and socioeconomic covariates. Specifically, receiving savings/investment advice is associated with 94.94% higher odds of saving for college compared to not receiving savings/investment advice. Seeking insurance advice increases the odds of saving for college by 41.29% com-

TABLE 4. Logistic Regression Estimates of College Savings on Financial Advice—Robustness Check with Other Propensity Score Matching Algorithms

	Matching method		
	Kernel matching	One-to-many (4) matching	Radius caliper matching (0.2 × <i>SD</i> of the propensity score)
Treatment variable			
Financial advice	1.4095* (0.0519)	1.4486* (0.0538)	1.4509* (0.0540)
<i>N</i>	18,655	16,751	8,435

Note. Each model includes marital status, age, White, educational attainment, employment status, number of children, household income, homeownership, health insurance ownership, risk preferences, subjective financial knowledge, financial literacy, and year dummy as controls. Odds ratios are shown alongside standard errors, which are in parenthesis.

**p* < .001.

pared to not receiving such advice. Respondents who report receiving tax planning advice have 70.23% greater odds of having college savings relative to those who do not receive such type of advice. These findings lend credence to Alyousif and Kalenkoski (2017), indicating that it is important to consider the type of advice received when examining the effect of financial advice on financial behaviors such as college savings. Those who seek savings/investment advice may be financially sophisticated and possess more financial resources, allowing them to set some money aside for their children's education. Those who seek tax planning advice may be more aware of the tax benefits associated with saving for children's education through investment vehicles, such as 529 savings plans. Households seeking insurance advice may have risk management motives, which could prompt the need to save for children's education.

Discussion, Limitations, and Implications

Discussion

Our study aims to fill an important gap in the literature by examining whether financial advice use is associated with the college-saving decisions of American households using pooled cross-sectional data sets from the 2009 and 2012 NFCS. The analyses account for self-selection into seeking financial advice using the one-to-one with replacement method of propensity score matching. The main finding of this study is that the average treatment effect of financial advice on the population is positive, suggesting that financial advice may help households develop positive attitudes toward college savings. When the type of advice is considered through additional analyses, the results show that

TABLE 5. Logistic Regression Estimates of College Savings on Types of Financial Advice—Sensitivity Analyses

Sensitivity model	Treatment variable/type of financial advice	Odds ratio (standard error)
1	Debt counseling	0.9738 (0.0613)
2	Savings or investments	1.9494* (0.0849)
3	Taking out a mortgage or a loan	1.0417 (0.0460)
4	Insurance of any type	1.4129* (0.0571)
5	Tax planning	1.7023* (0.0866)

Note. Data source is the 2009 and 2012 state-by-state data set from the U.S. National Financial Capability Study. *N* = 8,473. Each sensitivity model includes marital status, age, White, educational attainment, employment status, number of children, household income, homeownership, health insurance ownership, risk preferences, subjective financial knowledge, financial literacy, and year dummy as controls. The sensitivity analyses focus on the matched sample.

**p* < .001.

receiving advice relating to savings/investment, insurance, or tax planning is positively associated with the odds of saving for postsecondary education.

The findings support our hypothesis that financial advice may positively impact the college-saving decisions of households. Receiving the right professional financial

advice could help households optimize their financial resources and manage behavioral biases, which can lead to sub-optimal financial decisions. Our results suggest that the decision to save for college education is more likely to be implemented when households seek professional financial advice.

Compared to the literature, our results do not align with those of Mountain (2015) and Yao et al. (2020) who ascertain that financial advice does not always lead to positive financial outcomes. However, our findings reinforce those of several existing studies, highlighting the need for financial advisory services to assist individuals in cultivating appropriate financial behaviors. For instance, our findings are consistent with related studies such as Alyousif and Kalenkoski (2017), Fan (2021), Kim et al. (2018), Marsden et al. (2011), and Winchester and Huston (2014), who observe that financial advice is associated positively with several outcomes, including financial asset investments, retirement savings, and setting and attaining financial goals. The findings from the current study lend support to these studies that households are more likely to set and attain a long-term financial goal when they seek professional financial advice. More specifically, our study demonstrates that professional financial advice motivates households to include college savings in their basket of financial goals.

Limitations

Despite the findings and contributions, our study has limitations to note. The NFCS does not provide data on the characteristics of the child, such as age, innate abilities, and whether the child is a biological child. Prior studies have shown that child characteristics influence the decision of parents to have college savings for children (Steelman & Powell, 1991). Data relating to the actual amount saved for college also are not available in the NFCS. To enhance our understanding of the effect of financial advice on college savings, future studies may reexamine the current study's findings considering the aforementioned.

Even when considering these limitations, the current study enhances our understanding of the role of financial advice in promoting savings for college education. The findings suggest that households who seek financial advice have greater odds of having college savings for their children

compared to those who do not. Thus, our research adds to the literature by showing that financial advice could be an invaluable intervention mechanism to encourage households to save for college.

Implications for Practitioners

The results of the current study suggest the need for stakeholders, including financial educators, the federal government, and state agencies, to encourage individuals to seek financial advice. Individuals and households who seek financial advice could receive support in setting appropriate financial goals and devising strategies to achieve them. Given the current burden of student debt on households and the economy (Deller & Parr, 2021; Elliott & Lewis, 2015; Korankye & Kalenkoski, 2021a; Mountain et al., 2020), the findings suggest that deliberate policies that encourage households to save for college could be a step in the right direction. One such policy could be allowing financial advisory fees to be a tax-deductible expense on federal and state tax returns for all eligible taxpayers. Such a policy could encourage more households to seek financial advice and to adopt positive financial behaviors, including saving for children's college education.

Other findings also highlight the importance for financial practitioners and educators to prompt households to save for college while considering factors such as income, educational attainment, financial risk preferences, and subjective financial knowledge. Households characterized by low income, low education (high school or less), risk aversion, or low subjective financial knowledge could be identified to provide appropriate intervention strategies.

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