Executive Summary

Examining Financial Education:
How Literacy and Interventions Affect Financial Behaviors

NATIONAL ENDOWMENT FOR FINANCIAL EDUCATION

Partnering for Financial Well-Being

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About this Executive Summary

This summary presents key findings from The Effect of Financial Literacy and Financial Education on Downstream Financial Behaviors *by John G. Lynch, Jr., Ph.D., Leeds School of Business, University of Colorado-Boulder; Daniel Fernandes, Ph.D., Rotterdam School of Management, Erasmus University; and Richard G. Netemeyer, Ph.D., McIntire School of Commerce, University of Virginia.*

The full report, available at NEFE.org, was prepared in June 2013 to document findings of a systematic meta-analysis and new research funded by the National Endowment for Financial Education® (NEFE®) to explore what past studies indicate regarding the link between financial education, financial literacy, and financial behaviors.

What is Financial Literacy?

Financial Literacy is a basic understanding of personal finance with respect to borrowing, saving, debt, and investment, as defined by the researchers for this project.

What is Financial Education?

Financial education—referred to as an "intervention" in this research—covers a broad range of activities, from something as simple as information printed in a pamphlet to a workshop or extended course.

A Groundbreaking Scientific Review

Few people question the need for consumer savvy in today's world of personal finance. What does spark debate is how to build financial literacy in ways that lead to healthier financial behaviors.

Organizations ranging from high schools to government agencies make significant investments to improve the financial capability of individuals. In an era of limited educational funding, the investment in financial literacy is seen by some as taking away resources from other programs and subject areas. This debate is magnified due to the lack of agreement and evidence about what works.

While policymakers generally accept that financial literacy drives better decision making, findings vary widely when researchers investigate the strength and dynamics of the relationship between what people know with regard to personal finance and how that knowledge affects their financial behaviors.

To better understand these discrepancies and to extract higher-order findings from the sum results of available research to date, the National Endowment for Financial Education® (NEFE®) funded a meta-analysis—a scientifically robust review of research—exploring the link between financial education, literacy, and behaviors.

"What is the connection between financial education, financial literacy, and the choices that people make about their finances?"

Key Findings

The combined results of the meta-analysis show that:

> **The Amount and Timing of Financial Education Matters**
When it comes to attempts at building financial literacy to shape behavior, education that closely precedes a financial decision has more impact.

> **Behaviors and Literacy as Measured to Date Are Weakly Linked**
Educational interventions and financial literacy as measured to date are only weakly linked to behaviors. Moreover, in studies that measured financial education effects on both knowledge gains and behavior, effects of financial education delivered through interventions were much less than education in comparable domains, such as workplace education or career counseling.

> **Findings from Past Investigations Merit Revisiting**
Different types of studies have yielded such disparate results—more varied than science would predict—that we must question to what extent those differences stem from widely varying research designs and analyses.

KEY FINDING 1

The Amount and Timing of Financial Education Matters

Research shows that the impact of education on behavior varies with how much education people receive and when they get it in relation to relevant decisions or behaviors. Large interventions with many hours have larger effects than short interventions—at least if behavior is measured soon after the intervention.

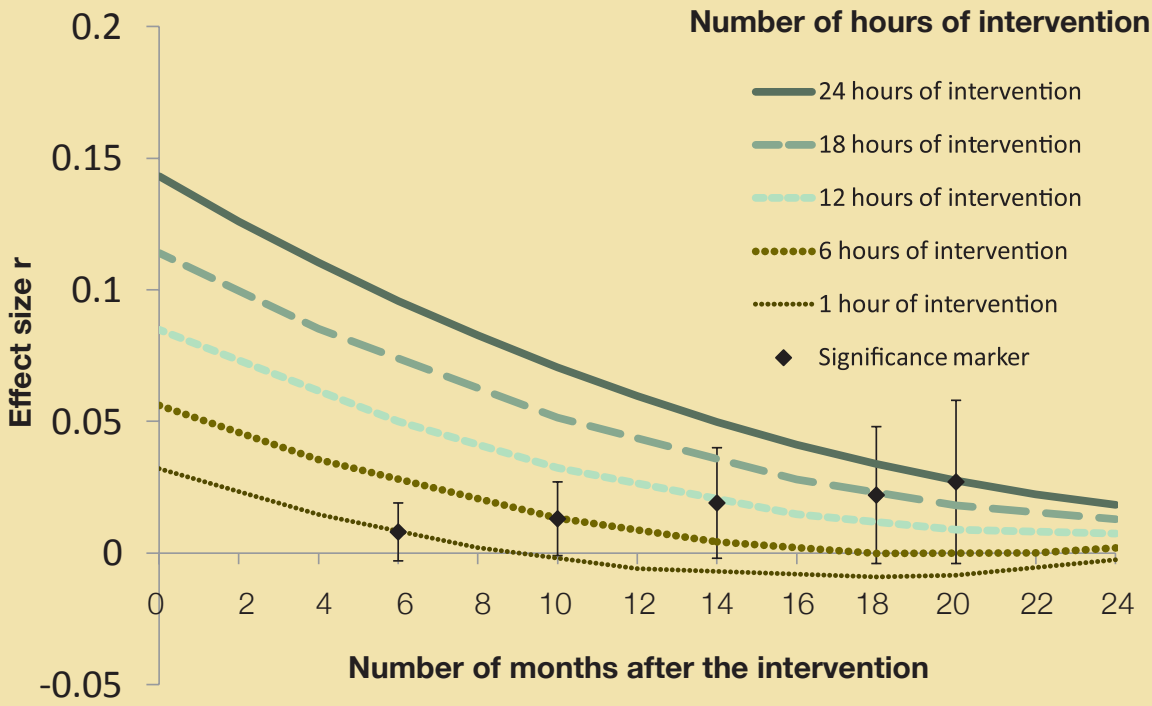
Effects on behavior from all types of interventions are larger when measured right after the intervention than after a delay. However, that connection is not a straight-line, one-to-one relationship: The data show eventual diminishing returns as time elapses.

Critically, that decay is stronger over time for larger interventions, averaging across studies. After 20 months or longer, there is no difference in the effects of a one-hour intervention or a multi-hour intervention—even a 24-hour intervention has no significant effects on behavior at such a delay.

These variables interplay in ways both cautionary and promising. Small, timely interventions can equal the impact of much more instruction delivered well before a financial decision. Similarly, longer interventions have larger impacts when they occur closer to financial decisions.

This raises the challenge for financial educators of how to deliver education close to the point in time when those receiving the education might act on it.

The Case for Timely Financial Education



How can effects drop below zero?

Findings indicate that timely and relevant interventions throughout a person's lifetime are most effective. The bottom curve for one-hour interventions shows that such interventions have no statistically measurable effect after six months. The curve appears to pass below zero, but is not significantly different from zero at any point after six months.

Making the Most of Interventions

Education affects behavior, but the impact diminishes over time. Small interventions timed close to a financial decision have modest impact for a short amount of time. However, as demonstrated in the above chart, the longer the intervention and the closer it is to a financial decision, the more effective it becomes.

A question for consideration: Based on these data that illustrate the impact of timeliness and relevance, should financial education take place throughout life and always link to an upcoming financial decision?

KEY FINDING 2

Behaviors and Literacy as Measured to Date Are Only Slightly Linked

The connection between financial literacy and positive behaviors—a measure known as effect size—ranged from 0.009 percent for studies with experimental designs to 0.153 percent for studies that looked for correlations using basic statistics. That means that only about 0.1 percent of the variability in whether people perform healthy or unhealthy financial behaviors is explained by whether or not they were given a financial literacy intervention.

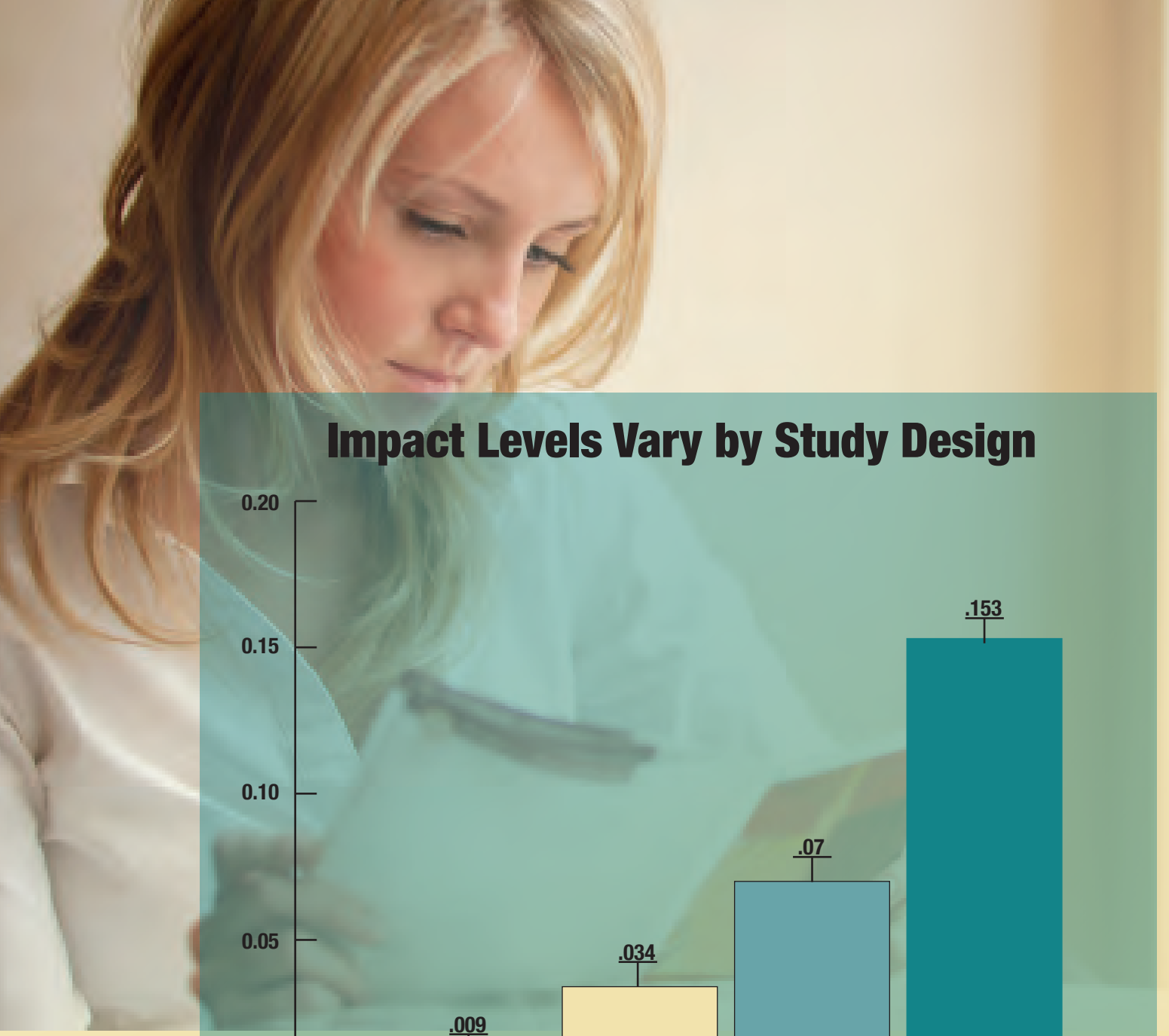
To put those measures in context: Scientists regard an effect size below 0.1 percent as small. Effect sizes are regarded as large at 0.4 percent and above.

Regarded as a group, studies exploring the effects of interventions ranging from high school courses to getting information in a newsletter, report especially mild results, accounting for only 0.1 percent of differences in later financial behaviors. However, the strongest findings among these—those that involved high school instruction—report an average effect size of 0.043 percent. In all kinds of studies, effects were slightly lower for studies of low-income consumers in relation to the general population.

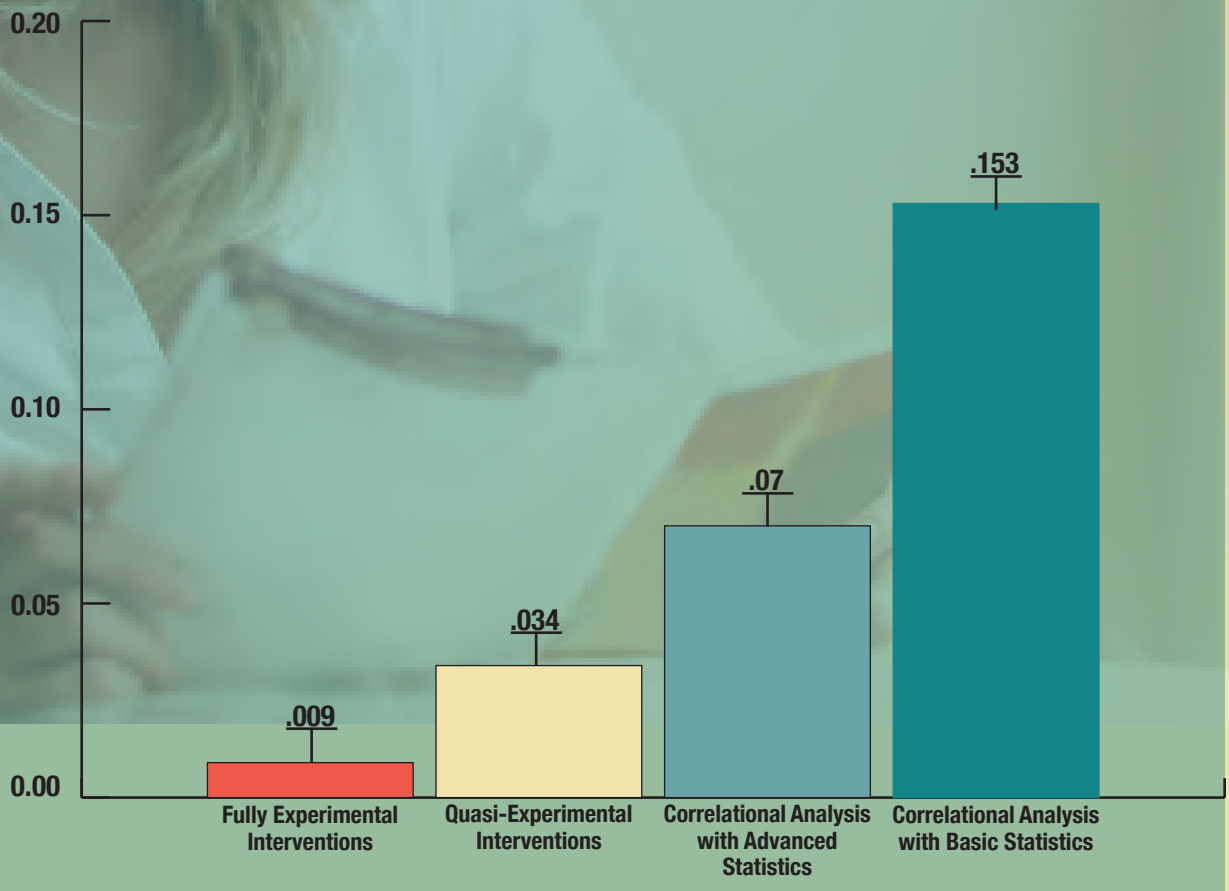
Making Education More Effective

If literacy does shape behavior, education as delivered to date may be missing the target on knowledge that drives decision making. Education interventions in workplace or career counseling settings account for more than 5 percent of variation in related downstream knowledge. In contrast, financial education interventions account for only 0.44 percent of variation in later measures of financial literacy.

A question for consideration: Should more research of financial education focus on the examination of pedagogical best practices and the means for implementing them to raise the effectiveness of intervention-based education?



Impact Levels Vary by Study Design



Past research shows only a slight link between financial literacy and behavior for all types of inquiries. The least rigorous studies — correlational studies with basic statistics — report the strongest associations between literacy and behavior, but at an average level still statistically very modest. True experimental interventions, the gold standard of scientific research, report the least impact.

KEY FINDING 3

Past Investigations Merit Revisiting

A third finding of the meta-analysis is that past studies may not have produced scientifically robust results. A number of phenomena point to this possibility.

The four types of studies vary in the strengths of their findings more than science would predict. Also, the impact of education shown in this analysis is lower than financial education in comparable domains, such as workplace education or career counseling.

Many things could explain these findings. The lifetime of education implied within correlational studies, for example, may have more impact than what is seen in single-dose interventions, just as 20 years of advertising has more effect than exposure to a single billboard.

The studies included in the meta-analysis were divided into four methodological categories:

Fully Experimental Interventions Studies that were the most scientifically robust and included control groups and/or random testing	**Quasi-Experimental Interventions** Studies that investigated effects on subjects without comparison to control groups (e.g., may be pre-post or have nonequivalent control groups)
Correlational Analysis with Advanced Statistics Studies wherein data were analyzed using advanced statistical methods	**Correlational Analysis with Basic Statistics** Studies wherein data were analyzed using basic (less rigorous) statistical methods

New Research: Financial Traits as Confounding Variables

Another explanation for inconsistent findings in the current analysis is that past research failed to factor in confounding variables that are correlated with both measured financial literacy and the financial behaviors statistically linked to financial literacy. In these studies, financial literacy is measured by percent correct in some measure of objective financial knowledge (e.g., 80 percent of the questions were answered correctly).

In fact, three new studies conducted by the researchers after the meta-analysis suggest that finance-relevant traits—such as propensity to plan for the use of money, or confidence in one's ability to find relevant financial information—are wild cards not properly accounted for in past investigations.

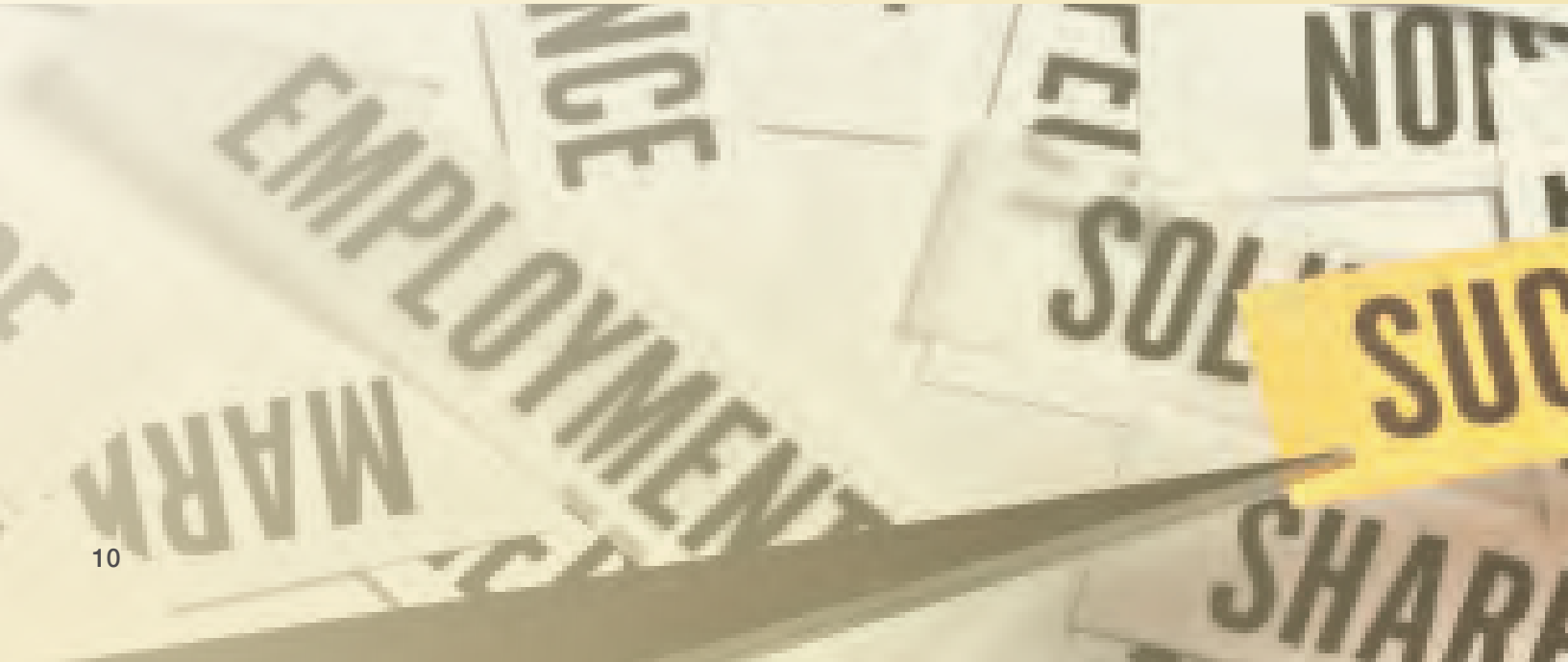
- Researchers conducted three new studies, each controlling for demographic differences, engaging 1,152 participants.
- The studies included tools for measuring financial literacy as well as finance-related traits, examining links with behaviors matched to past studies.
- Using the same analysis methods used by researchers in prior studies, this new inquiry showed significant links between behavior and financial literacy.
- However, when the meta-analysis researchers re-examined the math, factoring in financial traits, links between literacy and behavior became statistically insignificant in most cases.

These new studies don't articulate the exact relationship between literacy, traits, and behavior, but clearly show that past researchers may have omitted important variables, undermining the validity of their results.

RESEARCH IMPLICATIONS

> Implications for Future Research

- Researchers should establish shared standards for reporting on financial education and measuring changes in financial literacy, clearly identifying changes in knowledge, behavior, or both.
- Published findings should include information about the content and context of financial interventions used within the studies (e.g., type of training teachers received in the subject, length of program, type of program, educational materials used).
- It is important to report and examine the scope and content of teacher training as another variable that may affect the impact of interventions on literacy and behavior.
- Recognizing that teaching and learning take many forms, research should explore which interventions work for which populations and in what contexts.
- Recognizing that marketing can influence behavior (e.g., ads that promote credit card use or saving for retirement), researchers should explore how various marketing strategies and campaigns affect financial behavior and financial literacy.



EDUCATION IMPLICATIONS

> Implications for Financial Educators

- Because timing matters, it is important that educators identify teachable moments for their learners when they can deliver timely and relevant information.
- Financial educators need to explore ways in which they can learn from those (such as workplace and career educators) who have been able to demonstrate a greater impact on later behaviors.
- Given the considerable challenges in financial education, educators must share effective interventions and best practices with key stakeholders in the field.
- Research findings should be used to help guide appropriate changes in the delivery of effective financial education.

About the Research

> What is Systematic Meta-Analysis?

For this investigation, experts from three universities used meta-analysis to extract and compare findings from 201 studies that had engaged 585,168 participants. They drew data from published results and solicited additional information from study authors as needed.

As a research tool, systematic meta-analysis is no small undertaking. To minimize potential bias, it requires clear rules for which studies are included or omitted. Researchers then create a new comprehensive data set by recoding data in the original studies to homogenize variables and scales.

> What Does Meta-Analysis Produce?

Unlike a literature review, which relies on qualitative interpretation of findings, researchers use the homogenized data of meta-analysis to extract a unifying metric: effect size, which is an abstract measure indicating the magnitude and direction of a finding relative to findings in other studies.

In this investigation, meta-analysis allowed researchers to compare the strength of findings across studies with different designs and different kinds of statistical analyses, all exploring the same core question: What is the connection between financial education, financial literacy, and the choices that people make about their finances?

> Meta-Analysis as Broader Inquiry

Because meta-analysis creates a single measure for comparing studies, scientists also use it to detect problems in a body of research. This meta-analysis showed that different study designs and methodologies produced magnitudes of findings far more varied than science would predict, suggesting inconsistencies with past work.

> > > Scope of this Meta-Analysis

15

Studies that documented behavior after participants were randomly assigned to groups that did or did not receive educational interventions

75

Studies that also examined behaviors following education, but without randomization and/or control groups

24

Studies exploring links between behaviors and existing financial literacy, using advanced statistics to help rule out problems in study design

87

Studies using basic statistics and less scientifically robust methodologies, such that the meta-analysis researchers could draw fewer conclusions about problems that may have compromised results

201 Studies

In these studies, “education” ranged from high school coursework to information in a newsletter. For all studies, behaviors included saving, planning for retirement, and whether or not participants took steps to avoid paying unnecessary fees on credit cards and checking accounts.

National Endowment for Financial Education

Through research studies, conferences, symposia, think tanks, and other activities that we sponsor, the National Endowment for Financial Education (NEFE) encourages better understanding of personal finance by identifying and promoting in-depth exploration of financial issues of concern to the field.

NEFE is the leading private nonprofit 501(c)(3) national foundation dedicated to inspiring empowered financial decision making for individuals and families through every stage of life. With more than a quarter century of dedication to the public good, NEFE continues its legacy of service and commitment to providing financial education and practical information to help people achieve financial capability at all financial levels.