



MILITARY FINANCIAL READINESS

Measuring the Effectiveness of Financial
Literacy Education and Training Across
the Department of Defense

This material is based on work supported by a gratuitous service agreement between the USAA Educational Foundation (USAAEF) and the Department of Defense (DoD) Office of Financial Readiness (FINRED), developed in collaboration with a team based at the University of Georgia. The views expressed in this paper do not necessarily represent the views of the Department of Defense or the United States.

The views of sources utilized in this study are solely their own and do not represent the official policy or position of DoD or the U.S. government.



UNIVERSITY OF
GEORGIA

Suggested Citation

O'Neal, C. W., Lucier-Greer, M., Saxey, M. T., Okamoto, R. M., & Murdie, A. S. (2024). *Measuring the Effectiveness of Financial Literacy Education and Training Across the Department of Defense*. University of Georgia.

TABLE OF CONTENTS

2	Chapter 1 — INTRODUCTION
6	Chapter 2 — SYNTHESIS OF THE SCHOLARLY LITERATURE ON FINANCIAL WELL-BEING
18	Chapter 3 — SYNTHESIS OF INTERVENTION-FOCUSED SCHOLARLY LITERATURE
28	Chapter 4 — THEORY OF CHANGE
34	Chapter 5 — MAPPING ON METRICS
<hr/>	
46	References
57	Appendix A — COMPILATION OF KEY TAKEAWAYS ACROSS CHAPTERS
59	Appendix B — OTHER DOCUMENTS
61	Appendix C — WHAT IS PREVENTION SCIENCE AND HOW DOES IT ALIGN WITH DOD FINANCIAL READINESS PROGRAMS?

CHAPTER 1: INTRODUCTION

This chapter includes these components:

- Study Purpose
- Study Elements
- Questions Relevant to Financial Literacy Training Effectiveness



STUDY PURPOSE

The purpose of this research and analysis study is to (a) inform the provision of financial literacy education and training efforts across the Department of Defense (DoD) and (b) measure the effectiveness of these efforts, which includes identifying standardized metrics and measures of effectiveness at various outcome levels (i.e., individual, unit, organizational).



STUDY ELEMENTS

Six elements were developed to accomplish the study's purpose. Each element is briefly introduced here. See **Appendix A** for a complete list of key takeaways across elements.

An extensive literature review of scholarly research examining financial well-being (Chapter 2)

The Consumer Financial Protection Bureau (CFPB, 2015) defines financial well-being “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 them to enjoy life” (p. 6). Financial well-being can be conceptualized and measured objectively or subjectively. Research does not support a preference for one over the other, as there is merit in both approaches.

Two of the most salient (i.e., important or noteworthy) modifiable factors contributing to financial well-being are financial knowledge and financial behaviors. *Subjective* financial knowledge (one's perceived financial knowledge) appears to be more strongly correlated with outcomes like financial behaviors than *objective* knowledge (i.e., factual knowledge about finances). Seven financial behaviors commonly correlated with better financial well-being were identified from existing research: paying off credit cards, using a budget or spending plan, paying bills on time, beginning or maintaining an emergency saving fund, having a retirement account or investing for retirement, saving for the future (unrelated to emergency or retirement), and setting financial goals and making plans to achieve them. Because measures often combine multiple financial behaviors, the salience of specific behaviors as they contribute to financial well-being is unclear.

Research shows that financial well-being has implications for individual and family outcomes, including, but not limited to, stress, mental health, romantic relationship quality, and parent-child relationship quality.

A graphic representation of factors contributing to Service members' financial well-being (Chapter 2)

Factors contributing to Service members' financial well-being are graphically summarized as a social-ecological model. These factors support Service members' ability to perform their Service obligations and are organized by levels (i.e., individual, family, community, larger military and societal context). The model identifies factors modifiable by financial literacy interventions (defined as actions or events intended to cause change, including education and training) while acknowledging other important factors that are generally not malleable by interventions. The model can inform the development and implementation of financial literacy interventions by suggesting what *content* to include and at what *level(s)* to intervene. When assessing intervention efficacy, the model can also help identify factors to measure and account for (i.e., control for).

A systematic review of research about financial literacy interventions (Chapter 3)

This review summarizes evaluation methods and measurement approaches used to determine the efficacy of financial literacy interventions. Critiques of early empirical studies include a lack of rigor in methodology and design, conflicting or indecisive findings, and limitations restricting the attribution of interventions to an *association* rather than *causality*. More recent empirical evidence with more rigorous methods generally supports the positive causal effects of financial literacy interventions on downstream intended outcomes, including, but not limited to, financial behaviors. Intervention impact varies by programmatic characteristics (e.g., dosage) and participant characteristics (e.g., readiness to learn). The review highlights the most valuable and practical methodologies and procedures for collecting outcome data to assess intervention efficacy.

A process model for financial literacy intervention efforts (Chapter 3)

This process model illustrates that participant characteristics interact with the intervention to determine the likelihood of interventions having their intended effects. This model illustrates important considerations such as participant characteristics when developing, implementing, and evaluating financial literacy interventions.

A theory of change and logic model for DoD financial literacy education and training efforts, particularly efforts overseen by DoD's Office of Financial Readiness (FINRED) (Chapter 4)

This element is rooted in the Kirkpatrick and Kirkpatrick (2016) training evaluation model, an established framework identifying four *levels of measurement* for training outcomes. These outcomes unfold over time. While reaction (short-term initial responses to intervention) and learning (knowledge, attitudes, and skills acquired during the intervention) are evident immediately following the intervention, behavior change is a midterm outcome, and results are long-term goals that take considerable time to develop.

The developed theory of change describes how intervention efforts are expected to lead to the intended outcomes at tactical, operational, and strategic levels. It is accompanied by a logic model graphically mapping intervention components (e.g., activities) to intended outcomes. The objective is to “tell the story” of how DoD financial literacy education and training efforts are thought to contribute to downstream outcomes.

Measures and indicators of logic model constructs (Chapter 5)

Appropriate measures of the intended outcomes in the logic model were identified. When employed in specific education and training settings with a rigorous study design and adjustments to fully align with intervention content, these measures can be collected to demonstrate whether intervention efforts have the intended effects. These measures establish a foundation for evaluating the efficacy of DoD financial literacy education and training efforts.



An extensive literature review of scholarly research examining financial well-being (Chapter 2)



A graphic representation of factors contributing to Service members' financial well-being (Chapter 2)



A systematic review of research about financial literacy interventions (Chapter 3)



A process model for financial literacy intervention efforts (Chapter 3)



A theory of change and logic model for DoD financial literacy education and training efforts, particularly efforts overseen by DoD's Office of Financial Readiness (FINRED) (Chapter 4)



Measures and indicators of logic model constructs (Chapter 5)



QUESTIONS RELEVANT TO FINANCIAL LITERACY INTERVENTION EFFECTIVENESS

This work informs efforts to gather a suite of data sets that will address questions relevant to developing intervention content and setting intervention requirements. For *illustration* purposes, research questions and efforts that findings from this study can inform are identified below.

Synthesis of the Scholarly Literature on Financial Well-Being (Chapter 2)

- “Are training materials developed responsive to needs of the population?”
- “How can formal learning objectives be validated?”
- “What financial and other relevant trends are seen in the military population?”
- “What are the preferences of the population served?”

Synthesis of Intervention-Focused Scholarly Literature Review (Chapter 3)

- “Should there be changes in delivery methods and modalities?”
- “Does sequence and timing of training positively impact financial readiness?”

Theory of Change (Chapter 4)

- “What are the current strengths of the program?”
- “Is there a need to adjust training content to address emerging threats and challenges (e.g., new financial technologies, predatory lending trends)?”
- “Are there gaps and opportunities in the training curriculum?”

Measures and Outcomes (Chapter 4)

- “Is the presentation and delivery of standardized training content effective?”
- “What evidence shows the financial literacy levels achieved in the force?”

This page
intentionally left
blank.

CHAPTER 2:

SYNTHESIS OF THE SCHOLARLY LITERATURE ON FINANCIAL WELL-BEING

This chapter includes these components:

- Overview
- Key Takeaways
- Background
- Methodology
- Financial Well-Being Defined
- Factors Contributing to Financial Well-Being
- Financial Knowledge
- Financial Behaviors
- Outcomes of Financial Well-Being
- Graphical Representation of Factors Influencing Military Financial Well-being



OVERVIEW

A compilation of peer-reviewed scholarship published within the past 15 years identified the factors that research has consistently linked to both individuals' and families' financial well-being. Various definitions of financial well-being are employed in the scholarly literature. Financial well-being has been conceptualized both objectively and subjectively, but subjective conceptualizations are more common in the research. Factors shown by the scholarly literature to contribute to financial well-being include (but are not limited to) one's family financial upbringing, income, debt, assets, financial knowledge, and financial behaviors. These factors are summarized in a graphical representation as a social-ecological model. The model is organized by levels (i.e., individual, family, community, larger military and societal context) and indicates the extent to which factors are modifiable by financial literacy education or training.

Given the emphasis on financial literacy education and training efforts, substantial detail is provided about two of the most salient contributing factors of financial well-being that are modifiable: financial knowledge and financial behaviors. Financial knowledge is conceptualized and measured both objectively and subjectively. Nonetheless, in the research to date,

subjective financial knowledge (one's self-perceived financial knowledge) appears to be more strongly correlated with outcomes like financial behaviors than objective knowledge (e.g., factual knowledge about finances) seems to be. Seven financial behaviors have been commonly analyzed and shown to correlate with better financial well-being. Financial well-being, in turn, is related to individual and family outcomes.



KEY TAKEAWAYS

- Both objective and subjective financial knowledge are linked to healthier financial behaviors, but research suggests that subjective financial knowledge might be more strongly linked to financial behaviors.
- Financial literacy education and training can consider methods to provide objective knowledge in ways that trainees will internalize subjectively (e.g., by incorporating activities or self-assessments that enable trainees to realize their expanding knowledge, thus bolstering their subjective perceptions).
- Financial behaviors are a commonly studied correlate of financial well-being. These behaviors explain variations in individuals' subjective perceptions of their financial well-being. Less is known about links between financial behaviors and objective measures of financial well-being.
- The financial behaviors commonly examined in research with the most robust empirical support for their association with subjective financial well-being include paying off credit cards, using a budget or spending plan, paying bills on time, saving money for the future, beginning or maintaining an emergency savings fund, having a retirement account or investing for retirement, and setting financial goals and making plans to achieve them.
- Little is known about the salience (i.e., level of importance) of these *specific behaviors* for financial well-being because

they are typically measured and analyzed in aggregate.

- Financial well-being has downstream implications for other life domains, such as mental health (e.g., depressive, anxiety symptoms, suicide risk), job performance, and relationship quality (e.g., parent-child and romantic relationship quality).
- Financial literacy education and training that results in participants changing their financial behaviors (e.g., the seven financial behaviors listed above) can enhance their financial well-being and, in turn, downstream outcomes like mental health and relationship quality.
- Goals and intended outcomes of financial literacy education and training *must* consider (a) what is within “reach” as training goals (that is, what can be directly influenced by education and training efforts) and (b) the extensive number of factors that contribute to the overarching desired outcome of financial well-being.
- Financial literacy education and training efforts that target individual, family, community, *and* larger military and societal context factors within their influence may be best positioned to impact Service members’ financial well-being.



BACKGROUND

To identify and document the landscape of research on financial well-being, empirical research was first compiled from several electronic databases (e.g., Military REACH database, PsycINFO, EconLit) and Google Scholar. The examination focused on the scholarship of experts who study financial well-being and related fields, emphasizing (but not limited to) military-specific studies. The focus was primarily on empirical research published within the last 15 years. Review and organization of the literature centered around two elements:

1. *contributing factors* that explain variation in financial well-being and
2. *outcomes* that develop, at least in part, because of financial well-being.

Concepts are organized as “contributing factors” or “outcomes” based on how they are most commonly identified within the literature. However, it is essential to recognize that many studies cannot identify definitive temporal ordering (i.e., which came first?). Analyses most commonly point to “associations” rather than “causal relationships” when describing the relationships among variables. This methodological clarification is complicated by the possibility of bidirectional associations between some constructs (e.g., financial behaviors affect financial well-being, and, in turn, increases in financial well-being will often result in more positive financial behaviors).

By identifying and enacting education and training efforts that align with these “contributing factors,” financial well-being can be enhanced, and the identified “outcomes” may be realized. Relatedly, we incorporate a review of empirically supported measures of “contributing factors” and “outcomes.” Implementing these measures in the context of financial literacy education and training (and with an appropriate research/evaluation design) can provide input on the effectiveness of the intervention efforts.



METHODOLOGY

Initial searches began with broad search terms such as “military,” “financial well-being,” and “financial stability.” Search terms were expanded as the search continued. Sample key terms included the following:

- | | | |
|--|-------------------------|----------------------|
| • “active duty military” OR “military families” OR “Service members” | • “financial knowledge” | • “program” |
| • “financial socialization” | • “financial behaviors” | • “credit score” |
| | • “homeownership” | • “financial stress” |

The search intentionally included research from various fields of study (e.g., financial planning, economics, family science) and samples from across the lifespan (e.g., emerging adults and older adults).

Articles were charted to explicate each study’s “predictor” and “outcome” variables, sample notes, and key findings. Charting allows for the systematic identification of overarching themes, which provides stronger support than relying on conclusions from any individual study. Conceptual saturation of the literature was reached after charting more than 150 peer-reviewed studies. Synthesis and analysis indicated that a broad spectrum of factors and outcomes are empirically

linked, either directly or indirectly, to financial well-being. However, there was variation in (a) how frequently various contributing factors were studied and (b) the magnitude of the association between the identified contributing factors and well-being. *Focus is placed on the most consistent and salient (i.e., strongest) linkages to financial well-being, according to peer-reviewed evidence.*



FINANCIAL WELL-BEING DEFINED

The Consumer Financial Protection Bureau (CFPB; 2015) defines financial well-being “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 them to enjoy life” (p. 6). In conceptualizing and operationalizing financial well-being, some researchers have focused on *objective* indicators, such as a high amount of savings, a low amount of consumer debt, having an emergency fund, and a higher net worth. Objective measures often commonly overlap with the measurement of behavior. For instance, inquiring about *paying credit card bills in full each month* examines behavior that overlaps considerably with a *low amount of consumer debt* as an objective indicator of financial well-being. Hence, considerable attention is devoted later in this chapter to discussing empirically supported measures of these financial behaviors.

More research has conceptualized (and measured) financial well-being subjectively rather than objectively. Common subjective measures include individuals’ perceptions of their financial well-being, financial situation (i.e., financial satisfaction), and financial stress or hardship. More detail is provided below regarding the measurement of these three subjective conceptualizations.

- Perceptions of Financial Well-Being. The CFPB’s subjective 10-item Financial Well-Being Scale is a commonly used measure (e.g., Lee et al., 2020; Roll et al., 2022; Xiao & Porto, 2022) and includes questions such as “My finances control my life,” “I can enjoy life because of the way I’m managing my money,” and “I am securing my financial future.”
- Financial Satisfaction. Satisfaction with one’s financial situation is a commonly assessed outcome (e.g., Archuleta et al., 2011; Fan & Henager, 2022; Xiao et al., 2014) that is frequently measured with a single-item question, such as “On a scale of 1-10, please circle the number which best represents how satisfied are you with your present financial situation?” or “Overall, thinking of your assets, debts, and savings, how satisfied are you with your current personal financial condition?”
- Financial Stress and Hardship. There is considerable variability in examining subjective financial stress. A commonly used measure (e.g., Khan et al., 2023; Totenhagen et al., 2023), likely due to its brevity, comprises the following three items: “My financial situation is much worse this year than it was a year ago,” “I do not know how I will be able to support myself in the next year,” and “I often worry about my financial situation.”

The primary rationale for subjective measures of financial well-being is that what feels “stressful” or “satisfying” to one individual may not necessarily be the same to another. Furthermore, the stress literature has consistently demonstrated the detrimental effects of *perceived* stress and well-being, irrespective of objective measures (e.g., income; Hill et al., 2017).

Research does not indicate either the subjective or objective conceptualization of financial well-being as “preferable.” Rather, there is merit in both approaches. While measures aligning with the objective conceptualization can be easier to evaluate by noting their presence or absence, they fail to capture the nuance of financial well-being reflected in the stress and well-being literature. In future research, measuring financial well-being via objective *and* subjective indicators may be preferable and provide more comprehensive understanding.



FACTORS CONTRIBUTING TO FINANCIAL WELL-BEING

Based on a synthesis of the scholarly literature over the last 15 years, common contributing factors to financial well-being include (but are not limited to) the following:

- family financial upbringing (also termed financial socialization);
- confidence in financial management and skills;
- objective financial knowledge;
- subjective financial knowledge;
- income;
- debt;
- assets (e.g., home ownership);
- formal financial education;
- financial behaviors; and
- couples' financial communication and shared financial values.

A graphical representation of many factors associated with financial well-being is summarized at the end of the chapter (see **Figure 4**). Given this study's focus on financial literacy education and training efforts, the discussion focuses on describing research about knowledge and behaviors, as these are modifiable factors that can be addressed in educational settings. See the complementary literature review focused on financial literacy interventions provided in **Chapter 3**.



FINANCIAL KNOWLEDGE

Financial knowledge was identified as a salient predictor of financial well-being in 47 studies reviewed (30.1%). Financial knowledge is thought to be a precursor to other important factors contributing to financial well-being, such as financial behaviors (Fan & Henager, 2022; Hwang & Park, 2023; Serido et al., 2013). As with financial well-being, distinctions are drawn between *objective* and *subjective* financial knowledge.

Objective financial knowledge is often measured by assessing individuals' responses to "test" questions with "correct" (i.e., factual) answers. For example, the National Financial Capability Study (NFCS) includes the "Big Five" questions to assess objective financial knowledge (e.g., Hastings et al., 2013). The "Big Five" questions used in the NFCS and commonly incorporated into other academic studies (e.g., Fan & Zhang, 2021; Wilmarth, Kim, & Henager, 2023; Wilmarth, Kim, & Pak, 2023) are:

1. Suppose you had \$100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow? (Correct answer: More than \$102)
2. Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account? (Correct answer: Less than today)
3. If interest rates rise, what will typically happen to bond prices? (Correct answer: They will fall)
4. A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage, but the total interest paid over the life of the loan will be less. (Correct answer: True)
5. Buying a single company's stock usually provides a safer return than a stock mutual fund. (Correct answer: False)

When measuring *subjective* financial knowledge, researchers often ask a single question (e.g., Balasubramanian & Sargent, 2020; Totenhagen et al., 2019; Wilmarth, Kim, & Henager, 2023), such as "On a scale from 1 to 7, where 1 means very low and 7 means very high, how would you assess your overall financial knowledge?"

Research studies generally conclude that both subjective and objective financial knowledge explain variations in financial well-being. According to a recent meta-analysis (Hwang & Park, 2023), however, subjective and objective financial knowledge might contribute in different ways and with varying magnitudes of impact. Objective financial knowledge, for example, was positively correlated with financial behaviors ($r = .29$) and subjective financial well-being ($r = .14$)¹. The strength of these associations can be described as small to moderate (Cohen, 1988). However, subjective financial knowledge was more strongly correlated with financial behaviors ($r = .32$) and subjective financial well-being ($r = .42$) (Hwang & Park, 2023). This association would be described as moderately robust (Cohen, 1988).

¹ Correlation coefficients (r) can range from -1 to 1, and values farther away from 0 (in either direction) indicate a stronger correlation (termed "effect size").

In other words, understanding financial facts seems to matter for financial behaviors and financial well-being, but individuals' *perceptions of their financial knowledge* might matter more. Compared to objective financial knowledge, subjective financial knowledge might engender greater confidence in financial management, which might be why it is more strongly related to financial behaviors and financial well-being (Serido et al., 2013). However, the commonly used objective financial knowledge questions only capture certain financial topics. While they capture fundamental topics (e.g., compound interest), it is unclear whether the findings comparing the relative strength of subject and objective financial knowledge for financial well-being would be different if measures focused on other important topics of objective financial knowledge (e.g., paying down credit cards vs. other forms of debt).



FINANCIAL BEHAVIORS

One of the most frequently studied factors contributing to financial well-being was *financial behaviors* (i.e., actions that individuals take related to money management; Xiao, 2008). Of the articles reviewed, a subset of 80 studies (51.3%) focused specifically on financial behaviors as predictors of financial well-being. From this subset, seven conceptually distinct financial behaviors were identified, which are presented below in order from *most prevalent* in the literature to *less prevalent* (see **Figure 1**):

- paying off credit cards (36.3% of studies);
- using a budget or spending plan (36.3% of studies);
- paying bills on time (35% of studies);
- saving for the future (i.e., savings unrelated to emergency or retirement; 35% of studies);
- beginning or maintaining an emergency savings fund (28.8% of studies);
- having a retirement account or investing for retirement (23.8% of studies); and
- setting financial goals and making plans to achieve them (20% of studies).

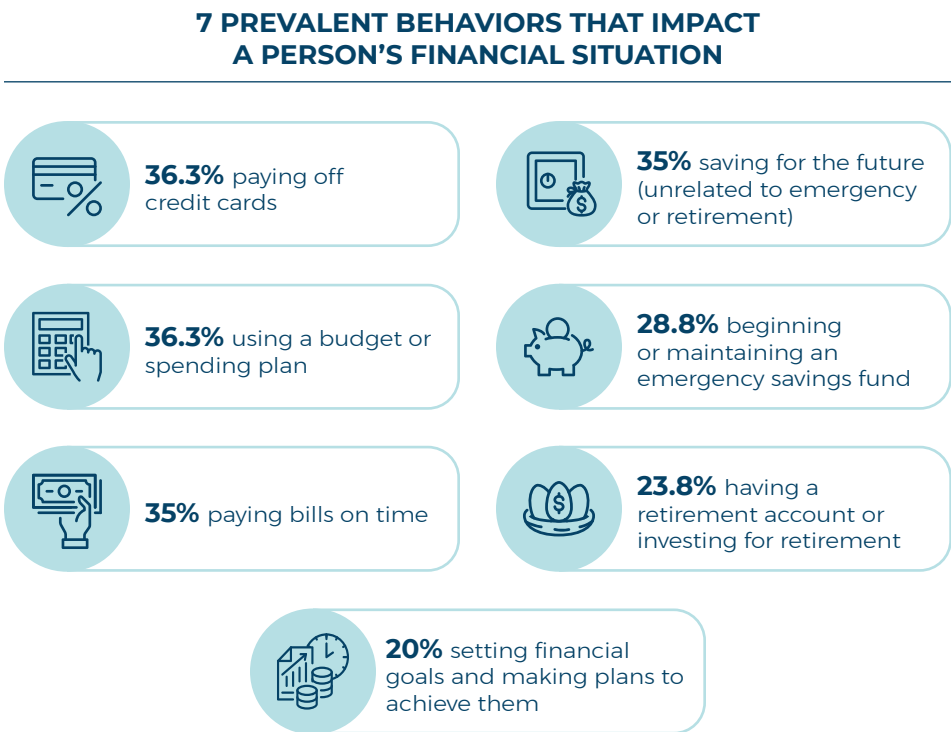


Figure 1. The seven most *prevalent* financial behaviors identified in research that correlate with financial well-being.

Illustrated in these seven broad behaviors are variations of “saving” that, although similar at first glance, are conceptually distinct. The behaviors associated with “saving” include saving for retirement, saving for emergencies, and saving for the future (separate from retirement and emergencies). In other words, there are at least three different forms of saving. Each form of saving has a unique purpose or goal, and an individual can save in one or more ways at the same time.

Furthermore, individuals can differ in how they view and prioritize these forms of saving, which supports the importance of conceptualizing and measuring multiple forms of saving. More research is needed to examine associations *between* behaviors, which can confirm the extent to which these saving behaviors are distinct or reflective of a single, broad concept of saving more generally.

A review of this subset of 80 studies determined whether (and to what extent) research has identified the relative importance of these seven behaviors for financial well-being. Unfortunately, only two of the 80 studies (2.5%) (Aboagye & Jung, 2018; Gutter & Copur, 2011) compared the relative strength of several of these behaviors as separate predictors in a statistical model. More frequently, research studies tended to group a handful of financial behaviors to assess the cumulative extent to which individuals engage in a range of healthy financial behaviors. The two studies (Aboagye & Jung, 2018; Gutter & Copur, 2011) identified as parsing financial behaviors in a statistical analysis to determine the relative influence of individual behaviors are described in more detail below.

- Using a cross-sectional sample (i.e., data at a single time point) of 18,600 adults, Aboagye and Jung (2018) examined characteristics that explain satisfaction with one's financial situation. The factors examined in the study included having a budget, bill payment difficulty, credit card behaviors, saving for retirement, and having an emergency fund. Relying on the standardized regression coefficients (which can be interpreted as higher values representing greater magnitude relative to other standardized coefficients in the model), *having an emergency fund* and *bill payment difficulty* were the strongest contributing factors to individuals' satisfaction with their financial situation (with standardized beta coefficients [β]² between .21-.28). *Credit card behaviors*, *having a budget*, and *saving for retirement* were also significantly associated with satisfaction with one's financial situation but with smaller effect sizes (β between -.10-.04). Together, these financial behaviors and the other variables included in the model explained approximately half (49%) of the variation in individuals' satisfaction with their financial situation.
- Using a cross-sectional sample of 15,797 college students, Gutter and Copur (2011) examined the degree to which having a budget, saving money for retirement/the future, and multiple credit card behaviors (all binary [yes/no] predictors) explained variation in individuals' perception of their financial well-being (measured using the InCharge Financial Distress/Financial Well-Being Scale®; Prawitz et al., 2006). *Having a budget* was an inconsistent predictor of financial well-being across multiple statistical models (i.e., it was only a statistically significant predictor in some models). Based on the comparison of regression coefficients, *saving money for retirement/the future* was most strongly associated with financial well-being ($\beta = .54$), with *credit card behaviors* being the second strongest contributing factor (β between -.14 and -.27). In other words, saving with a purpose was systematically associated with better financial well-being, whereas engaging in unhealthy credit card habits was systematically associated with worse financial well-being. Together, these financial behaviors and the other variables in the model explained somewhat less than half (43%) of the variation in individuals' subjective financial well-being.

Collectively, these studies indicated that *investing for retirement* (or saving for the future more generally), *paying off credit cards*, *paying bills on time*, and *having an emergency fund* may be the strongest behavioral factors contributing to financial well-being. These behaviors had the highest regression coefficients with statistically significant associations in both studies. These findings align with previously identified financial behaviors (see **Figure 1**). However, more research is needed to parse the relative salience of these behaviors for financial well-being, particularly for unique populations such as military families, whose life experiences (e.g., recent relocations) may amplify the effect of certain behaviors on financial well-being.

Most existing studies assessing financial behaviors and financial well-being have used an aggregate score (e.g., mean score, latent variable) of two or more financial behaviors. For example, many studies asked participants about the seven financial behaviors above (and sometimes others). Then, participants' average responses to these questions were used to predict financial well-being scores. This approach recognizes that numerous behaviors act in concert to contribute to financial well-being, which is useful. Nonetheless, this approach does not enable a determination of which *specific* behaviors are the strongest predictors of financial well-being.

² Studies generally use different measurement units and therefore vary in how they express regression coefficients. Standardized beta coefficients enable researchers to attempt to compare effect sizes by mathematically converting the coefficients into of a single, common set of statistically reasonable units. While they are useful estimates for comparison, standardized beta coefficients still have their drawbacks and limitations.

Below is a description of how the seven financial behaviors have been most commonly measured. A common theme is the use of items from Dew and Xiao's (2011) Financial Management Behavior Scale (FMBS). Following these descriptions, the full FMBS scale is provided for interested readers (see Figure 2).

Paying Off Credit Cards

- 48.2% of the studies that measured paying off credit cards asked participants how often they pay off credit cards. For instance, Dew and Xiao's (2011) scale assessing multiple financial behaviors asked respondents to indicate how often they "paid off [their] credit card balance in full each month." Response options ranged from 1 (*never*) to 5 (*always*).
- The second most common (13.8%) measure used for credit card payments was from the NFCS. For example, the stem of "In the past 12 months, which of the following describes your experience with credit cards?" contained six items, one of which was "I always paid my credit cards in full" (desirable). The remaining five items were about carrying balances, minimum payments, late fees, over-limit fees, and cash advances (none of which are desirable). Responses were coded as 1 if desirable behavior and 0 if not.

Using a Budget or Spending Plan

- 62.1% of the studies that measured whether participants used a budget or spending plan asked participants how often (usually within the last 6 months) they, for example, "stayed within [their] budget or spending plan." Response options commonly ranged from 1 (*never*) to 5 (*always*). This measure is one item from Dew and Xiao's (2011) scale assessing multiple financial behaviors.
- The second most common (17.2%) measure of this behavior was a *yes/no* question about whether the participant had a budget. This type of measure is commonly used in national surveys like the NFCS (e.g., Henager & Cude, 2019).

Paying Bills on Time

- 82.1% of the studies that assessed bill payment tendencies asked participants how frequently (usually within the last 6 months) they "paid all [their] bills on time" or similar wording. Response options commonly ranged from 1 (*never*) to 5 (*always*). This measure comes from an item in Dew and Xiao's (2011) scale assessing multiple financial behaviors.
- 10.7% of the studies that measured bill payment tendencies examined how difficult it was for participants to pay their bills (e.g., "I have difficulty paying bills because of not enough income" with responses on a scale of 1 = *almost never* to 5 = *almost always*; Carlson et al., 2015).

Saving for the Future

- 53.6% of the studies that measured saving money for the future asked questions about how frequently participants engaged in behaviors such as "[saving] for a long-term goal other than retirement" and "[saving] from every paycheck." Responses ranged from 1 (*never*) to 5 (*always*). The measure comes from Dew and Xiao's (2011) scale on financial behaviors.
- 17.9% of studies asked a single binary *yes/no* question about saving money for the future as part of various financial behavior scales (other than the FMBS) (e.g., "I saved money for long-term goals such as education, a car, or a home") (Kim et al., 2019).

Beginning or Maintaining an Emergency Savings Fund

- 56.5% of the studies that assessed the existence or maintenance of an emergency savings fund asked participants how often (usually within the last 6 months) they "began or maintained an emergency savings fund" or similar wording. Response options commonly ranged from 1 (*never*) to 5 (*always*). This measure comes from an item in Dew and Xiao's (2011) scale assessing multiple financial behaviors.
- 43.5% of the studies that assessed the state of individuals' emergency savings asked participants whether they had an emergency fund (usually as a *yes/no* question). Some studies did not specify the emergency fund amount, but when they did, it was typically approximately 3 months of income or expenses. For instance, Elbogen et al. (2023) examined whether participants "had 3 months of savings set aside for unexpected periods of reduced income."

Having a Retirement Account or Investing for Retirement

- 21% of studies that measured retirement investing included some measure of retirement investing as *an item* from the FMBS (Dew & Xiao, 2011). Participants were asked how often in the past 6 months they had "contributed money to a retirement account" and "bought bonds, stocks, or mutual funds." Similarly, Elbogen et al. (2023) asked whether

respondents “were putting aside money toward their retirement.”

- The second most common (15.8%) measure of retirement investing came from four items in the NFCS. Participants responded to *yes/no* questions, including whether they “had a retirement account” and “had any investments or securities” (e.g., Henager & Cude, 2016).

Setting Financial Goals and Making Plans to Achieve Them

- 68.7% of the studies that examined financial goals asked participants the degree to which they have taken specific action to achieve a financial goal. Common items probed for how often (e.g., within the last 6 months) participants “saved for a long-term goal such as a car, education, home, etc.” Response options commonly ranged from 1 (*never*) to 5 (*always*). This measure comes from an item in Dew and Xiao’s (2011) scale assessing multiple financial behaviors.
- 31.3% of the studies that measured financial goals simply asked a *yes/no* question about whether participants had financial goals, e.g., “Do you or your family have written goals such as owning a home, retirement, children’s education, or starting a business that require savings?” (Cho et al., 2012).

FINANCIAL MANAGEMENT BEHAVIOR SCALE

This scale was designed to be used as a collective whole. Scale items were not originally developed to be utilized individually. Together, the 15 items comprising the scale are thought collectively to capture behaviors that are indicative of overall healthy financial management. This conceptualization has been validated in previous research.

Stem for the first 12 items: Please indicate how often you have engaged in the following activities in the past six months:

Response options: 1 = Never, 2 = Seldom, 3 = Sometimes, 4 = Often, and 5 = Always.

1. Comparison shopped when purchasing a product or service
2. Paid all your bills on time*
3. Kept a written or electronic record of your monthly expenses*
4. Stayed within your budget or spending plan*
5. Paid off credit card balance in full each month*
6. Maxed out the limit on one or more credit cards (RS)*
7. Made only minimum payments on a loan (RS)*
8. Began or maintained an emergency savings fund*
9. Saved money from every paycheck*
10. Saved for a long-term goal such as a car, education, home, etc.*
11. Contributed money to a retirement account*
12. Bought bonds, stocks, or mutual funds*

Stem for the last 3 items: Please rate your behavior regarding insurance within the past year:

Response options: 1 = Never, 2 = Seldom, 3 = Sometimes, 4 = Often, and 5 = Always.

13. Maintained or purchased an adequate health insurance policy
14. Maintained or purchased adequate property insurance like auto or homeowners insurance
15. Maintained or purchased adequate life insurance

Notes. (RS) indicates reverse-scored items. Higher scores represent better financial behaviors. Asterisks (*) identify items related to the seven most common financial behaviors from the scholarly literature review.

Figure 2. The complete 15-item Financial Management Behavior Scale (Dew & Xiao, 2011).



OUTCOMES OF FINANCIAL WELL-BEING

In addition to research examining *factors* that are thought to contribute to (or predict) financial well-being, other research has examined *outcomes* that are thought to develop, at least in part, due to financial well-being (see **Figure 3**). This research demonstrates the downstream impacts that financial literacy education and training efforts can have.

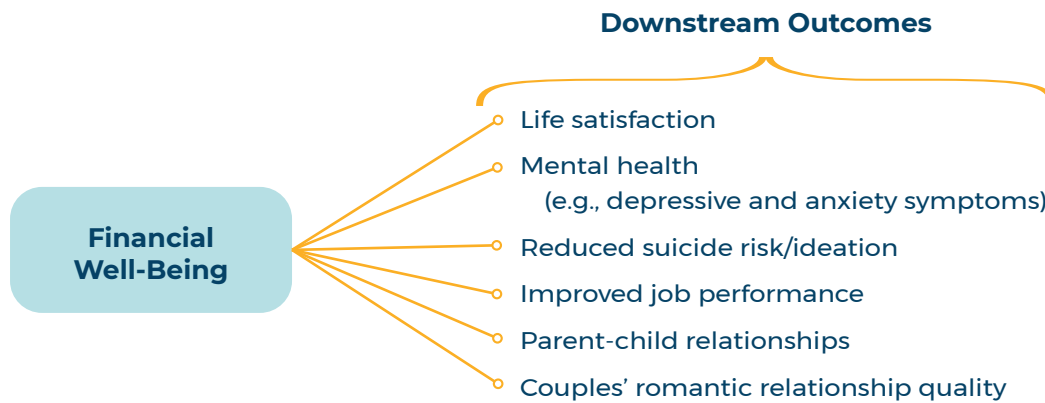


Figure 3. Examples of outcomes research indicates develop, at least in part, because of financial well-being.

For example, studies (e.g., Okamoto et al., 2024; Saxey et al., 2024; Spuhler & Dew, 2019; Totenhagen et al., 2019) have found systematic links with small to moderate effect sizes between aggregate scales that capture the seven financial behaviors reviewed above and couples' romantic relationship quality (i.e., individuals' perceptions of how well their romantic relationship is going). Common measures of romantic relationship quality included aggregated scores for items like "I really work to improve our relationship" and "How rewarding is your relationship with your partner?" These correlations and their meaningful effect sizes provide evidence that engaging in healthy financial behaviors—which are, in turn, related to improvements in financial well-being—could also result in downstream improvements in couples' relationships more generally. Similar downstream improvements may extend to other relationships and life domains (e.g., parent-child relationships) (Masarik & Conger, 2017). In short, these findings support the inclusion of "enjoyment of life" in the CFPB's (2015) definition of financial well-being, as financial well-being can enhance the enjoyment of life across multiple domains (e.g., family relationships).

In the same vein, studies suggest that financial well-being, particularly when conceptualized and assessed by perceptions of financial stress, is linked to mental health (e.g., depressive and anxiety symptoms; LeBaron-Black et al., 2022; Liu et al., 2022; Wang & Pullman, 2019). While the measurement of mental health symptoms is complex, the studies reviewed often conceptualized mental health through an aggregate score of items capturing anxiety symptoms (e.g., "Over the last 2 weeks, how often have you been bothered by 'not being able to stop or control worrying'") and depressive symptoms (e.g., "Have you recently been feeling unhappy and depressed?"). The standardized regression coefficients (and effect sizes) varied considerably across studies assessing this association. Such variability may reflect differences in the samples examined, measurement intervals, and measures used. Other work has linked financial stress to suicide ideation, noting that financial strain is associated with thoughts of suicide and self-harm (Elbogen et al., 2021). Conceptually, these findings link mental health to financial well-being and most strongly align with the "enjoyment of life" aspect of the CFPB's (2015) definition of financial well-being.

Another outcome connected to financial well-being is job performance (e.g., Carlson et al., 2016; Hallinan, 2023; Luther et al., 1998) and, relatedly for many Service members, security clearance (Hill, 1991; Williams, 2017). Individuals subject to higher levels of financial stress reported more issues with job performance than those with less financial stress (e.g., Carlson et al., 2016; Carrell & Zinman, 2014). In terms of debt, Hill (1991) noted a significant association between delinquent debt and security clearance, recognizing the ties between financial behaviors and the ability to maintain job security.



GRAPHICAL REPRESENTATION OF FACTORS INFLUENCING MILITARY FINANCIAL WELL-BEING

Drawing from the literature review and other pertinent documentation (see **Appendix B**), a graphical representation of factors contributing to the financial well-being of Service members was developed (see **Figure 4**). More specifically, the factors were organized as a social-ecological model, which is used to depict “the complex interplay between individual, relationship, community, and societal factors” that contribute to a program’s desired outcome (National Center for Injury Prevention and Control, Division of Violence Prevention, 2022). In other words, a social-ecological model illustrates the many factors that contribute to desired intervention outcomes (e.g., Service members’ financial well-being) and organizes these factors based on whether they exist within the *individual* Service member, their *family*, their *community*, or the *larger military and societal context*.

Grouping these contributing factors within a single figure illustrates the reality of financial literacy and education efforts: They do not exist in isolation but occur within a constellation of other factors informing financial well-being. Further, the model provides insight into what factors are realistic targets for training efforts and demonstrates a prevention science principle: A program is generally best positioned to enact change when it simultaneously engages leverage points across multiple levels of the model. (See **Appendix C** for more about prevention science and its alignment with Department of Defense [DoD] financial readiness programs.)

FACTORS INFLUENCING MILITARY FINANCIAL WELL-BEING

Factors are categorized as subject to **direct**, **indirect**, and **external influences** to indicate the extent to which DoD financial literacy education and training efforts may influence the factors.

DIRECT

DoD has Direct Influence

INDIRECT

DoD has Indirect Influence

EXTERNAL

External Influence
(DoD has No/Little Influence)

COMMUNITY

DIRECT

Local military resources
(e.g., Family Readiness Centers)

INDIRECT

Local civilian supports/entities
(e.g., financial institutions, predatory lenders)

Financial services and products

Job market for dependents

Access to quality K-12 public education

EXTERNAL

Availability of affordable childcare

Availability of affordable housing

Unit culture regarding finances

LARGER MILITARY & SOCIETAL CONTEXT

DIRECT

Mandated military financial touchpoint trainings
(e.g., Promotion, Marriage)

Access to military on-demand resources
(e.g., Sen\$e mobile app)

INDIRECT

Congressionally mandated policies with financial implications

Military retirement system

EXTERNAL

Historical context
(e.g., COVID-19)

Global economic fluctuations

FAMILY

DIRECT

Dependents' access to financial resources

INDIRECT

Service member income

Debt

Assets

Joint banking accounts

Emergency savings

Home ownership

Retirement investing

Couples' shared financial values

Marital quality

Family stress

Family transitions

EXTERNAL

Generational wealth

Family structure
(e.g., number of dependents)

Partner employment and income

Cost of living adjustment (COLA)

INDIVIDUAL

DIRECT

Financial education

Objective financial knowledge

Subjective financial knowledge

Financial attitudes

Financial skills

INDIRECT

Financial comparisons to peers

Sources for financial decision making

Financial risk orientation

Financial behavior

Credit score

Financial satisfaction

Financial stress and hardship

Emotion regulation

Future orientation

Mental health

EXTERNAL

Financial upbringing

Gender

Rank

Figure 4. A social-ecological model accounting for factors within the *individual*, *family*, *community*, and the *larger military and societal context*.

The model also indicates the extent to which factors can generally be influenced by DoD financial literacy education and training efforts, denoted in **Figure 4** through “*DIRECT*” (what DoD can directly influence), “*INDIRECT*” (what DoD can indirectly influence), and “*EXTERNAL*” (what DoD cannot influence because they are external influences).

- Direct Influence. Direct influence indicates that DoD financial literacy education and training efforts could directly impact this factor. For example, financial literacy training could directly improve Service members’ objective financial knowledge (i.e., knowledge of factual financial information).
- Indirect Influence. Indirect influence indicates that DoD efforts may be able to contribute to this factor but are unlikely to determine it fully. For instance, a Service member might learn *what* a monthly spending plan is (i.e., objective financial knowledge) and *how* to stay within one (i.e., a financial skill), representing direct influences. However, the degree to which a Service member consistently stays within a monthly spending plan (i.e., the behavior) is driven by multiple factors (including, but not limited to, the objective financial knowledge and financial skills gained at a training).
- External Influence. External influence indicates that these factors contribute to Service members’ financial well-being but are not modifiable by DoD financial literacy efforts. For example, financial readiness programs cannot impact Service members’ financial upbringing or gender. However, research indicates that these two factors correlate with financial well-being.

Because the discussion has centered on the individual Service member level, examples from the family, community, and larger military contexts illustrate the relevance of factors at these levels.

- At the *family* level, marital quality falls under indirect influence. Considerable spillover has been noted among life domains, with studies indicating relatively strong bidirectional effects between financial stress and marital stress, i.e., marital attributes contributing to how individuals describe their financial well-being and vice versa (Ross et al., 2017; Saxey, LeBaron-Black, Dew, et al., 2023).
- At the *community* level, financial literacy efforts by DoD (or the Military Services) include the financial resources and support available to Service members and their dependents. A direct influence example includes services offered at military and family readiness centers. In the broader community, factors such as the job market (indirect influence) and housing market (external influence) will determine partners’ employment options and expenses, respectively, with implications for financial well-being (e.g., Wang & Pullman, 2019).
- Additionally, at the *larger military and societal context* level, DoD efforts contribute to policies such as the financial touchpoint training required at milestones in Service members’ military careers and personal lifecycles. For Service members, the military and societal contexts are intertwined. Many aspects of this context, such as the COVID-19 pandemic, undoubtedly impact Service members’ financial well-being (e.g., Gomez et al., 2023; Urbieto et al., 2021) but are largely outside the control of DoD efforts (i.e., these factors often fall under external influence).

This model is a “quick reference” that helps develop (and maintain) realistic expectations about the impact of financial literacy education and training efforts by demonstrating (a) what is feasibly within “reach” as intervention goals (that is, what can be influenced by intervention efforts) and (b) the extensive number of factors across four levels that contribute to the overarching desired outcome of financial well-being.

CHAPTER 3:

SYNTHESIS OF INTERVENTION-FOCUSED SCHOLARLY LITERATURE

This chapter includes these components:

- Overview
- Key Takeaways
- Background
- Methodology
- Prevalence of Financial Literacy Intervention Research
- Challenges Faced by Previous Financial Literacy Intervention Research
- General Interpretations of the Efficacy of Financial Literacy Interventions
- Process Model for Financial Literacy Programming



OVERVIEW

To build on the previous chapter's synthesis of *what* contributes to and results from financial well-being, this chapter summarizes the state of the research on *how* research has evaluated financial literacy education and training (i.e., interventions), specifically the strengths, limitations, and feasibility of efforts that have commonly been employed to evaluate intervention efficacy.

Three study designs commonly utilized in financial literacy intervention studies include (a) randomized controlled trials (RCTs; i.e., randomly assigning participants to receive the intervention or to a comparison group or groups), (b) quasi-experimental designs (QEDs; i.e., two groups but without random assignment), and (c) observational studies (generally, designs without any comparison group). Most early empirical studies focused on education (rather than literacy) and, due to study design, could not conclusively determine whether interventions were the direct reason for the observed change.

Researchers have recently worked to close this gap and focus on financial *literacy* interventions. Although many of the newer empirical studies have focused on other countries with different economies and/or on students, recent (and growing) empirical evidence generally supports the positive causal effects of financial literacy interventions on downstream intended outcomes, including, but not limited to, financial behaviors, thus providing exemplars for future studies assessing financial literacy intervention efficacy. The process through which financial literacy intervention efforts expect to reach their intended outcomes is depicted in a graphical representation termed a *process model*.



KEY TAKEAWAYS

- Researchers describe the result of changing an outcome (e.g., increased knowledge) because of exposure to some event as a *causal effect*.
- With thoughtful data collection and study design, data collected from a portion (i.e., sample) of those who receive an intervention can be generalized to the broader intervention population. While not the only option, RCT designs are particularly suited for this type of generalization.
- QEDs are often more feasible than RCT designs, but there are limits to what can be inferred from the results (specifically causal effects).
- Observational studies provide relatively cost-effective methods for assessment and evaluation. However, their ability to provide causal conclusions about the intervention is more limited than that of RCTs and QEDs.
- Overall, research supports the contention that financial literacy interventions can have small but meaningful causal effects on outcomes of interest, such as financial behaviors.

- Common and feasible intended outcomes of financial literacy interventions were identified. Based on when they are thought to develop following training, their temporal ordering can be organized as short-term, midterm, and long-term.
- Intervention effects can vary across participant subgroups. Participant characteristics, such as baseline knowledge level or mental health, can generate these differential effects. Thus, the intervention's impact is determined both by the intervention itself and participant characteristics. It is important to account for these participant characteristics in efficacy studies to estimate intervention effects accurately and determine whether education and training needs vary across subgroups.



BACKGROUND

Although the term *financial education* has been used interchangeably in the literature and the media with *financial knowledge* and *financial literacy*, more recent scholarship has sought to define and clarify these terms (Huston, 2010).

The general consensus is that *financial education* refers to an individual's level of financial knowledge and/or to the interventions (including trainings, workshops, programs, and curricula) aiming to enhance such knowledge. However, it is regularly acknowledged that knowledge does not necessarily equate to behaviors (e.g., Hilgert et al., 2003).

Financial literacy, however, is an extension of financial education that is conceptualized as having two components: (a) financial knowledge and (b) the skill needed to apply such knowledge. In other words, financial literacy is "how well an individual can understand and use personal finance-related information" (Huston, 2010, p. 306). Therefore, financial literacy was the focal terminology of this systematic review of empirical research evaluating the causal effects of financial education interventions.

This chapter is structured into the following subsections:

- a description of the methodology used;
- prevalence of financial literacy intervention research;
- a description of the primary challenges faced by previous empirical research; and
- a summary of the general interpretations from the literature regarding the efficacy of these efforts.



METHODOLOGY

Separate from the broader financial well-being literature review (see **Chapter 2**), a targeted review of *financial literacy interventions* (e.g., trainings, workshops, programs, curricula) was conducted. The specific aim was to narrow the search scope to understand the empirical evidence behind financial literacy interventions, particularly research designs utilized and intervention effects.

Following Birkenmaier and colleagues' (2022) approach, a systematic review was conducted using an advanced query of research databases and Google Scholar, focusing on studies published between 1990 and 2024 (the inclusion of earlier years produced negligible differences in results). Search queries used the exact phrases "financial education" and "financial literacy;" other keywords included "training," "intervention," "behavior," "outcome," "control," and "effect*" OR "impact." Studies using interventions were prioritized. Given the relatively fewer military-specific studies, relevant nonmilitary studies were included. From this search, abstracts of 987 articles were screened to focus primarily on the following categories:

- Organisation for Economic Co-operation and Development (OECD) countries,³ a group comprising 38 democracies with market-based economies (26 of which are NATO members), including the United States;
- studies with some form of group comparison (i.e., natural, RCT, or QED);
- interventions serving adults (excluding studies focused on programs for the elderly, children, and high school/university students); and
- interventions in which financial literacy education and training were the primary focus.

³ The Latin American OECD member countries (Chile, Colombia, Costa Rica, and Mexico) were excluded.

See **Figure 5** for the decision tree used to narrow the results to 52 articles for a closer review, 45 of which were ultimately selected for inclusion. Although not included in the initial search results, 14 meta-analyses were also incorporated. These statistical assessments useful for drawing conclusions about a body of research from numerous previous studies. The final examination included 59 articles.

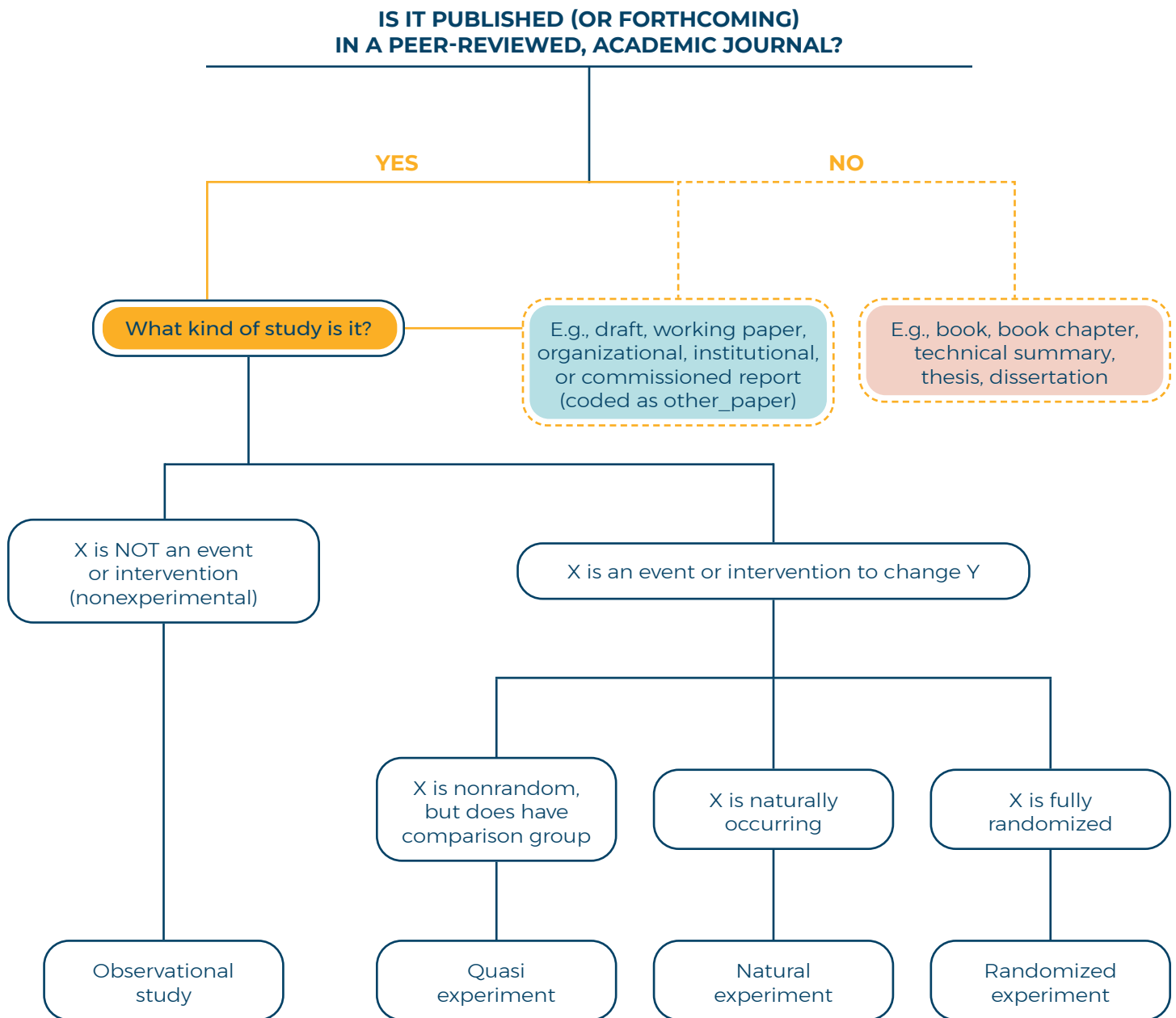


Figure 5. The decision tree used for the synthesis of intervention-focused scholarly literature review. Adapted from de Vocht et al. (2021) and Yoong et al. (2013).



PREVALENCE OF FINANCIAL LITERACY INTERVENTION RESEARCH

The 1990s saw a “dramatic increase in the development and delivery of financial education programs” (Fox et al., 2005, p. 196), which policy and decision-makers viewed as “a necessary antidote to the increasing complexity of consumers’ financial decisions” (Fernandes et al., 2014, p. 1861; see also Hilgert et al., 2003; Johnson & Sherraden, 2007). Examinations of the causal effects of *financial literacy* because of financial education initiatives, however, have only gained traction more recently (as demonstrated by Google Scholar search results⁴ for “financial literacy,” “intervention,” “treatment,” “effect,” and “impact” [see Figure 6]).

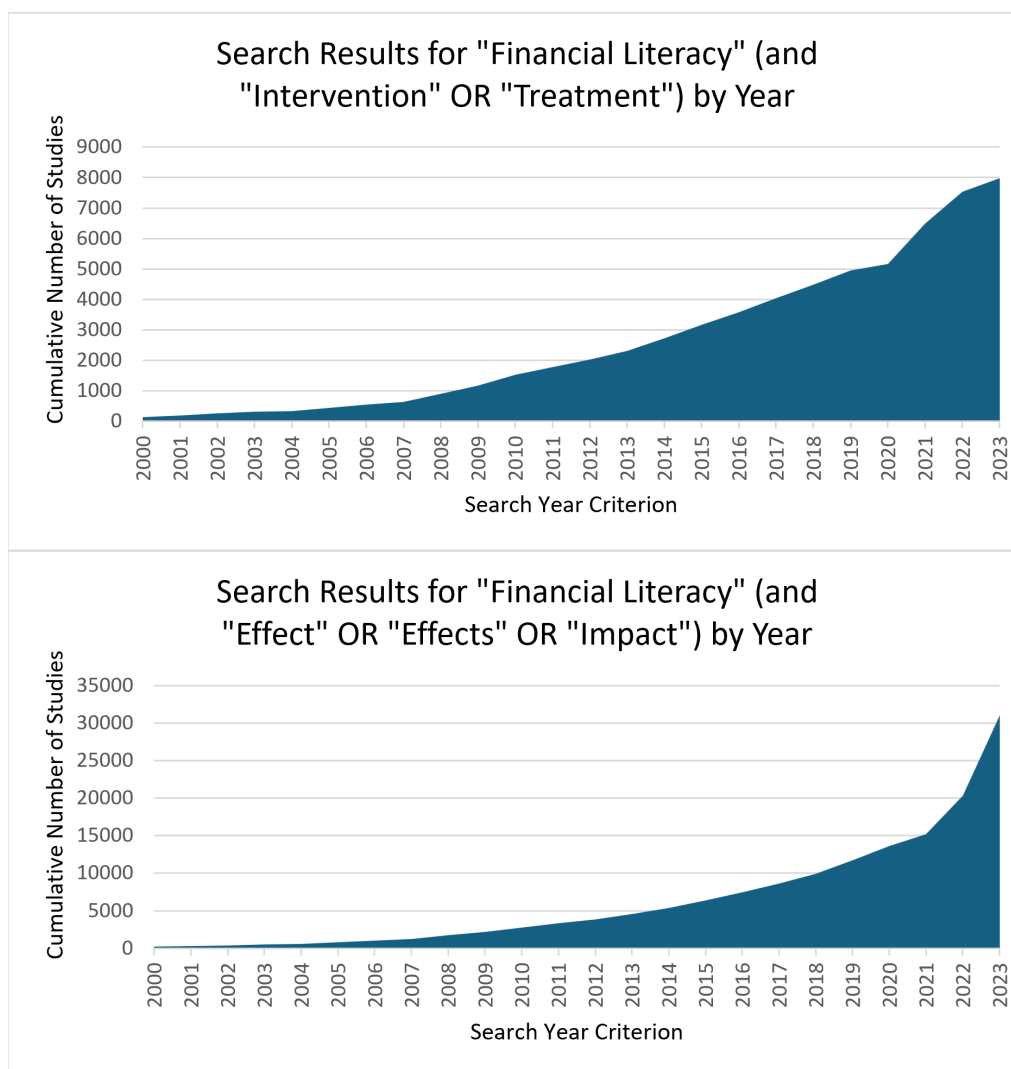


Figure 6. Google Scholar search results for financial literacy, interventions/treatments, and effects/impacts by year, 2000–2023.

Despite the relatively recent increase in such examinations, the consensus in the literature is that well-informed, financially educated individuals make better financial decisions for themselves and their families that, in turn, increase their economic security and financial well-being. Conversely, individuals who lack financial education are less likely to engage in recommended financial practices (Hilgert et al., 2003), thereby potentially increasing their risk for financial stress and financial instability (Hastings et al., 2013). Alongside this rationale for the need to provide financial literacy interventions comes the challenge of effectively evaluating such interventions, which vary considerably in aspects including intervention dosage and topics covered (Lusardi & Mitchell, 2014).

⁴ This includes duplicates, studies in languages other than English, non-OECD studies, and studies involving students.



CHALLENGES FACED BY PREVIOUS FINANCIAL LITERACY INTERVENTION RESEARCH

Common challenges identified in financial literacy intervention research relate to variations in study designs affecting measures, considerations for measuring constructs of interest, and factors that impact how conclusions are drawn. Each challenge domain is discussed in further detail below.

Variation in Study Design Affects Measures

Common study designs observed in financial literacy interventions include RCTs, QEDs, and observational studies.⁵

The strongest evaluation support is generally thought to come from RCTs. An RCT *randomly* assigns individuals to groups, with one group receiving the intervention and the other being a “control” (e.g., receiving either no intervention or a different type of intervention) (Hariton & Locascio, 2018). Randomization enables robust, often causal, conclusions about the intervention impact. By randomizing who receives the intervention, researchers avoid concerns about other factors that may explain observed associations. One example of such concerns is self-selection, where those who seek out interventions may be more prone to financial success due to certain underlying characteristics rather than the intervention itself. A study by Skimmyhorn et al. (2016) is an example of an RCT in a military setting. The study used an experimental approach to test the impact of two different education methodologies on various financial educational outcomes (e.g., knowledge, self-efficacy, risk preference) for students at West Point.

While RCTs are the “gold standard” for identifying the causal effects of interventions, QEDs are pre-postintervention studies with two or more nonrandomly assigned groups. QEDs are generally considered acceptable, particularly when it is not feasible to conduct an RCT (Harris et al., 2006). QEDs are similar to RCTs in many respects, but they are challenged by threats to internal validity due to the absence of randomization (Handley et al., 2018; Maciejewski, 2020). In other words, QEDs cannot always identify to what extent the observed outcome represents the true intervention effect versus how much is explained by factors related to group assignment (e.g., individuals self-selecting into the intervention or control group). An example of a QED in a military setting is found in Skimmyhorn (2016a), which examined, among other things, retirement savings contributions in connection with Personal Financial Management Course attendance.

Observational studies are more common than either RCTs or QEDs and are typically more feasible (Rosenbaum, 2005). “Observational” refers to the lack of experimentation or manipulation seen in RCTs and QEDs. Instead, the intervention is simply being “observed” without a comparison group. (Note. “Observational” design should not be confused with “observational” data, which refers to the method of data collection.) Cochran (1965) was among the first to define an observational study as having the objective to infer a cause-and-effect relationship when experimentation is not ethical and/or feasible. For instance, researchers could measure a Service member’s financial knowledge level and correlate this with the measured behavioral outcome of interest to determine whether a relationship exists with financial literacy (i.e., the combination of knowledge and skill). These types of studies cannot confirm causality, as it can be difficult to rule out “third variables” that drive the association (or lack thereof) between a financial literacy intervention and the outcome of interest (e.g., endogeneity; Fernandes et al., 2014; Kaiser et al., 2022; Lusardi & Mitchell, 2014; Stolper & Walter, 2017). For instance, determining how much of the observed outcome represents the true intervention effect versus how much is explained by factors such as the passing of time can be difficult to pinpoint. Despite these limitations, certain efforts, such as statistically “controlling” for contributing or confounding factors, can minimize (but not altogether remove) these concerns, thereby bolstering the conclusions that may be drawn from such studies.

Considerations for Measuring Constructs of Interest

Two common limitations to measuring constructs of interest in the existing financial literacy evaluation research are *self-selection bias* and *social desirability bias*.

Participants may consciously or unconsciously overreport the good, underreport the bad, and/or exaggerate their

⁵ Research studies examining natural experiments are the least prevalent in the scholarly literature. Conversely, observational studies are arguably the most common type of study regarding financial education, financial literacy, and financial interventions. While observational studies are mentioned due to their sheer prevalence (and studies with natural experiments are not due to their low frequency), the focus of this systemic review was on experiments that could provide evidence of causality (i.e., RCTs and QEDs).

behavioral changes. Participants' perceptions also commonly inform their responses. For instance, individuals are likely to report *not learning* from a financial literacy intervention after facing financial setbacks. In contrast, participants who faced financial success may *attribute* their improvement to the intervention. Participant self-assessments, therefore, are more likely measures of confidence and perceptions than “ideal” measures to assess behavior (Stolper & Walter, 2017; Willis, 2009).

However, emerging research counters this limitation by providing evidence that confidence, self-esteem, and subjective financial knowledge are more broadly related to financial behavior and financial well-being. Research has increasingly suggested the importance of self-perception, as *subjective* financial knowledge may be more closely associated with a change in financial behavior than *objective* financial knowledge (Henager & Cude, 2016; Tang & Baker, 2016). Strengthening this claim is Netemeyer et al.'s (2024) recent finding that, in some instances, only subjective (but not objective) knowledge affected changes in downstream behaviors. Other research notes that self-reports, although not a perfect match for behavior, can be a valuable proxy or indicator of behavior (see Stolper & Walter, 2017). For instance, Collins (2013) found this to be true when comparing self- and actual reports of debt and credit scores.

Factors That Impact how Conclusions Are Drawn From Previous Research

Another frequent critique in the literature focuses on the limited amount of rigorous evaluation assessing the effectiveness of financial literacy interventions and, therefore, what can be inferred from the studies available. This scholarly critique is echoed within financial literacy best practices established by the U.S. Financial Literacy and Education Commission (FLEC, 2019, 2020). The FLEC and the empirical scholarship examining the effects of financial literacy interventions caution against inferring causality, as extant research is limited and cannot be generalized to the broader population from specific study samples. Moreover, the FLEC urges increasing methodological rigor, including using RCT study designs highlighted previously.

It is important to note that switching to experimental designs alone is not enough to satisfy the call for increased rigor. Birkenmaier et al. (2022) concluded that, despite an increase in studies using random assignment, important methodological weaknesses mean that evidence remains sparse regarding whether participants' financial behaviors and/or financial outcomes are improved following a financial literacy intervention. In other words, switching to an experimental design without also increasing the rigor of the design methodology will continue to limit researchers' ability to infer causality.

Intertwined with rigor, other factors hindering comparisons among studies include a lack of clearly defined concepts, the frequent use of terms as interchangeable (e.g., using financial *literacy*—i.e., the combination of *knowledge* and *skill*—when only financial knowledge was meant), and the lack of research utilizing validated, comprehensive measures (Huston, 2010).



GENERAL INTERPRETATIONS OF THE EFFICACY OF FINANCIAL LITERACY INTERVENTIONS

Many studies have found only weak or little evidence establishing a causal relationship between financial education and desired outcomes, especially for particular subgroups (for a more nuanced discussion, see Burke et al., 2020; Gale & Levine, 2010; Schuchardt et al., 2009). A meta-analysis of 77 studies by Fernandes et al. (2014) found that interventions to improve financial literacy had a statistically significant but small effect on financial behavior.⁶ They examined 90 effect sizes, with an r value of .032 and a 95% confidence interval of .029 to .035.⁷ Other empirical analyses, however, have offered contradictory findings providing evidence of somewhat larger causal effects on downstream financial behaviors (see a review of 20 studies by Clark [2023] and a meta-analysis by Kaiser et al. [2022]).

⁶ In social science disciplines evaluating social science-related interventions, coefficients less than .10 are considered “small” effects (Fernandes et al., 2014).

⁷ In other words, .032 is the “estimate” of effect size. When accounting for error, we can be fairly confident that the “actual” effect size is between .029 and .035.

Several other research themes that can inform investigations of intervention efficacy include:

- Intervention effects may vary across participant subgroups. For instance, there may be changes for participants with the lowest levels of financial knowledge but not for those with high financial knowledge, or there could be changes for some demographic groups but not others (e.g., Harvey, 2019).
- An intervention may increase one component of financial literacy, such as an increase in financial knowledge, while not producing substantial changes in other intended outcomes, such as financial behavior. A good example is not saving money when the budget is tight, despite knowing the overall importance of saving money (Entorf & Hou, 2018; Lusardi et al., 2020). See the social-ecological model (Figure 4, Chapter 2) for more details about the many factors that contribute to individuals' behavior and, ultimately, their financial well-being.
- The importance of aligning measures with intervention components cannot be understated (Boateng et al., 2018; Hinkin, 1995; Lusardi, 2019). For instance, if an intervention targets goal setting but fails to assess knowledge and behaviors that align with goal setting, the measures are misaligned with the curriculum. As a result, evidence of change is unlikely, not because change did not occur, but because the measures did not align with the intervention's focus and theory of change (see Chapter 4 for more on the theory of change). As Coster (2013) explained, the value of a study relies on how closely the outcome measure is aligned with researchers' conceptualization of what is expected to change (and to what degree) as a result of the intervention, how long such change should take, and how to discern and measure such change.

Thus, an empirical analysis of any financial literacy intervention requires a rigorous methodology to infer causality and careful consideration of context when interpreting results.



PROCESS MODEL FOR FINANCIAL LITERACY PROGRAMMING

Drawing from the literature review, a graphical representation (see Figure 7) was developed to summarize the process through which financial literacy intervention efforts expect to reach their intended outcomes, termed a *process model*. Specific components include:

- *Content* commonly included in evidence-based financial literacy intervention efforts – This figure component summarizes what interventions generally focus on when aiming to help individuals achieve greater financial well-being.
- *Intervention participants' preexisting characteristics* – Individuals are not “blank slates” but arrive to an intervention with experiences and characteristics that impact the extent to which intervention goals (or intended outcomes) are reached.
- *Common goals (or intended outcomes)* of financial literacy interventions – These are the impacts that interventions often seek for the individuals they engage with.

These goals, or intended outcomes, are rooted in Kirkpatrick and Kirkpatrick's (2016) conceptualization of four levels for measuring intervention outcomes, which is discussed in more detail in Chapter 4. In brief, outcomes are conceptualized as *short-term* if they are evident immediately following an intervention, *midterm* if they are behavioral and require some time to develop, and *long-term* if they are further downstream and build on behavior outcomes (e.g., aspects of financial well-being).

A PROCESS MODEL FOR FINANCIAL LITERACY PROGRAMMING

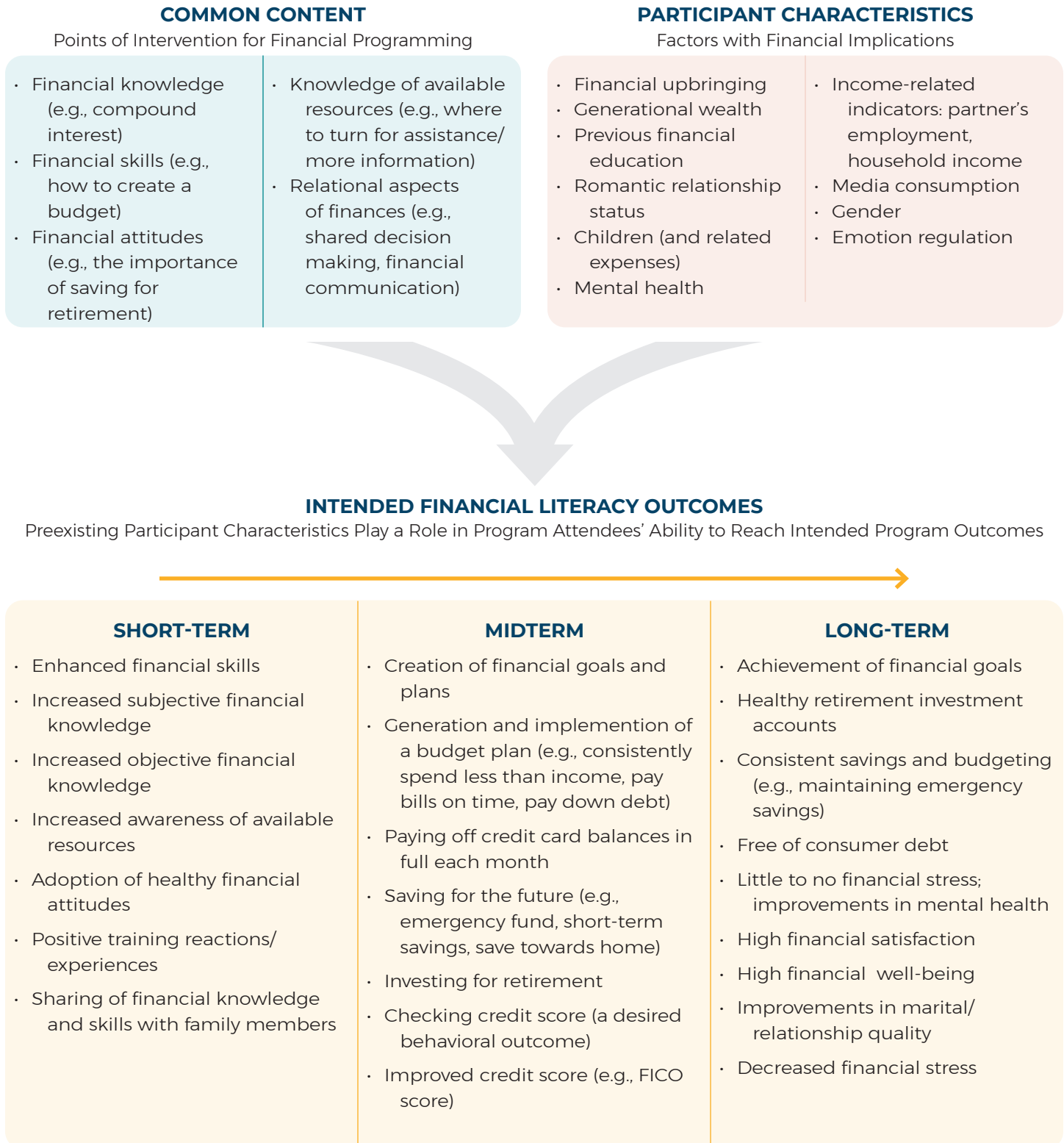


Figure 7. A process model to demonstrate general financial literacy program considerations and components.

The programming process model clarifies factors that are common (and feasible) targets of financial literacy interventions and a visual representation of the temporal ordering of common intended intervention outcomes. For instance,

- Research has established that subjective financial knowledge is important for financial well-being (Hwang & Park, 2023; Lusardi & Mitchell, 2017). It is also considered *appropriate*, *relevant*, and *feasible* to address in financial literacy interventions (Austin & Arnot-Hill, 2014; Bell et al., 2009) and to measure as a short-term outcome, given that change is observable immediately following the intervention.
- In contrast, decreased financial stress is also implicated in financial well-being (Dare et al., 2023; Dew et al., 2021; Want & Pullman, 2019) but is not considered appropriate, relevant, or feasible for measurement as an indicator of intervention efficacy immediately following financial intervention implementation. To assess whether an intervention has met its long-term goal of decreased financial stress, longitudinal data are needed surveying participants at multiple time points, including sometime after their initial intervention experience. Furthermore, connecting intervention to reduced financial stress is best accomplished when simultaneously capturing more proximal intervention effects (e.g., short- and midterm outcomes) to capture the *process* through which this long-term intended outcome is reached.

Further, the process model demonstrates the need to consider how intervention content (or activities) *interacts* with preexisting characteristics to determine whether intended intervention goals have been reached. One such consideration is that preexisting characteristics determine the degree to which a training topic produces observable growth.

- For example, a young adult who did not receive socialization about financial principles as an adolescent may find information on basic budgeting helpful. However, a young adult whose family provided extensive financial socialization may already know this information. Suppose these two individuals receive the same training with basic budgeting information. The first individual will likely experience observable growth in financial knowledge and may improve their financial behaviors. In contrast, the second individual is unlikely to experience any change in knowledge or behaviors.

In sum, this process model identifies common intervention content areas while recognizing the preexisting factors that interact with the intervention to determine the likelihood of interventions having their intended effect. Furthermore, the model demonstrates the temporal ordering of when intervention effects are likely to be observed. Together, this model can inform efforts to measure intervention efficacy by pointing to what and when to measure to ensure that measurements align with points at which the effects are most likely to be observed.

This page
intentionally left
blank.

CHAPTER 4:

THEORY OF CHANGE



OVERVIEW

This chapter includes these components:

Overview
Key Takeaways
Methodology
Theory of Change and Logic Model Components
Application to DoD Financial Literacy Education and Training Efforts

A theory of change describes how and why an intervention (referring to education, training, or program efforts) reaches its intended goals. It is a narrative explanation of why meaningful change is expected to occur when participants engage with a given intervention. As such, it is the first step in evaluating an intervention. Identifying a theory of change involves explicitly stating (a) underlying assumptions about how change is enacted and (b) beliefs about how an intervention contributes to these changes (Weiss, 1997, 2000). Specific components include intervention inputs, audience, outputs, and intended outcomes. Outcomes were organized using the levels of measurement found in Kirkpatrick and Kirkpatrick's (2016) training evaluation model. A logic model illustrates the narrative graphically.



KEY TAKEAWAYS

- A first step in evaluating interventions, including financial literacy education and training efforts, is to describe the theory of change, often illustrated graphically as a logic model.
- *Inputs* are diverse, essential resources needed to provide the intervention. *Audience* is the intended recipient of this intervention. The actual intervention efforts (i.e., what is done) are included in the *activities* section. *Outputs* are the products of the activities. *Outcomes* for recipients are organized into broad domains of reactions, learning, behavior change, and results.
- *Reaction* captures short-term, initial responses to intervention. *Learning* includes short-term financial knowledge, attitudes, and skills that participants learn or acquire during the intervention. *Behavior change* is a midterm outcome because it takes time to develop (e.g., building an emergency savings account). *Results* capture long-term outcome goals of the intervention, such as high financial well-being.
- The theory of change informs *what* and *when* to measure in assessing intervention efficacy.
- As a roadmap detailing how the intervention expects to enact change for participants, the theory of change can inform intervention modifications to better align inputs, activities, and outputs with intended outcomes.



Although there are numerous related Department of Defense (DoD) programs and initiatives, it was necessary to narrow the scope to what could feasibly be focused on in a single theory of change and logic model. Focusing on efforts currently overseen by the Office of Financial Readiness (FINRED) within DoD allowed for alignment with the study focus of DoD financial literacy programmatic outcomes while achieving the specificity needed for a theory of change.

The theory of change and logic model were constructed via a collaborative process in which feedback and expertise were sought from stakeholders in DoD, specifically FINRED (Bamberger & Mabry, 2020; see Mancini et al., 2004, for a discussion of how the worlds of evaluators and stakeholders should interrelate). Once created, the theory of change and logic model become iterative: They inform the evaluation, and the evaluation results should, in turn, inform theory enhancement and refinement.

The basic components are shown in **Figure 8** (adapted from the Division for Heart Disease and Stroke Prevention, 2017).

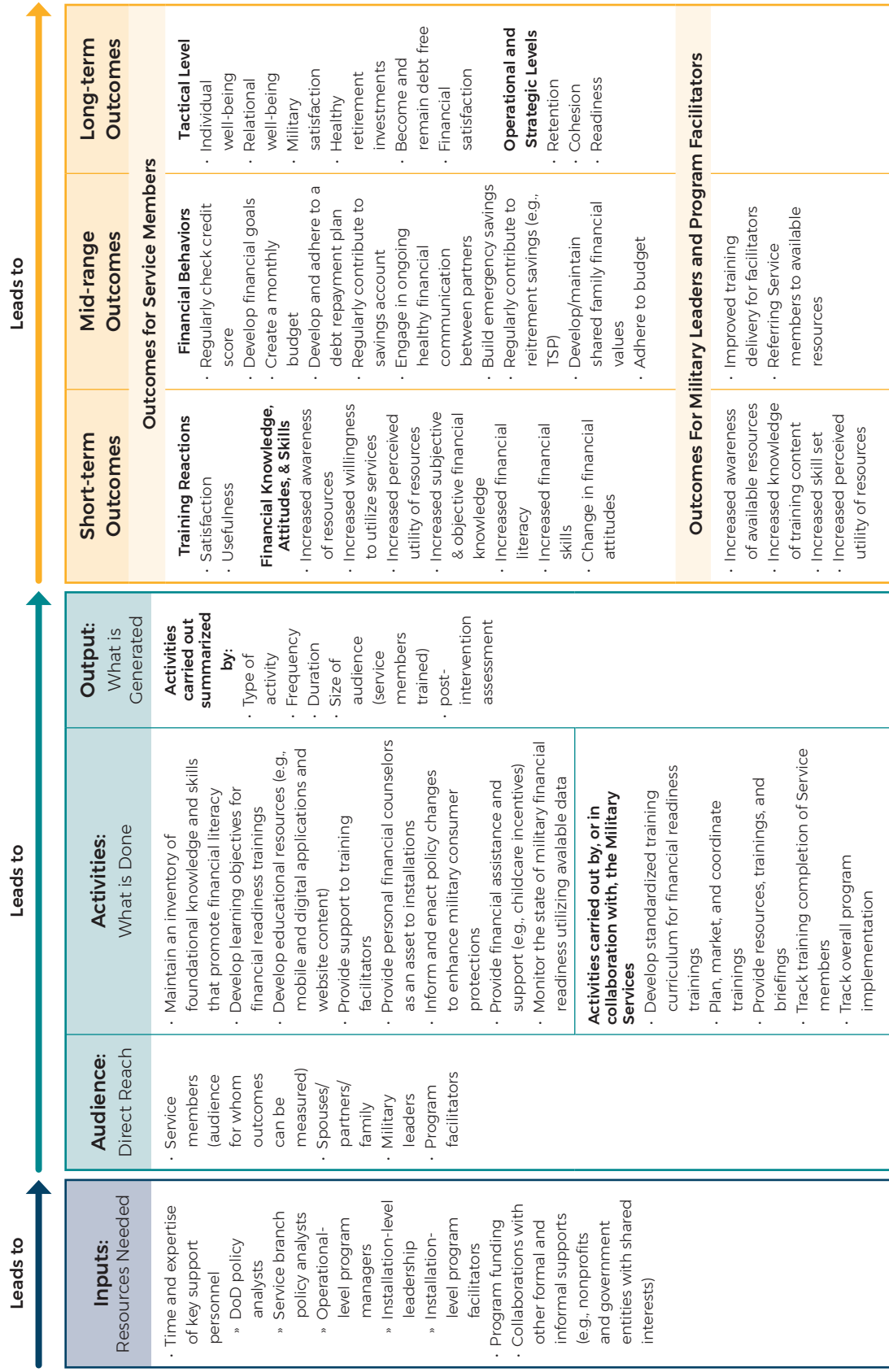


Figure 8. Simplified depiction of the components of a logic model.

Before describing the components of the proposed theory of change and logic model for DoD financial literacy education and training efforts, this section begins with a few considerations regarding external factors that impact participant engagement and outcomes (presented at the bottom of **Figure 9** and in the bullet points below).

- While a logic model aims to detail what an intervention seeks to change, a wide variety of contributing factors are beyond an intervention's sphere of control and may influence both the impact and outcomes of the interventions.
- Examples of *preexisting external factors* include financial upbringing, previous financial behaviors, behavioral motivation, excessive consumer debt accrued prior to financial literacy intervention, and mental health challenges.
- Figure 4 in Chapter 2 organizes numerous factors that influence financial well-being into a multilevel social-ecological schema: *individual, family, community, and military and societal context*. Acknowledging and, when feasible, accounting for such factors helps stakeholders conceptualize their influence within the larger context. These varied factors can have widespread implications for both the impact and intended outcomes of the intervention.
- Distinguishing between *intervention outcomes* and *community outcomes* is important for evaluation. Intervention outcomes are inherently related to the programmatic activities and achievable by the intervention either directly or indirectly. Community outcomes refer to outcomes that no one program, unit, or organization controls (e.g., individual well-being).

LOGIC MODEL FOR DOD FINANCIAL LITERACY EDUCATION AND TRAINING EFFORTS



Key Assumptions: Military life poses unique stressors. Financial stress can negatively impact service member health, family relations, mission readiness, and retention. Positive financial well-being can lessen the impact of stressors on military service members and their family.

Pre-existing External Factors: The midterm and long-term outcomes are related, in part, to DoD financial literacy education and training efforts. Other factors internal and external to the individual contribute to these outcomes.

Figure 9. A logic model for DoD financial literacy education and training efforts.

PRIORITIES

Financial Readiness
Financial Stability
Financial Security
DODI 1322.34



THEORY OF CHANGE AND LOGIC MODEL COMPONENTS

Inputs and Audience

The resources needed to develop and maintain an intervention must be defined (i.e., what is needed to promote Service members' financial literacy?). The *inputs* column of **Figure 9** describes diverse, essential resources, including the time and expertise of personnel to develop and implement guiding policy, develop operational plans, and carry out guidance; collaborative partnerships within and outside the military; and funding. These inputs must be maintained to effectively reach and serve the identified *audiences* (or recipients), which include Service members, military spouses/partners/families, training facilitators, and military leaders. All audience groups are (potential) recipients of some type of intervention effort (not necessarily identical across groups).

Activities

The actual intervention (i.e., what is done) are defined in the *activities* column. Activities are defined broadly and comprise the numerous activities that occur "behind the scenes" as well as those that are forward-facing, including direct services and available resources. For example, FINRED provides materials to aid in curriculum development for financial readiness training. The Service branches develop and implement these trainings, providing financial literacy education through mobile and digital applications (apps) and website content for Service members and families. Notably, in this logic model, activities are focused most directly on Service members. Thus, measurable intervention outputs and outcomes are oriented toward Service members, assuming these activities spill over into both military- and family-focused outcomes.

Outputs

The products of the activities are the *outputs*. Useful output indicators are generally easily quantifiable. Hence, outputs are commonly *counts* and *notations*. Example outputs include how frequently an activity is carried out (e.g., a training, a report generated, website content added), the amount of time an activity takes (30-minute briefing), and the number of individuals reached directly (e.g., number of training attendees, number of mobile app users in a month, number of individuals who engage with social media or online resources).

Outcomes

While outputs are typically focused on monitoring intervention implementation, *outcomes* are focused on the outcomes of intervention recipients (i.e., the target audience/s). Short-, mid-, and long-term outcomes expected to result from the activities are the final component of the logic model. These outcomes reflect the intervention goals and should ideally be (a) evidence-based and (b) identified prior to intervention development and implementation (De Silva et al., 2014). Time is one of the clearest distinguishing factors of the outcome levels.

- Short-term outcomes represent what the audience could immediately possess following intervention engagement.
- Midterm outcomes represent behaviors and actions that take time for audience members to develop and enact.
- Long-term outcomes articulate the audience's downstream, "big-picture" goals.

The temporal ordering of outcome levels means that they can be considered a series of "if...then" statements (Chen, 2015). In other words, *if* the short-term outcomes occur, *then* the midterm outcomes develop. Similarly, *if* the midterm outcomes develop, *then* the long-term outcomes can be attained. Outcomes should be directly or indirectly related to the identified activities.

In addition to ordering by time, outcomes can be grouped by level. For instance, intervention outcomes can be conceptualized (and measured) at the group, organization, or community levels (Chen, 2015). Within the *military and societal context*, intended outcomes realized for individual Service members represent the *tactical* level, and the accumulation of these outcomes for multiple Service members is thought to spill over to impact *operational* (unit) and, ultimately, *strategic* (DoD/Service branch-wide) levels of financial readiness. For instance, financial stability is expected to support the development of fully operational units (e.g., cleared for deployment, sufficient retention), and fully operational units are essential for maintaining a "ready" force.

Drawing from financial literacy intervention research (**Chapter 3**), intervention impacts should be conceptualized (and measured) as close to the source as possible. Thus, if the intervention serves *individuals*, a theory of change should be

heavily grounded in the intended outcomes for individuals. Furthermore, it is advised not to overlook measuring more proximal outcomes. For instance, interventions are often most interested in long-term outcomes (e.g., “big-picture” goals such as enhanced financial well-being). However, measuring the short- and midterm outcomes that are expected to lead to long-term outcomes is essential. Building on the foundational short-term level of outcomes, it is possible to consider expanding interventions to broader levels when feasible. A theory of change offers the most value when applied at various levels of evaluation, from the individual to the organization (Jackson, 2013).



APPLICATION TO DOD FINANCIAL LITERACY EDUCATION AND TRAINING EFFORTS

The logic model in **Figure 9** graphically displays how and why DoD financial literacy education and training efforts, as an intervention, are well positioned to promote a range of desired outcomes. The following paragraphs describe the next step: designing evaluation effort(s) to test the theory of change.

The Kirkpatrick and Kirkpatrick (2016) training evaluation model is an established framework for evaluating intervention effects. This model identifies four *levels of measurement* (see **Figure 10**) that align with and complement the outcomes from the logic model while emphasizing the foundational role of participant reactions:

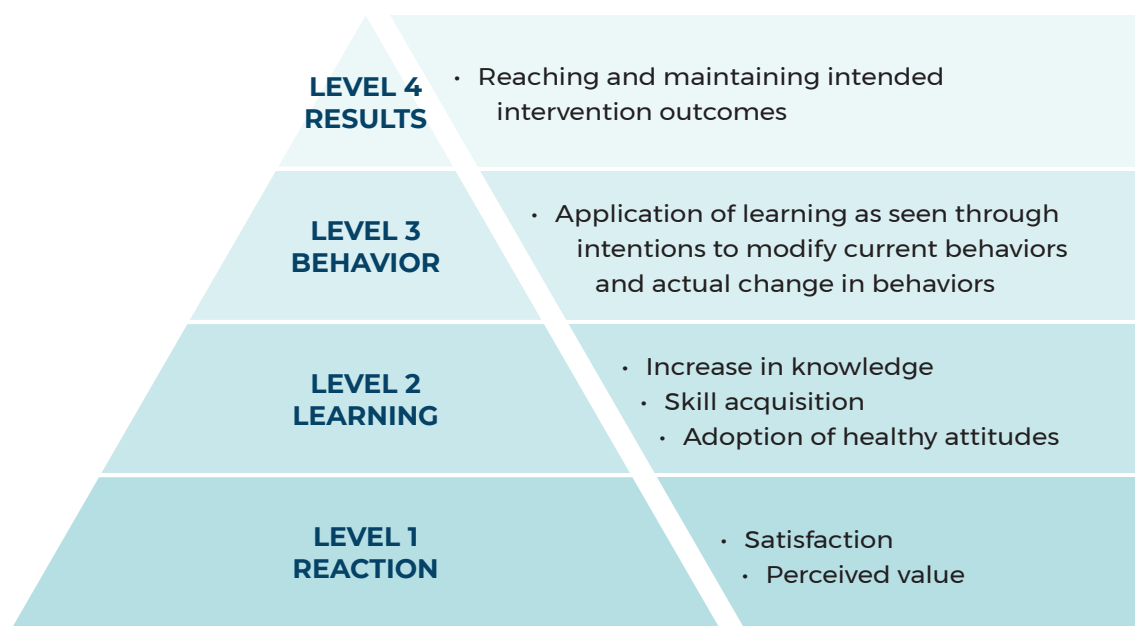


Figure 10. Levels of measurement from the Kirkpatrick and Kirkpatrick (2016) model of training evaluation.

- Reaction. A short-term outcome focused on participants’ initial response to the intervention.
- Learning. Short-term outcomes highlight the financial knowledge, attitudes, and skills participants learn or acquire during training, briefing, counseling, or interaction with other information sources (e.g., website, app).
- Behavior Change. Midterm behavioral outcomes include checking one’s credit score, opening a savings account, or increasing one’s Thrift Savings Plan/retirement contribution.
- Results. Long-term outcome goals of the intervention (e.g., for Service members reporting healthy retirement investments and high financial well-being).

These levels build on one another. Reactions to the intervention are positioned as foundational for learning. Learning is a prerequisite for behavior change, and behavior change is essential for results.

In designing evaluation efforts, it is important to consider the level(s) of measurement desired when selecting what method to use. For instance, if the desire is to speak to *results* (i.e., long-term outcomes), an experimental and/or quasi-experimental design (see **Chapter 3**) may be optimal for drawing causal conclusions. Notably, there are many factors that must be considered as well, such as feasibility and resources required, and other designs can also provide meaningful measures of training outcomes.

CHAPTER 5:

MAPPING ON METRICS

This chapter includes these components:

- Overview
- Outcomes and Measures Table
- Additional Recommended Scales



OVERVIEW

The work in **Chapter 4**—articulating the theory of change and identifying how intervention activities map onto measurable outcomes—sets the stage for selecting appropriate and intervention-specific measures and indicators. Building on that work, **Table 1** in this chapter provides measures that could be used together to comprehensively test the theory of change and logic model described in Chapter 3 (see **Figure 9**).

Following research recommendations for evaluating intervention efficacy, these measures align with the specific efforts and outcomes of interest (Boateng et al., 2018; Hinkin, 1995; Lusardi, 2019). Following another recommendation, they also draw from empirically based research (Darling et al., 2020). This document is not exhaustive in terms of all possible measures. Instead, it demonstrates measures that align with Department of Defense (DoD) financial literacy education and training efforts while (a) prioritizing measures with consistent empirical support and (b) capturing heterogeneity in field of study, reporter, or way of assessing constructs.

Furthermore, seven measures with a strong probability of being useful across various contexts and study designs were identified. A brief description of these measures along with the scale items and response options are included after Table 1.

Reminder: Measures are only one part of investigating the efficacy of financial literacy intervention (including training, education, workshops, and programming) efforts. What information a measure provides, such as whether it provides causal evidence of training impact, depends on the study methods, particularly the design employed (see **Chapter 3** for more on financial literacy interventions and study designs used to identify intervention outcomes).

OUTCOMES AND MEASURES TABLE

CONSTRUCT	MEASURE NAME OR TYPE	SAMPLE ITEM	CITATION
OUTCOME LEVEL: SHORT-TERM			
Usefulness of Training	Assessment developed for Veterans experiencing reintegration challenges	“I felt the training on financial literacy was relevant.” 1 = <i>Strongly disagree</i> to 5 = <i>Strongly agree</i>	Tangoalem (2023)
	Assessment developed for Service members receiving financial training	“I think this training and the materials provided will help me improve my financial behaviors.” 1 = <i>Strongly disagree</i> to 5 = <i>Strongly agree</i>	O’Neal, Lucier-Greer, Peterson, & McKay (2023)
Satisfaction with Training	Single item	“Overall, I was satisfied with the training.” 1 = <i>Strongly disagree</i> to 5 = <i>Strongly agree</i>	Generated for this study
Awareness of Resources	Assessment developed for Service members receiving financial training	“Where can Service members and their families receive in-person financial counseling and training free of charge on an installation?” <i>Multiple-choice answers, correct/incorrect scoring</i>	Adapted from O’Neal, Lucier-Greer, Peterson, & McKay (2023)
Subjective Financial Knowledge	National Financial Capability Study (NCFCS) questionnaire, Section M	“How would you assess your overall financial knowledge?” 1 = <i>Very low</i> to 7 = <i>Very high</i>	FINRA Investor Education Foundation (2021)
Objective Financial Knowledge	Financial knowledge scale	“Suppose you had \$100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?” <i>Multiple-choice answers, correct/incorrect scoring</i>	Lusardi et al. (2010) [used in NFCS (FINRA, 2021)]
	Financial Literacy “Big Five” (5 items)	“Buying a company stock usually provides a safer return than a stock mutual fund” <i>True/false</i>	Lusardi & Mitchell (2017)
Objective (Intervention-Specific) Financial Knowledge	Knowledge questions that closely map onto education/training content	Questions would need to be developed for a specific education/training effort. As an illustration, this question may align with curriculum: “In which section of the Leave and Earnings Statement (LES) are contributions to the Thrift Savings Plan (TSP) listed?” <i>Multiple-choice answers, correct/incorrect scoring</i>	Generated for this study
Financial Skills	Financial Skill Scale	“I am able to make good financial decisions that are new to me.” 0 = <i>Does not describe me at all</i> to 4 = <i>Describes me completely</i>	CFPB (2018)
Financial Attitudes	Financial Attitudes Scale	“A written budget is absolutely essential for successful financial management.” 1 = <i>Strongly disagree</i> to 5 = <i>Strongly agree</i>	Parrotta & Johnson (1998)

Table continues on next page.

CONSTRUCT	MEASURE NAME OR TYPE	SAMPLE ITEM	CITATION
OUTCOME LEVEL: MIDTERM			
Regularly Checking Credit Score	Self-reported credit check and score (see "Sample Items")	"Have you requested your credit score in the past 6 months?" <i>Yes/no</i>	Saxey, LeBaron-Black, Totenhagen, & Curran (2023)
Developing Financial Goals	Financial Management Behavior Scale (FMBS)	[Please indicate how often you have engaged in the following activities in the past six months:] "Saved for a long term [sic] goal such as a car, education, home, etc." 1 = <i>Never</i> to 5 = <i>Always</i>	Dew & Xiao (2011)
	Single item	"Do you or your family have written goals such as owning a home, retirement, children's education, or starting a business that require savings?" <i>Yes/no</i>	Cho et al. (2012) [Adapted from Hayhoe & Gutter (2012)]
	Single item	"Do you have a 3-5 year financial plan?" [By financial plan, we mean a series of actions to achieve a financial goal or goals; these may be written or not.] <i>Yes/no</i>	Kerr et al. (2016) [using ASIC (2014) questions]
Creating a Monthly Budget	Financial Management Behavior Scale	[Please indicate how often you have engaged in the following activities in the past six months:] "Kept a written or electronic record of your monthly expenses." 1 = <i>Never</i> to 5 = <i>Always</i>	Dew & Xiao (2011)
	Single Item	"Does your household have a budget? A household budget is used to decide what share of your household income will be used for spending, saving or paying bills." <i>Yes/no/don't know/prefer not to say</i>	FINRA Investor Education Foundation (2015)
Adhering to a Budget	Financial Management Behavior Scale	[Please indicate how often you have engaged in the following activities in the past six months:] "Stayed within your budget or spending plan." 1 = <i>Never</i> to 5 = <i>Always</i>	Dew & Xiao (2011)
	Single Item	"I have a weekly or monthly budget that I follow." 1 = <i>Almost never</i> to 5 = <i>Almost always</i>	Carlson et al. (2015)
Paying Off Debt (e.g., credit card debt)	Financial Management Behavior Scale	[Please indicate how often you have engaged in the following activities in the past six months:] "Paid off credit card balance in full each month." 1 = <i>Never</i> to 5 = <i>Always</i>	Dew & Xiao (2011)
	The Poor Credit Card Behavior Index	The sum of four indicators: not paying [credit cards off] in full, exceeding [credit] limit, paying a late fee, and [using a] cash advance. <i>Yes/no</i>	Skimmyhorn (2016b) [using NFCS questions]

CONSTRUCT	MEASURE NAME OR TYPE	SAMPLE ITEM	CITATION
OUTCOME LEVEL: MIDTERM			
Building Emergency Savings	Financial Management Behavior Scale	[Please indicate how often you have engaged in the following activities in the past six months:] “Began or maintained an emergency savings fund.” 1 = <i>Never</i> to 5 = <i>Always</i>	Dew & Xiao (2011)
	Single item	“Have you set aside emergency or rainy day funds that would cover your expenses for 3 months, in case of sickness, job loss, economic downturn, or other emergencies?” <i>Yes/no</i>	Fan & Zhang (2021)
Regularly Contributing to a Savings Account	Financial behavior measure	[How likely are you to...] “Save money each month for the future.” 1 = <i>Not likely</i> to 5 = <i>Very likely</i>	Adapted from Shim et al. (2009)
	Financial Management Behavior Scale	[Please indicate how often you have engaged in the following activities in the past six months:] “Saved money from every paycheck” 1 = <i>Never</i> to 5 = <i>Always</i>	Dew & Xiao (2011)
Regularly Contributing to a Retirement Savings Account (e.g., TSP)	Financial Management Behavior Scale	[Please indicate how often you have engaged in the following activities in the past six months:] “Contributed money to a retirement account” 1 = <i>Never</i> to 5 = <i>Always</i>	Dew & Xiao (2011)
	Single item	“How often in the last 6 months have you contributed part of your paycheck to your Thrift Savings Plan (TSP) retirement account?” 1 = <i>Never</i> to 5 = <i>Always</i>	Generated for this study
	Administrative TSP records	Using TSP records, examine the percentage of Service members investing in their TSP account.	Not applicable
Engaging in Ongoing Healthy Financial Communication Between Partners	Positive financial communication between partners	“My partner and I discuss major household purchases before spending the money.” 1 = <i>Very strongly disagree</i> to 6 = <i>Very strongly agree</i>	Britt et al. (2017)
Developing/Maintaining Shared Family Financial Values	The Shared Goals and Values Scale	“We have similar values about the importance and meaning of money in our lives.” 1 = <i>Strongly disagree</i> to 7 = <i>Strongly agree</i>	Archuleta, Grable, & Britt (2013)

Table continues on next page.

CONSTRUCT	MEASURE NAME OR TYPE	SAMPLE ITEM	CITATION
OUTCOME LEVEL: LONG-TERM			
Retirement Investments	Single item	“How confident are you that you are investing enough for your retirement?” 1 = <i>Not confident</i> to 5 = <i>Extremely confident</i>	Adapted from Lusardi & Mitchell (2017)
Acceptable Credit Score	Single item	“What is your credit score?” 1 = <i>less than 499</i> , 2 = <i>500–600</i> , 3 = <i>601–660</i> , 4 = <i>661–780</i> , 5 = <i>781–850</i> , 6 = <i>I don't have a credit score</i> , 7 = <i>I don't know my credit score</i> , 8 = <i>I don't know what a credit score is</i> .	Generated for this study
	Administrative records	Actual credit scores <i>It could be scored as a continuous variable or with a cutoff based on the financial implications. For instance, 670 has been identified as what lenders consider acceptable.</i>	Not applicable
Become and Remain Debt Free	Single item	“Which of the following BEST describes your financial situation?” 0 = <i>I have debt (e.g., student loan debt, credit card debt)</i> ; 1 = <i>I am debt free, except for mortgage debt</i> ; 2 = <i>I am completely debt free (including no mortgage debt)</i>	Generated for this study
Financial Satisfaction	The Financial Satisfaction Scale	“I am satisfied with my current level of savings” and “Amount of money owed.” 1 = <i>Very dissatisfied</i> to 6 = <i>Very satisfied</i>	DeVaney et al. (1996)
	Single item	“How satisfied are you with your overall current financial situation?” 1 = <i>Very dissatisfied</i> to 10 = <i>Very satisfied</i>	Archuleta, Dale, & Spann (2013)
Financial Well-Being	CFPB Financial Well-Being Scale (10-item version)	“I am securing my financial future.” 1 = <i>Not at all</i> to 5 = <i>Completely</i>	CFPB (2015)
Lack of Financial Stress	The InCharge© Financial Well-Being Scale	“How stressed do you feel about your personal finances in general?” 1 = <i>Overwhelming stress</i> to 10 = <i>No stress at all</i>	Prawitz et al. (2006)
	Financial Distress	“I often worry about my financial situation.” <i>Yes/no</i>	Patel et al. (2016) [using Speak to Your Health! Community Survey, Michigan, 2011]

CONSTRUCT	MEASURE NAME OR TYPE	SAMPLE ITEM	CITATION
OUTCOME LEVEL: LONG-TERM			
Individual Well-being	Satisfaction With Life Scale	"In most ways my life is close to my ideal." 1 = <i>Strongly disagree</i> to 7 = <i>Strongly agree</i>	Diener et al. (1985)
	Single item	"In general, how satisfied are you with your life?" 1 = <i>Very satisfied</i> to 4 = <i>Very dissatisfied</i>	Cheung & Lucas (2014)
	Depressive Symptoms	"I feel as if I am slowed down." 1 = <i>Not at all</i> to 4 = <i>Nearly all the time</i>	Zigmond & Snaith (1983)
	Anxiety Symptoms	"I feel tense or 'wound up'." 1 = <i>Not at all</i> to 4 = <i>Most of the time</i>	Zigmond & Snaith (1983)
Relational Well-Being	Couples Satisfaction Index	"Please indicate the degree of happiness, all things considered, of your relationship." 0 = <i>Extremely Unhappy</i> to 6 = <i>Perfect</i>	Funk & Rogge (2007)
	Relationship Flourishing Scale	"My partner has helped me to grow in ways that I could not have done on my own." 1 = <i>Strongly disagree</i> to 5 = <i>Strongly agree</i>	Fowers et al. (2016)
	Brief Assessment of Family Functioning Scale (BAFFS)	"We can express feelings to each other." 1 = <i>Strongly agree</i> to 4 = <i>Strongly disagree</i> [sum the values for the 3 item BAFFS; scores above 6 indicate distress]	Mansfield et al. (2018)
Military Satisfaction	Single item	"Taking all things into consideration, how satisfied are you, in general, with each of the following aspects of being in the military? Mark one answer for each" [a. Your total compensation (i.e., base pay, allowances, and bonuses)] 1 = <i>Very satisfied</i> to 5 = <i>Very dissatisfied</i> [reverse coded]	Question 21 in the 2023 Status of Forces Survey of Active Duty Members
Retention	Single item	"At the present time, which statement best describes your military career plans?" 1 = <i>Leave the military before I complete present obligation</i> to 5 = <i>Stay in the military until retirement</i>	King et al. (2020) [using the 2011 Air Force Community Assessment Survey (CAS)]
Unit Cohesion	Unit Cohesion Scale	"My unit is like family to me." 1 = <i>Strongly disagree</i> to 5 = <i>Strongly agree</i>	Adapted from Vogt et al. (2012)
Unit Readiness	Single item	"Overall, how well prepared is <u>your unit</u> to perform its wartime mission?" 1 = <i>Very well prepared</i> to 5 = <i>Very poorly prepared</i> [reverse coded]	Question 43 in the 2023 Status of Forces Survey of Active Duty Members

Table 1. Logic model constructs and measures with sample items. *Note.* Some items have been adapted from the source for better application to DoD contexts.



ADDITIONAL RECOMMENDED SCALES

The measures provided in **Table 1** were designed to be *intervention-specific*, aligning with the theory of change and logic model developed for FINRED efforts. Because measures (and methods) must be specific to any evaluation or assessment effort, the measures in Table 1 may not translate to other measurement efforts – although some overlap is probable. However, seven measures were identified that are likely to have a high degree of utility across different evaluation or assessment efforts. These measures are further broken down to distinguish between three measures that highly recommended measures and four additional measures that are also highly relevant but more nuanced in their focus.

Highly Recommended:

1. Consumer Finance Protection Bureau's Financial Well-Being Scale (CFPB, 2015) (the full 10-question scale)
2. Financial Management Behavior Scale (Dew & Xiao, 2011)
3. Financial Satisfaction Scale (DeVaney et al., 1996)

Optional Scales on Specific Topics:

4. InCharge Financial Distress/Financial Well-Being Scale (Prawitz et al., 2006)
5. Net worth question (Joo & Grable, 2004)
6. Financial Anxiety Scale (Archuleta et al., 2013)
7. Financial Self-Efficacy Scale (Lown, 2011)

1. FINANCIAL WELL-BEING

The CFPB's 10-item **Financial Well-Being Scale** has been in use since 2015 and has undergone extensive psychometric testing (CFPB, 2015). While the five-item CFPB scale currently included in the SOFS data is highly correlated with the 10-item scale, the full scale has better psychometric properties.

The CFPB Financial Well-Being Scale covers many of the overarching topics that DoD and the military Services could be interested in understanding over time, including the following:

- having a financial “cushion” against unexpected expenses and emergencies;
- having savings, health insurance, and good credit;
- reliance on friends and family for financial assistance as a factor that increases one's capacity to absorb a financial shock;
- having financial goals (e.g., paying off one's student loans within a certain number of years or saving a particular amount towards one's retirement);
- being on track to meet financial goals;
- being able to make choices that allow one to enjoy life (e.g., taking a vacation, enjoying a meal out, going back to school to pursue an advanced degree, or working less to spend more time with family—all deemed essential components of financial well-being); and
- having the financial security and freedom of choice in both the present and the future.

Items 1-6:

Stem: How well does this statement describe you or your situation?

Response options: 1 = Not at all, 2 = Very little, 3 = Somewhat, 4 = Very well, 5 = Completely

1. I could handle a major unexpected expense.
2. I am securing my financial future.
3. Because of my money situation, I feel like I will never have the things I want in life.*
4. I can enjoy life because of the way I'm managing my money.
5. I am just getting by financially.*
6. I am concerned that the money I have or will save won't last. *

Items 7-10:

Stem: How often does this statement apply to you?

Response options: 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always

7. Giving a gift for a wedding, birthday or other occasion would put a strain on my finances for the month.
8. I have money left over at the end of the month.*
9. I am behind with my finances.
10. My finances control my life.*

Asterisks (*) indicate the five items currently used in the SOFS (AD questions 84 and 85).

Recommendations include expanding to incorporate the additional five questions not currently found in the SOFS.

2. FINANCIAL BEHAVIOR

The **Financial Management Behavior Scale** (Dew & Xiao, 2011) captures engagement in explicit positive financial behaviors.

- Reliability¹: Cronbach's alpha from the Dew and Xiao (2011) measure validation study = .81
- Validity²: There is evidence for face, content, construct, criterion, and external validity using a nationally representative sample.

If space does not permit utilizing the full scale, recommendations include using seven of the 15 items (noted with an asterisk). These items were identified based on their salience to financial well-being in the review of the literature and informed by other shortened versions of this scale (e.g., Saxey et al, 2024; Sorgente et al., 2023). (Note: It is preferable to use complete scales when possible. Condensing scales can affect their reliability and validity.)

¹ Scale reliability is commonly measured using Cronbach's alpha, which is a measure of the extent to which all the items in a scale "hang together" and capture the same concept. Alpha values are specific to each sample and, consequently, warrant examination with each sample. Values between (roughly) .70 and .95 are preferred.

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*, 2, 53-55. <https://doi.org/10.5116%2Fijme.4dfb.8dfd>

² Face validity refers to how well items measure what was intended to be measured. *Content* validity is the extent to which a measure covers the construct. *Construct* validity is the degree to which the measure aligns with the theoretical construct. *Criterion* validity is the extent to which measurements correlate with other variables (as they were expected to). *External* validity is the degree to which the results can be generalized to the larger population.

Items 1-12:

Stem: Please indicate how often you have engaged in the following activities in the past 6 months.

Response options: 1 = Never, 2 = Seldom, 3 = Sometimes, 4 = Often, 5 = Always

1. Comparison shopped when purchasing a product or service
2. Paid all your bills on time*
3. Kept a written or electronic record of your monthly expenses
4. Stayed within your budget or spending plan*
5. Paid off credit card balance in full each month*
6. Maxed out the limit on one or more credit cards
7. Made only minimum payments on a loan
8. Began or maintained an emergency savings fund*
9. Saved money from every paycheck*
10. Saved for a long-term goal such as a car, education, home, etc.*
11. Contributed money to a retirement account*
12. Bought bonds, stocks, or mutual funds

Items 13-15:

Stem: Please rate your behavior regarding insurance within the past year on a scale of 1-5:

Response options: 1 = Never, 2 = Seldom, 3 = Sometimes, 4 = Often, 5 = Always

13. Maintained or purchased an adequate health insurance policy
14. Maintained or purchased adequate property insurance like auto or homeowners insurance
15. Maintained or purchased adequate life insurance

Asterisks (*) denotes the seven questions recommended if including the full scale is not feasible.

3. FINANCIAL SATISFACTION

The Financial Satisfaction Scale (DeVaney et al., 1996) is useful for assessing satisfaction with a variety of financial considerations.

- Reliability: Cronbach's alpha from DeVaney et al. (1996) = .89
- Validity: Scale scores were shown to be positively associated with having a spending and savings plan.

Stem: Scale authors did not establish a stem, but a reasonable stem is "Please respond to the following questions about how satisfied you are, all things considered, with your present financial situation."

Response options: 1 = Very Dissatisfied to 6 = Very Satisfied (authors did not specify labels for values of 2-5)

Items:

1. Level of household income
2. Money for family necessities
3. Money for family emergencies
4. Current level of savings
5. Amount of money owed
6. Amount for future needs
7. Way family money is handled³
8. Who handles family money

³ This item was originally "Way money handled in family." We revised the language for clarity.

4. FINANCIAL DISTRESS

The InCharge Financial Distress/Financial Well-Being Scale© (Prawitz et al., 2006) assesses elements of financial distresses that Service members may be experiencing.

This scale is copyrighted, and permission must be obtained to utilize this scale in future research.

©Copyright by InCharge Education Foundation and E. Thomas Garman, 2004, 2005, and 2006. All rights reserved.

- Reliability: Cronbach's alpha from Prawitz et al. (2006) = .96
- Validity: There is evidence for face, content, criterion, and construct validity.

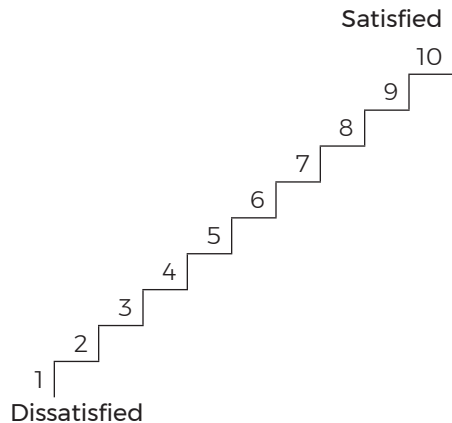
Stem: Circle or check the responses that are most appropriate for your situation.

1. What do you feel is the level of your financial stress today?

Response options for item #1: 1 = Overwhelming Stress to 10 = No Stress at All

2. On the stair steps below, mark (with a circle) how satisfied you are with your present financial situation. The "1" at the bottom of the steps represents complete dissatisfaction. The "10" at the top of the stair steps represents complete satisfaction. The more dissatisfied you are, the lower the number you should circle. The more satisfied you are, the higher the number you should circle.

Response options for item #2: 1 = Dissatisfied to 10 = Satisfied (as seen in visual below)



3. How do you feel about your current financial situation?

Response options for item #3: 1 = Feel Overwhelmed to 10 = Feel Comfortable

4. How often do you worry about being able to meet normal monthly living expenses?

Response options for item #4: 1 = Worry All the Time to 10 = Never Worry

5. How confident are you that you could find the money to pay for a financial emergency that costs about \$1,000?

Response options for item #5: 1 = No Confidence to 10 = High Confidence

6. How often does this happen to you? You want to go out to eat, go to a movie or do something else and don't go because you can't afford to?

Response options for items #6: 1 = All the Time to 10 = Never

7. How frequently do you find yourself just getting by financially and living paycheck to paycheck?

Response options for items #7: 1 = All the Time to 10 = Never

8. How stressed do you feel about your personal finances in general?

Response options for item #8: 1 = Overwhelming Stress to 10 = No Stress at All

5. NET WORTH

The **net worth** question is commonly used in academic research to ascertain a general idea of net worth without having to perform calculations (Joo & Grable, 2004).

Item: Suppose you were to sell everything you own and pay all of your debts with the cash you currently have with no new loans. Would you be in debt, break even, or have something left over?
Response options: 1 = Be in debt, 3 = Break even, 5 = Have something left over

6. FINANCIAL ANXIETY

The **Financial Anxiety Scale** (Archuleta et al., 2013) is very specific in what it measures (i.e., anxiety). It may speak to concerns at strategic and operational levels about the potentially detrimental impacts of financial stress (e.g., lack of mission readiness).

- Reliability: Cronbach's alpha from Archuleta et al. (2013) = .94.
- Validity: This scale showed good evidence of predictive validity and construct validity.

Stem: No stem was provided for this scale. However, a stem based on previous scholarship could be, "Please respond to these statements regarding the past 6 months."
Response options: 1 = Never to 7 = Always

Items:

1. I feel anxious about my financial situation.
2. I have difficulty sleeping because of my financial situation.
3. I have difficulty concentrating on my school/or [sic] work because of my financial situation.
4. I am irritable because of my financial situation.
5. I have difficulty controlling worrying about my financial situation.
6. My muscles feel tense because of worries about my financial situation.
7. I feel fatigued because I worry about my financial situation.

7. FINANCIAL SELF-EFFICACY

The **Financial Self-Efficacy Scale** (Lown, 2011) provides a useful estimate about how efficacious one feels about financial management. Self-efficacy offers particular insight because it has been shown to be a key determinant of whether individuals act on financial knowledge to initiate behavioral changes.

- Reliability: Cronbach's alpha from Lown (2011) = .76
- Validity: The scale showed evidence of criterion and discriminant validity.

Stem: Please respond to the following statements using these response categories:
Response options: 1 = Exactly true, 2 = Moderately true, 3 = Hardly true, 4 = Not at all true

Items:

1. It is hard to stick to my spending plan when unexpected expenses arise.
2. It is challenging to make progress toward my financial goals.
3. When unexpected expenses occur, I usually have to use credit.
4. When faced with a financial challenge, I have a hard time figuring out a solution.
5. I lack confidence in my ability to manage my finances.
6. I worry about running out of money in retirement.

This page
intentionally left
blank.

REFERENCES

- Aboagye, J. & Jung, J. Y. (2018). Debt holding, financial behavior, and financial satisfaction. *Journal of Financial Counseling and Planning*, 29(2), 208-217. <http://doi.org/10.1891/1052-3073.29.2.208>
- Archuleta, K. L., Britt, S. L., & Grable, J. E. (2011). Financial satisfaction and financial stressors in marital satisfaction. *Psychological Reports*, 108(2), 563-576. <https://doi.org/10.2466/07.21.PR0.108.2.563-576>
- Archuleta, K. L., Dale, A., & Spann, S. M. (2013). College students and financial distress: Exploring debt, financial satisfaction, and financial anxiety. *Journal of Financial Counseling and Planning*, 24(2), 50-62. https://www.afcpe.org/wp-content/uploads/2018/10/v24_2_50-62.pdf
- Archuleta, K. L., Grable, J. E., & Britt, S. L. (2013). Financial and relationship satisfaction as a function of harsh start-up and shared goals and values. *Journal of Financial Counseling and Planning*, 24(1), 3-14. https://www.afcpe.org/wp-content/uploads/2018/10/v24_1_3-14.pdf
- Arensman, B., van Waegeningh, C., & van Wessel, M. (2018). Twinning “practices of change” with “theory of change”: Room for emergence in advocacy evaluation. *The American Journal of Evaluation*, 39(2), 221-236. <https://doi.org/10.1177/1098214017727364>
- Austin, P., & Arnott-Hill, E. (2014). Financial literacy interventions: Evaluating the impact and scope of financial literacy programs on savings, retirement, and investment. *The Journal of Social, Political, and Economic Studies*, 39(3), 290-314.
- Australian Securities and Investments Commission. (2014). *Australian Financial Attitudes and Behaviour Tracker: Wave 1: March – August 2014* (ASIC report 419). <https://download.asic.gov.au/media/2628863/rep419-published-17-december-2014.pdf>
- Balasubramnian, B., & Sargent, C. S. (2020). Impact of inflated perceptions of financial literacy on financial decision making. *Journal of Economic Psychology*, 80, Article 102306. <https://doi.org/10.1016/j.joep.2020.102306>
- Bamberger, M., & Mabry, L. (2020). *RealWorld evaluation: Working under budget, time, data, and political constraints* (3rd ed.). Sage. <https://doi.org/10.4135/9781071909607>
- Bell, C. J., Gorin, D. R., & Hogarth, J. M. (2009, August). *Does financial education affect Soldiers' financial behavior?* (Networks Financial Institute Working Paper 2009-WP-08). Networks Financial Institute at Indiana State University. <https://ssrn.com/abstract=1445635>
- Birkenmaier, J., Maynard, B., & Kim, Y. (2022). Interventions designed to improve financial capability: A systematic review. *Campbell Systematic Reviews*, 18(1), Article e1225. <https://doi.org/10.1002/cl2.1225>
- Boateng, G. O., Neilands, T. B., Frongillo, E. A., Melgar-Quiñonez, H. R., & Young, S. L. (2018). Best practices for developing and validating scales for health, social, and behavioral research: A primer. *Frontiers in Public Health*, 6, Article 366616. <https://doi.org/10.3389/fpubh.2018.00149>
- Borden, L. M., Lu, Z., Mischel, E., Norby, A., Otto, A., Otto, M., Richmond, A., Roeske, R., Root, H., Schroeder, B., & Smischney, T. (2017, August). *Child maltreatment in the military: Understanding the research* [Report submitted to the U.S. Department of Defense]. Military REACH, Center for Research and Outreach (REACH), University of Minnesota. <https://aub.ie/MilitaryREACH-ChildMaltx-17>

- Britt, S. L., Hill, E. J., LeBaron, A., Lawson, D. R., & Bean, R. A. (2017). Tightwads and spenders: Predicting financial conflict in couple relationships. *Journal of Financial Planning*, 30(5), 36–42. <https://www.financialplanningassociation.org/article/journal/MAY17-tightwads-and-spenders-predicting-financial-conflict-couple-relationships>
- Burke, J., Collins, J. M., & Urban, C. (2020, August 24). *Does state-mandated financial education affect financial well-being?* Center for Financial Security. https://centerforfinancialsecurity.files.wordpress.com/2020/09/state-fin-ed-well-being_burke_collins_urban_final.pdf
- Carlson, M. B., Britt, S. L., & Goff, B. N. (2015). Factors associated with a composite measure of financial behavior among Soldiers. *Journal of Financial Counseling and Planning*, 26(1), 30–42. <https://doi.org/10.1891/1052-3073.26.1.A1>
- Carlson, M. B., Nelson, J. S., & Skimmyhorn, W. L. (2016). Military personal finance research. In J. J. Xiao (Ed.), *Handbook of Consumer Finance Research* (2nd ed., pp. 251–264). Springer. https://doi.org/10.1007/978-3-319-28887-1_21
- Carrell, S., & Zinman, J. (2014). In harm's way? Payday loan access and military personnel performance. *The Review of Financial Studies*, 27(9), 2805–2840. <https://doi.org/10.1093/rfs/hhu034>
- Castro, F. G., Barrera, M., Jr., & Holleran Steiker, L. K. (2010). Issues and challenges in the design of culturally adapted evidence-based interventions. *Annual Review of Clinical Psychology*, 6, 213–239. <https://doi.org/10.1146%2Fannurev-clinpsy-033109-132032>
- Chen, H. T. (2015). *Practical program evaluation: Theory-driven evaluation and the integrated evaluation perspective* (2nd ed.). Sage. <https://doi.org/10.4135/9781071909850>
- Cheung, F., & Lucas, R. E. (2014). Assessing the validity of single-item life satisfaction measures: Results from three large samples. *Quality of Life Research*, 23(10), 2809–2818. <https://doi.org/10.1007/s11136-014-0726-4>
- Chinman, M., Acosta, J., Bush-Mecenas, S., Smucker, S., Farris, C., Fortson, B., Imm, P., Lamont, A., Maguire, T., Martin, L., Wandersman, A., Watson, A., Wicker, A., & Tharp, A. (2023). Improving sexual assault and sexual harassment prevention from the bottom-up: A pilot of getting to outcomes in the US military. *Prevention Science*, 24(7), 1352–1364. <https://doi.org/10.1007/s11121-023-01577-3>
- Cho, S. H., Gutter, M., Kim, J., & Mauldin, T. (2012). The effect of socialization and information source on financial management behaviors among low- and moderate-income adults. *Family and Consumer Sciences Research Journal*, 40(4), 417–430. <https://doi.org/10.1111/j.1552-3934.2012.02120.x>
- Clark, R. L. (2023). Effectiveness of employer-provided financial education programs. *Journal of Financial Literacy and Wellbeing*, 1(1), 154–168. <https://doi.org/10.1017/flw.2023.1>
- Cochran, W. G. (1965). The planning of observational studies of human populations. *Journal of the Royal Statistical Society: Series A (General)*, 128(2), 234–266. <https://doi.org/10.2307/2344179>
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Lawrence Erlbaum Associates. <https://doi.org/10.4324/9780203771587>
- Coie, J. D., Watt, N. F., West, S. G., Hawkins, J. D., Asarnow, J. R., Markman, H. J., Ramey, S. L., Shure, M. B., & Long, B. (1993). The science of prevention: A conceptual framework and some directions for a national research program. *American Psychologist*, 48(10), 1013–1022. <https://doi.org/10.1037/0003-066X.48.10.1013>
- Collins, J. M. (2013). The impacts of mandatory financial education: Evidence from a randomized field study. *Journal of Economic Behavior & Organization*, 95, 146–158. <https://doi.org/10.1016/j.jebo.2012.08.011>
- Consumer Financial Protection Bureau. (2015, December). *Measuring financial well-being: A guide to using the CFPB Financial Well-Being Scale*. https://files.consumerfinance.gov/f/201512_cfpb_financial-well-being-user-guide-scale.pdf

- Consumer Financial Protection Bureau. (2017, September). *National Financial Well-Being Survey: Public use file user's guide*. https://files.consumerfinance.gov/f/documents/cfpb_nfwbs-puf-user-guide.pdf
- Consumer Financial Protection Bureau. (2018, September). *Measuring financial skill: A guide to using the Bureau of Consumer Financial Protection Financial Skill Scale*. https://files.consumerfinance.gov/f/documents/bcftp_financial-well-being_measuring-financial-skill_guide.pdf
- Coster, W. J. (2013). Making the best match: Selecting outcome measures for clinical trials and outcome studies. *American Journal of Occupational Therapy*, 67(2), 162-170. <https://doi.org/10.5014/ajot.2013.006015>
- Dare, S. E., van Dijk, W. W., van Dijk, E., van Dillen, L. F., Gallucci, M., & Simonse, O. (2023). How executive functioning and financial self-efficacy predict subjective financial well-being via positive financial behaviors. *Journal of Family and Economic Issues*, 44(2), 232-248. <https://doi.org/10.1007/s10834-022-09845-0>
- Darling, C. A., Cassidy, D., & Rehm, M. (2020). The foundations of family life education model: Understanding the field. *Family Relations*, 69(3), 427-441. <https://doi.org/10.1111/fare.12372>
- De Silva, M. J., Breuer, E., Lee, L., Asher, L., Chowdhary, N., Lund, C., & Patel, V. (2014). Theory of change: A theory-driven approach to enhance the Medical Research Council's framework for complex interventions. *Trials*, 15(1), Article 267. <https://doi.org/10.1186/1745-6215-15-267>
- DeVaney, S., Gorham, E., Bechman, J., & Haldeman, V. (1996). Cash flow management and credit use: Effect of a financial information program. *Journal of Financial Counseling and Planning*, 7, 71-80. <https://www.afcpe.org/wp-content/uploads/2018/10/vol-78.pdf>
- Dew, J., Barham, C., & Hill, E. J. (2021). The longitudinal associations of sound financial behaviors and marital quality. *Journal of Family & Economic Issues*, 42(1), 1-12. <https://doi.org/10.1007/s10834-020-09701-z>
- Dew, J., & Xiao, J. (2011). The financial management behavior scale: Development and validation. *Journal of Financial Counseling and Planning*, 22(1), 43-59. https://www.afcpe.org/wp-content/uploads/2018/10/vol_22_issue_1_dew_xiao.pdf
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, 49(1), 71-75. https://doi.org/10.1207/s15327752jpa4901_13
- Division for Heart Disease and Stroke Prevention. (2017, May 22). *Developing and Using a Logic Model*. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. Retrieved December 4, 2023, from https://www.cdc.gov/dhdsp/evaluation_resources/guides/logic_model.htm
- Elbogen, E. B., Lanier, M., Blakey, S. M., Wagner, H. R., & Tsai, J. (2021). Suicidal ideation and thoughts of self-harm during the COVID-19 pandemic: The role of COVID-19-related stress, social isolation, and financial strain. *Depression & Anxiety*, 38(7), 739-748. <https://doi.org/10.1002/da.23162>
- Elbogen, E. B., Zeber, J. E., Vogt, D., Perkins, D. F., Finley, E. P., & Copeland, L. A. (2023). Financial status and well-being in recently separated military veterans. *Military Medicine*, 188(7-8), e2181-e2188. <https://doi.org/10.1093/milmed/usac030>
- Entorf, H., & Hou, J. (2018, April). *Financial education for the disadvantaged? A review* (IZA DP No. 11515). IZA Institute of Labor Economics. <https://docs.iza.org/dp11515.pdf>
- Fagan, A. A., Bumbarger, B. K., Barth, R. P., Bradshaw, C. P., Cooper, B. R., Supplee, L. H., & Walker, D. K. (2019). Scaling up evidence-based interventions in US public systems to prevent behavioral health problems: Challenges and opportunities. *Prevention Science*, 20, 1147-1168. <https://doi.org/10.1007/s1121-019-01048-8>
- Fan, L., & Henager, R. (2022). A structural determinants framework for financial well-being. *Journal of Family and Economic Issues*, 43(2), 415-428. <https://doi.org/10.1007/s10834-021-09798-w>

- Fan, L., & Zhang, L. (2021). The influence of financial education sources on emergency savings: The role of financial literacy. *Family and Consumer Sciences Research Journal*, 49(4), 344-361. <https://doi.org/10.1111/fcsr.12400>
- Fernandes, D., Lynch, J. G., Jr., & Netemeyer, R. G. (2014). Financial literacy, financial education, and downstream financial behaviors. *Management Science*, 60(8), 1861-1883. <https://doi.org/10.1287/mnsc.2013.1849>
- FINRA Investor Education Foundation. (n.d.). *Data and downloads*. Financial Industry Regulatory Authority. <https://finrafoundation.org/knowledge-we-gain-share/nfcs/data-and-downloads>
- FINRA Investor Education Foundation. (2015). *2015 National Financial Capability Study State-by-State Survey Instrument*. <https://finrafoundation.org/sites/finrafoundation/files/NFCS-2015-State-by-State-Qre.pdf>
- FINRA Investor Education Foundation. (2021). *2021 National Financial Capability Study State-by-State Survey Instrument*. <https://finrafoundation.org/sites/finrafoundation/files/NFCS-2021-State-by-State-Questionnaire.pdf>
- Flay, B. R., Biglan, A., Boruch, R. F., Castro, F. G., Gottfredson, D., Kellam, S., Mościcki, E. K., Schinke, S., Valentine, J. C., & Ji, P. (2005). Standards of evidence: Criteria for efficacy, effectiveness and dissemination. *Prevention Science*, 6(3), 151-175. <https://doi.org/10.1007/s11121-005-5553-y>
- Fowers, B. J., Laurenceau, J.-P., Penfield, R. D., Cohen, L. M., Lang, S. F., Owenz, M. B., & Pasipanodya, E. (2016). Enhancing relationship quality measurement: The development of the Relationship Flourishing Scale. *Journal of Family Psychology*, 30(8), 997-1007. <https://doi.org/10.1037/fam0000263>
- Fox, J., Bartholomae, S., & Lee, J. (2005). Building the case for financial education. *Journal of Consumer Affairs*, 39(1), 195-214. <https://doi.org/10.1111/j.1745-6606.2005.00009.x>
- Frye-Cox, N., Burke, B., Nichols, L., O'Neal, C. W., & Lucier-Greer, M. (2020). *Exploring the evidence-base for intimate partner violence prevention and treatment modalities: A review of the research* [Research report]. Military REACH. <https://aub.ie/MilitaryREACH-FAP2020>
- Frye-Cox, N., Sherman, H., Tidwell, A., O'Neal, C. W., & Lucier-Greer, M. (2021). *Helping school personnel prevent and de-escalate peer aggression: An overview of existing research and insights into programming* [Research report]. Military REACH. <https://aub.ie/MilitaryREACH-PeerAggression21>
- Funk, J. L., & Rogge, R. D. (2007). Testing the ruler with item response theory: Increasing precision of measurement for relationship satisfaction with the Couples Satisfaction Index. *Journal of Family Psychology*, 21(4), 572-583. <https://doi.org/10.1037/0893-3200.21.4.572>
- Gale, W. G., & Levine, R. (2010, October 1). *Financial literacy: What works? How could it be more effective?* Brookings Institution. https://www.brookings.edu/wp-content/uploads/2016/06/10_financial_literacy_gale_levine.pdf
- Gangl, M. (2010). Causal inference in sociological research. *Annual Review of Sociology*, 36, 21-47. <https://doi.org/10.1146/annurev.soc.012809.102702>
- Gomez, S. A. Q., Beymer, M. R., Jackson Santo, T., Riviere, L. A., Adler, A. B., Thomas, J. L., Bell, A. M., & Quartana, P. J. (2023). Impact of the COVID-19 pandemic on Army families: Household finances, familial experiences, and Soldiers' behavioral health. *Military Psychology*, 35(5), 420-430. <https://doi.org/10.1080/08995605.2022.2149190>
- Gottfredson, D. C., Cook, T. D., Gardner, F. E. M., Gorman-Smith, D., Howe, G. W., Sandler, I. N., & Zafft, K. M. (2015). Standards of evidence for efficacy, effectiveness, and scale-up research in prevention science: Next generation. *Prevention Science*, 16(7), 893-926. <https://doi.org/10.1007/s11121-015-0555-x>
- Gutter, M., & Copur, Z. (2011). Financial behaviors and financial well-being of college students: Evidence from a national survey. *Journal of Family and Economic Issues*, 32(4), 699-714. <https://doi.org/10.1007/s10834-011-9255-2>

- Hallinan, M. R. (2023, May 1). *How to improve the financial well-being of military members and their families: A data-driven approach* [Technical report]. Defense Technical Information Center, United States Department of Defense. <https://apps.dtic.mil/sti/citations/trecms/AD1207880>
- Handley, M. A., Lyles, C. R., McCulloch, C., & Cattamanchi, A. (2018). Selecting and improving quasi-experimental designs in effectiveness and implementation research. *Annual Review of Public Health*, 39, 5-25. <https://doi.org/10.1146/annurev-publhealth-040617-014128>
- Hariton, E., & Locascio, J. J. (2018). Randomised controlled trials—the gold standard for effectiveness research. *BJOG: An International Journal of Obstetrics & Gynaecology*, 125(13), 1716. <https://doi.org/10.1111%2F1471-0528.15199>
- Harris, A. D., McGregor, J. C., Perencevich, E. N., Furuno, J. P., Zhu, J., Peterson, D. E., & Finkelstein, J. (2006). The use and interpretation of quasi-experimental studies in medical informatics. *Journal of the American Medical Informatics Association*, 13(1), 16-23. <https://doi.org/10.1197/jamia.M1749>
- Harvey, M. (2019). Impact of financial education mandates on younger consumers' use of alternative financial services. *Journal of Consumer Affairs*, 53(3), 731-769. <https://doi.org/10.1111/joca.12242>
- Hastings, J. S., Madrian, B. C., & Skimmyhorn, W. L. (2013). Financial literacy, financial education, and economic outcomes. *Annual Review of Economics*, 5, 347-373. <https://doi.org/10.1146/annurev-economics-082312-125807>
- Hayhoe, C. R., & Gutter, M. E. (2012). Reliability of the scales in the NC1172 complex nature of saving data set. *Family and Consumer Sciences Research Journal*, 40(3), 284-294. <https://doi.org/10.1111/j.1552-3934.2011.02111.x>
- Henager, R., & Cude, B. J. (2016). Financial literacy and long-and short-term financial behavior in different age groups. *Journal of Financial Counseling and Planning*, 27(1), 3-19. <https://doi.org/10.1891/1052-3073.27.1.3>
- Henager, R., & Cude, B. J. (2019). Financial literacy of high school graduates: Long- and short-term financial behavior by age group. *Journal of Family and Economic Issues*, 40(3), 564-575. <https://doi.org/10.1007/s10834-019-09626-2>
- Henry, D., Tolan, P., Gorman-Smith, D., & Schoeny, M. (2017). Alternatives to randomized control trial designs for community-based prevention evaluation. *Prevention Science*, 18, 671-680. <https://doi.org/10.1007/s1121-016-0706-8>
- Hilgert, M. A., Hogarth, J. M., & Beverly, S. G. (2003). Household financial management: The connection between knowledge and behavior. *Federal Reserve Bulletin*, 89(7), 309-322. <https://www.federalreserve.gov/pubs/bulletin/2003/0703lead.pdf>
- Hill, E. J., Allsop, D. B., LeBaron, A. B., & Bean, R. A. (2017). How do money, sex, and stress influence marital instability? *Journal of Financial Therapy*, 8(1), 21-42. <https://doi.org/10.4148/1944-9771.1135>
- Hill, H. J. (1991). *Impact of altering the delinquent debt threshold used for background investigation expansion of the denial rate of security clearances* (Doctoral dissertation, Naval Postgraduate School). Defense Technical Information Center, United States Department of Defense. <https://apps.dtic.mil/sti/citations/tr/ADA247331>
- Hinkin, T. R. (1995). A review of scale development practices in the study of organizations. *Journal of Management*, 21(5), 967-988. <https://doi.org/10.1177/014920639502100509>
- Holland, P. W. (1986). Statistics and causal inference. *Journal of the American Statistical Association*, 81(396), 945-960. <https://doi.org/10.1080/01621459.1986.10478354>
- Huston, S. J. (2010). Measuring financial literacy. *Journal of Consumer Affairs*, 44(2), 296-316. <https://doi.org/10.1111/j.1745-6606.2010.01170.x>

- Hwang, H., & Park, H. I. (2023). The relationships of financial literacy with both financial behavior and financial well-being: Meta-analyses based on the selective literature review. *Journal of Consumer Affairs*, 57(1), 222-244. <https://doi.org/10.1111/joca.12497>
- Jackson, E. T. (2013). Interrogating the theory of change: evaluating impact investing where it matters most. *Journal of Sustainable Finance & Investment*, 3(2), 95-110. <https://doi.org/10.1080/20430795.2013.776257>
- Johnson, E., & Sherraden, M. S. (2007). From financial literacy to financial capability among youth. *Journal of Sociology and Social Welfare*, 34(3), 119-146. <https://doi.org/10.15453/0191-5096.3276>
- Kaiser, T., Lusardi, A., Menkhoff, L., & Urban, C. (2022). Financial education affects financial knowledge and downstream behaviors. *Journal of Financial Economics*, 145(2 Part A), 255-272. <https://doi.org/10.1016/j.jfineco.2021.09.022>
- Kaiser, T., & Menkhoff, L. (2017). Does financial education impact financial literacy and financial behavior, and if so, when? *The World Bank Economic Review*, 31(3), 611-630. <https://doi.org/10.1093/wber/lhx018>
- Kerr, G., Fair, A., & Chakarov, G. (2016, February 21). *Financial literacy outcome indicators: Phase I of "Strengthening Financial Literacy Program Evaluation in Canada."* Prosper Canada. <https://core.ac.uk/download/pdf/144778053.pdf>
- Khan, M. A., Li, X., LeBaron-Black, A. B., & Serido, J. (2023). Parental financial socialization, financial behaviors, and well-being among Hong Kong young adults amid COVID-19. *Family Relations*, 72(5), 2279-2296. <https://doi.org/10.1111/fare.12947>
- King, E. L., DiNitto, D., Salas-Wright, C., & Snowden, D. (2020). Retaining women air force officers: work, family, career satisfaction, and intentions. *Armed Forces & Society*, 46(4), 677-695. <https://doi.org/10.1177/0095327X19845024>
- Kirkpatrick, J. D., & Kirkpatrick, W. K. (2016). *Kirkpatrick's four levels of training evaluation*. Association for Talent Development Press.
- Komro, K. A., Flay, B. R., Biglan, A., & Wagenaar, A. C. (2016). Research design issues for evaluating complex multicomponent interventions in neighborhoods and communities. *Translational Behavioral Medicine*, 6(1), 153-159. <https://doi.org/10.1007/s13142-015-0358-4>
- LeBaron-Black, A. B., Yorgason, J. B., Curran, M. A., Saxey, M. T., & Okamoto, R. M. (2022). The ABC-X's of stress among U.S. emerging adults during the COVID-19 pandemic: Relationship quality, financial distress, and mental health. *International Journal of Environmental Research and Public Health*, 19(20), Article 13125. <https://doi.org/10.3390/ijerph192013125>
- Lee, J. M., Lee, J., & Kim, K. T. (2020). Consumer financial well-being: Knowledge is not enough. *Journal of Family and Economic Issues*, 41(2), 218-228. <https://doi.org/10.1007/s10834-019-09649-9>
- Liu, C. H., Wong, G. T. F., Hyun, S., & Hahm, H. C. (2022). Concerns about the social climate, finances, and COVID-19 risk on depression and anxiety: An analysis on U.S. young adults across two waves. *Journal of Psychiatric Research*, 148, 286-292. <https://doi.org/10.1016/j.jpsychires.2022.01.048>
- Luther, R. K., Leech, I. E., & Garman, E. T. (1998). The employer's cost for the personal financial management difficulties of workers: Evidence from the US Navy. *Personal Finances and Worker Productivity*, 2(1), 175-182.
- Lusardi, A. (2019). Financial literacy and the need for financial education: Evidence and implications. *Swiss Journal of Economics and Statistics*, 155(1), Article 1. <https://doi.org/10.1186/s41937-019-0027-5>
- Lusardi, A., Michaud, P.-C., & Mitchell, O. S. (2020). Assessing the impact of financial education programs: A quantitative model. *Economics of Education Review*, 78, Article 101899. <https://doi.org/10.1016/j.econedurev.2019.05.006>
- Lusardi, A., & Mitchell, O. S. (2014). The economic importance of financial literacy: Theory and evidence. *Journal of Economic Literature*, 52(1), 5-44. <https://doi.org/10.1257/jel.52.1.5>

- Lusardi, A., & Mitchell, O. S. (2017). How ordinary consumers make complex economic decisions: Financial literacy and retirement readiness. *The Quarterly Journal of Finance*, 7(3), Article 1750008. <https://doi.org/10.1142/S2010139217500082>
- Lusardi, A., & Mitchell, O. S. (2023). The importance of financial literacy: Opening a new field. *Journal of Economic Perspectives*, 37(4), 137-154. <https://doi.org/10.1257/jep.37.4.137>
- Lusardi, A., Mitchell, O. S., & Curto, V. (2010). Financial literacy among the young. *Journal of Consumer Affairs*, 44(2), 358-380. <https://doi.org/10.1111/j.1745-6606.2010.01173.x>
- Lyons, A. C., Chang, Y., & Scherpf, E. M. (2006). Translating financial education into behavior change for low-income populations. *Journal of Financial Counseling and Planning*, 17(2), 27-45. <https://www.afcpe.org/wp-content/uploads/2018/10/vol-1721-lyons.pdf>
- Maciejewski, M. L. (2020). Quasi-experimental design. *Biostatistics & Epidemiology*, 4(1), 38-47. <https://doi.org/10.1080/24709360.2018.1477468>
- Mancini, J. A., Marek, L. I., Byrne, R. A. W., & Huebner, A. J. (2004). Community-based program research: Context, program readiness, and evaluation usefulness. *Journal of Community Practice*, 12(1-2), 7-21. https://doi.org/10.1300/J125v12n01_02
- Mansfield, A. K., Keitner, G. I., & Sheeran, T. (2018). The Brief Assessment of Family Functioning Scale (BAFFS): A three-item version of the General Functioning Scale of the Family Assessment Device. *Psychotherapy Research*, 29(6), 824-831. <https://doi.org/10.1080/10503307.2017.1422213>
- Masarik, A. S., & Conger, R. D. (2017). Stress and child development: A review of the Family Stress Model. *Current Opinion in Psychology*, 13, 85-90. <https://doi.org/10.1016/j.copsy.2016.05.008>
- McLaughlin, J. A., & Jordan, G. B. (1999). Logic models: A tool for telling your programs performance story. *Evaluation and Program Planning*, 22(1), 65-72. [https://doi.org/10.1016/S0149-7189\(98\)00042-1](https://doi.org/10.1016/S0149-7189(98)00042-1)
- McLaughlin, J. A., & Jordan, G. B. (2004). Using logic models. In J. S. Wholey, H. P. Hatry, & K. E. Newcomer (Eds.), *Handbook of practical program evaluation* (2nd ed., pp. 7-32). John Wiley & Sons.
- National Center for Injury Prevention and Control, Division of Violence Prevention. (2022, January 18). *The social-ecological model: A framework for prevention*. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. Retrieved December 4, 2023, from <https://www.cdc.gov/violenceprevention/about/social-ecologicalmodel.html>
- Netemeyer, R. G., Lynch, J. G., Lichtenstein, D. R., & Dobolyi, D. (2024). Financial education effects on financial behavior and well-being: The mediating roles of improved objective and subjective financial knowledge and parallels in physical health. *Journal of Public Policy & Marketing*. <https://doi.org/10.1177/07439156241228197>
- Okamoto, R. M., Saxey, M. T., Wikle, J. S., & LeBaron-Black, A. B. (2024). Confident commitment: Financial self-efficacy's indirect association with romantic relationship flourishing through financial behaviors. *Journal of Family and Economic Issues*, 45(1), 35-44. <https://doi.org/10.1007/s10834-023-09903-1>
- O'Neal, C. W., Lucier-Greer, M., Miranda, H., McKay, B., Gower, K., Tate, A., Richardson, E., & Peterson, C. (2023). *Evaluation results of the DAF Personal Financial Readiness Program: Option year 3 annual evaluation report*. UGA PFR Program Evaluation Team.
- O'Neal, C. W., Lucier-Greer, M., Peterson, C., & McKay, B. (2023). Translating discovery science: Delivering online, asynchronous financial education to Service members at career and personal life transitions. *Family Relations*. Advance online publication. <https://doi.org/10.1111/fare.12966>

- Parrotta, J. L., & Johnson, P. J. (1998). The impact of financial attitudes and knowledge on financial management and satisfaction of recently married individuals. *Journal of Financial Counseling and Planning*, 9(2), 59-74. <https://www.afcpe.org/wp-content/uploads/2018/10/vol927.pdf>
- Patel, M. R., Kruger, D. J., Cupal, S., & Zimmerman, M. A. (2016). Effect of Financial Stress and Positive Financial Behaviors on Cost-Related Nonadherence to Health Regimens Among Adults in a Community-Based Setting. *Preventing Chronic Disease*, 13. <https://doi.org/10.5888/pcd13.160005>
- Prawitz, A. D., Garman, E. T., Sorhaindo, B., O'Neill, B., Kim, J., & Drentea, P. (2006). InCharge Financial Distress/Financial Well-Being Scale: Development, administration, and score interpretation. *Journal of Financial Counseling and Planning*, 17(1), 34-50. <https://www.afcpe.org/wp-content/uploads/2018/10/vol1714.pdf>
- Roll, S., Kondratjeva, O., Bufo, S., Grinstein-Weiss, M., & Skees, S. (2022). Assessing the short-term stability of financial well-being in low- and moderate-income households. *Journal of Family and Economic Issues*, 43(1), 100-127. <https://doi.org/10.1007/s10834-021-09760-w>
- Rosenbaum, P. R. (2005). Sensitivity analysis in observational studies. In B. S. Everitt & D. C. Howell (eds.), *Encyclopedia of statistics in behavioral science* (Vol. 4, pp. 1809-1814). John Wiley & Sons.
- Ross, D. B., O'Neal, C. W., Arnold, A. L., & Mancini, J. A. (2017). Money matters in marriage: Financial concerns, warmth, and hostility among military couples. *Journal of Family and Economic Issues*, 38(4), 572-581. <https://doi.org/10.1007/s10834-017-9522-y>
- Rossi, P. H., & Freeman, H. E. (1993). *Evaluation: A systematic approach* (5th ed.). Sage.
- Rossi, P. H., Lipsey, M. W., & Henry, G. T. (2018). *Evaluation: A systematic approach* (8th ed.). Sage.
- Rubin, D. B. (1990). Comment: Neyman (1923) and causal inference in experiments and observational studies. *Statistical Science*, 5(4), 472-480. <https://doi.org/10.1214/ss/1177012032>
- Saxey, M. T., Dew, J. P., Yorgason, J. B., & LeBaron-Black, A. B. (2024). Which came first, the money or the sex? Bidirectional, indirect associations between financial management behaviors and sexual satisfaction among newlywed couples. *The Journal of Sex Research*, 61(2), 285-298. <https://doi.org/10.1080/00224499.2023.2206818>
- Saxey, M. T., LeBaron-Black, A. B., Dew, J. P., Yorgason, J. B., James, S. L., & Holmes, E. K. (2023). Money to marriage, or marriage to money? Examining the directionality between financial processes and marital processes among newlywed couples. *Journal of Social and Personal Relationships*, 40(8), 2445-2465. <https://doi.org/10.1177/02654075221149967>
- Saxey, M. T., LeBaron-Black, A. B., Totenhagen, C. J., & Curran, M. A. (2023). More than a score? Indirect associations between credit score and romantic relationship quality in emerging adulthood. *Journal of Financial Counseling and Planning*, 34(1), 55-67. <http://doi.org/10.1891/JFCP-2022-0018>
- Schuchardt, J., Hanna, S. D., Hira, T. K., Lyons, A. C., Palmer, L., & Xiao, J. J. (2009). Financial literacy and education research priorities. *Journal of Financial Counseling and Planning*, 20(1), 84-95. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2225370
- Serido, J., Curran, M. J., Wilmarth, M., Ahn, S. Y., Shim, S., & Ballard, J. (2015). The unique role of parents and romantic partners on college students' financial attitudes and behaviors. *Family Relations*, 64(5), 696-710. <https://doi.org/10.1111/fare.12164>
- Serido, J., Shim, S., & Tang, C. (2013). A developmental model of financial capability: A framework for promoting a successful transition to adulthood. *International Journal of Behavioral Development*, 37(4), 287-297. <https://doi.org/10.1177/0165025413479476>

- Shim, S., Xiao, J. J., Barber, B. L., & Lyons, A. C. (2009). Pathways to life success: A conceptual model of financial well-being for young adults. *Journal of applied developmental psychology, 30*(6), 708–723. <https://doi.org/10.1016/j.appdev.2009.02.003>
- Skimmyhorn, W. (2016a). Assessing financial education: Evidence from boot camp. *American Economic Journal: Economic Policy, 8*(2), 322–343. <https://doi.org/10.1257/pol.20140283>
- Skimmyhorn, W. L. (2016b). Comparing military and civilian household finances: Descriptive evidence from recent surveys. *Journal of Consumer Affairs, 50*(2), 471–483. <https://doi.org/10.1111/joca.12109>
- Skimmyhorn, W. L., Davies, E. R., Mun, D., & Mitchell, B. (2016). Assessing financial education methods: Principles vs. rules-of-thumb approaches. *The Journal of Economic Education, 47*(3), 193–210. <https://doi.org/10.1080/00220485.2016.1179145>
- Spilman, S. K., & Burzette, R. G. (2006). *Critical Transitions Project Technical Reports* (F10 2003). Family Transitions Project, Iowa State University.
- Spuhler, B. K., & Dew, J. (2019). Sound financial management and happiness: Economic pressure and relationship satisfaction as mediators. *Journal of Financial Counseling and Planning, 30*(2), 157–174. <https://doi.org/10.1891/1052-3073.30.2.157>
- Stolper, O. A., & Walter, A. (2017). Financial literacy, financial advice, and financial behavior. *Journal of Business Economics, 87*, 581–643. <https://doi.org/10.1007/s11573-017-0853-9>
- Stufflebeam, D. L., & Shinkfield, A. J. (2007). *Evaluation, theory, models, and applications*. Jossey-Bass.
- Tang, N., & Baker, A. (2016). Self-esteem, financial knowledge and financial behavior. *Journal of Economic Psychology, 54*, 164–176. <https://doi.org/10.1016/j.joep.2016.04.005>
- Tangoalem, T. F. (2023). *Program outcomes evaluation for 21st century North Carolina Veterans experiencing reintegration problems* [Doctoral dissertation, The University of North Carolina at Chapel Hill]. Carolina Digital Repository. <https://cdr.lib.unc.edu/downloads/bv73c929x?locale=en>
- Totenhagen, C. J., Li, X., Wilmarth, M. J., Archuleta, K. L., & Yorgason, J. B. (2023). Do couples who play together stay together? A longitudinal dyadic examination of shared leisure, financial distress, and relationship outcomes. *Family Process*. Advance online publication. <https://doi.org/10.1111/famp.12869>
- Totenhagen, C. J., Wilmarth, M. J., Serido, J., Curran, M. A., & Shim, S. (2019). Pathways from financial knowledge to relationship satisfaction: The roles of financial behaviors, perceived shared financial values with the romantic partner, and debt. *Journal of Family and Economic Issues, 40*(3), 423–437. <https://doi.org/10.1007/s10834-019-09611-9>
- Urbietta, D. A., Akin, J. L., Hamilton, W. M., Brock, W. W., & Yablonsky, A. M. (2021). We're stronger together: A collaboration to support military families during the COVID-19 pandemic. *Military Medicine, 186*(Suppl_2), 23–34. <https://doi.org/10.1093/milmed/usab213>
- U.S. Financial Literacy and Education Commission. (2019). *Best Practices for Financial Literacy and Education at Institutions of Higher Education*. <https://home.treasury.gov/system/files/136/Best-Practices-for-Financial-Literacy-and-Education-at-Institutions-of-Higher-Education2019.pdf>
- U.S. Financial Literacy and Education Commission. (2020). *U.S. National Strategy for Financial Literacy 2020*. <https://home.treasury.gov/system/files/136/US-National-Strategy-Financial-Literacy-2020.pdf>
- Vogt, D., Smith, B. N., King, D. W., & King, L. A. (2012). The Deployment Risk and Resilience Inventory-2 (DRRI-2) [Measurement instrument]. Veterans Association, U.S. Department of Veterans Affairs. <https://www.ptsd.va.gov/professional/assessment/documents/DRRI2scales.pdf>

- Wang, Z., & Pullman, L. E. (2019). Financial stress, financial stability, and military spousal well-being. *Journal of Military, Veteran and Family Health*, 5(1), 82–91. <https://doi.org/10.3138/jmvfh.5.s1.2018-0025>
- Weiss, J. (1997). Theory-based evaluation: Past, present, and future. *New Directions for Evaluation*, 76, 41–55. <https://doi.org/10.1002/ev.1086>
- Weiss, J. (2000). From research to social improvement: Understanding theories of intervention. *Nonprofit and Voluntary Sector Quarterly*, 29(1), 81–110. <https://doi.org/10.1177/0899764000291006>
- West, S. G., & Thoemmes, F. (2010). Campbell's and Rubin's perspectives on causal inference. *Psychological Methods*, 15(1), 18–37. <https://doi.org/10.1037/a0015917>
- Wholey, J. S. (1979). *Evaluation: Promise and performance*. Urban Institute Press.
- Williams, J. F. (2017). Vets and Debts. *American Bankruptcy Institute Law Review*, 25, 43–60.
- Willis, L. E. (2009). Evidence and ideology in assessing the effectiveness of financial literacy education. *San Diego Law Review*, 46, 415–458. <https://digital.sandiego.edu/cgi/viewcontent.cgi?article=2715&context=sdlr>
- Wilmarth, M. J., Kim, K. T., & Henager, R. (2023). Exploring financial behaviors of military households: Do financial knowledge and financial education matter? *Financial Services Review*, 31(1), 35–54. <https://doi.org/10.61190/fsr.v31i1.3193>
- Wilmarth, M. J., Kim, K. T., & Pak, T-Y. (2023). What do we really know about “don't know”? Re-assessing the measurement of financial knowledge. *Journal of Consumer Affairs*, 57(4), 1623–1649. <https://doi.org/10.1111/joca.12563>
- Xiao, J. J. (2008). Applying behavior theories to financial behavior. In J. J. Xiao (Ed.), *Handbook of consumer finance research* (pp. 69–81). Springer. https://doi.org/10.1007/978-0-387-75734-6_5
- Xiao, J. J., Chen, C., & Chen, F. (2014). Consumer financial capability and financial satisfaction. *Social Indicators Research*, 118(1), 415–432. <https://doi.org/10.1007/s11205-013-0414-8>
- Xiao, J. J., & Porto, N. (2022). Financial capability and wellbeing of vulnerable consumers. *Journal of Consumer Affairs*, 56(2), 1004–1018. <https://doi.org/10.1111/joca.12418>
- Zigmond, A. S., & Snaith, R. P. (1983). The Hospital Anxiety and Depression Scale. *Acta Psychiatrica Scandinavica*, 67(6), 361–370. <https://doi.org/10.1111/j.1600-0447.1983.tb09716.x>

APPENDICES

This page
intentionally left
blank.



APPENDIX A – COMPILATION OF KEY TAKEAWAYS ACROSS CHAPTERS

Synthesis of the Scholarly Literature Review on Financial Well-Being

- Both objective and subjective financial knowledge are linked to healthier financial behaviors, but research suggests that subjective financial knowledge might be more strongly linked to financial behaviors.
- Financial literacy education and training can consider methods to provide objective knowledge in ways that trainees will internalize subjectively (e.g., by incorporating activities or self-assessments that enable trainees to realize their expanding knowledge, thus bolstering their subjective perceptions).
- Financial behaviors are a commonly studied correlate of financial well-being. These behaviors explain variations in individuals' subjective perceptions of their financial well-being. Less is known about links between financial behaviors and objective measures of financial well-being.
- The financial behaviors commonly examined in research with the most robust empirical support for their association with subjective financial well-being include paying off credit cards, using a budget or spending plan, paying bills on time, saving money for the future, beginning or maintaining an emergency savings fund, having a retirement account or investing for retirement, and setting financial goals and making plans to achieve them.
- Little is known about the salience (i.e., level of importance) of these *specific behaviors* for financial well-being because they are typically measured and analyzed in aggregate.
- Financial well-being has downstream implications for other life domains, such as mental health (e.g., depressive, anxiety symptoms, suicide risk), job performance, and relationship quality (e.g., parent-child and romantic relationship quality).
- Financial literacy education and training that results in participants changing their financial behaviors (e.g., the seven financial behaviors listed above) can enhance their financial well-being and, in turn, downstream outcomes like mental health and relationship quality.
- Goals and intended outcomes of financial literacy education and training *must* consider (a) what is within “reach” as training goals (that is, what can be directly influenced by education and training efforts) and (b) the extensive number of factors that contribute to the overarching desired outcome of financial well-being.
- Financial literacy education and training efforts that target individual, family, community, *and* larger military and societal context factors within their influence may be best positioned to impact Service members' financial well-being.

Synthesis of Intervention-Focused Scholarly Literature

- Researchers describe the result of changing an outcome (e.g., increased knowledge) because of exposure to some event as a *causal effect*.
- With thoughtful data collection and study design, data collected from a portion (i.e., sample) of those who receive an intervention can be generalized to the broader intervention population. While not the only option, RCT designs are particularly suited for this type of generalization.
- QEDs are often more feasible than RCT designs, but there are limits to what can be inferred from the results (specifically causal effects).
- Observational studies provide relatively cost-effective methods for assessment and evaluation. However, their ability to provide causal conclusions about the intervention is more limited than that of RCTs and QEDs.
- Overall, research supports the contention that financial literacy interventions can have small but meaningful causal effects on outcomes of interest, such as financial behaviors.
- Common and feasible intended outcomes of financial literacy interventions were identified. Based on when they are thought to develop following training, their temporal ordering can be organized as short-term, midterm, and long-term.

- Intervention effects can vary across participant subgroups. Participant characteristics, such as baseline knowledge level or mental health, can generate these differential effects. Thus, the intervention's impact is determined both by the intervention itself and participant characteristics. It is important to account for these participant characteristics in efficacy studies to estimate intervention effects accurately and determine whether education and training needs vary across subgroups.

Theory of Change

- A first step in evaluating interventions, including financial literacy education and training efforts, is to describe the theory of change, often illustrated graphically as a logic model.
- *Inputs* are diverse, essential resources needed to provide the intervention. *Audience* is the intended recipient of this intervention. The actual intervention efforts (i.e., what is done) are included in the *activities* section. *Outputs* are the products of the activities. *Outcomes* for recipients are organized into broad domains of reactions, learning, behavior change, and results.
- *Reaction* captures short-term, initial responses to intervention. *Learning* includes short-term financial knowledge, attitudes, and skills that participants learn or acquire during the intervention. *Behavior change* is a midterm outcome because it takes time to develop (e.g., building an emergency savings account). *Results* capture long-term outcome goals of the intervention, such as high financial well-being.
- The theory of change informs *what* and *when* to measure in assessing intervention efficacy.

Recognizing the merit of various documentation and research sources, a review of other pertinent documents (i.e., grey literature) supplemented the synthesis of academic literature. This provided insight into factors contributing to financial stability and well-being, specifically for Service members and their families.

Sources reviewed were based on recommendations from stakeholders and content available online from the following:

- Final Report of the Military Compensation and Retirement Modernization Commission;
- Inventory of Financial Literacy Knowledge and Skills for Service Members and Families;
- government agencies/organizations (e.g., reports and website content from the Consumer Financial Protection Bureau [CFPB] and Department of Defense [DoD] Office of Financial Readiness [FINRED]);
- nonprofit organizations (e.g., AARP, RAND Corporation, and American Psychological Association [APA]) (12.5%);
- federal policies (e.g., DoD Instructions) (20.8%); and
- other relevant resources (e.g., FINRA Investor Education Foundation, USC Dornsife's Center for Economic and Social Research [CESR]) (22.9%).

The review was expanded to include other pertinent documents as the discovery stage unfolded (e.g., through reviewing reference lists). Forty-eight documents were charted to easily reference each document's type, purpose, and key takeaways relevant to the current study.

Synopsis of Findings

Many of the documents reviewed provided important background context rather than serving as sources for direct report content. To illustrate the context provided, this chapter summarizes several high-level themes noted within the documents.

THEME 1: CONTENT FOCUS

The content analyzed largely fell within two research priorities: (a) the current financial state of Service members and their families and (b) financial content topics (e.g., retirement planning, financial stress).

THEME 2: STATE OF FINANCIAL WELL-BEING

Reports from government agencies/organizations (e.g., FINRED) and nonprofit organizations (e.g., AARP, RAND) examining the state of the financial well-being of military personnel indicated that Service members, on average, are somewhat secure financially. Assessments comparing Service members to civilian counterparts point to success in preparing Service members for their future financial needs and situations. Some documents focused on *objective* measures of finances and financial status of Service members, while others focused more on *subjective* measures of financial well-being.

THEME 3: CONTRIBUTING FACTORS TO FINANCIAL WELL-BEING

Other nonprofit organization reports (e.g., AARP, RAND) provided statistical content assessing the relationships between financial well-being and variables conceptualized as "contributing factors" to it. For example, an AARP study led by Jeremy Burke (May 2021) examined changes in financial well-being before and after the COVID-19 pandemic. Multiple waves of data from the Understanding America Study (UAS) were used, utilizing a sample of 4,300 participants. The report summarized changes in well-being over time and unique influences on financial well-being. Specifically, the findings linked financial well-being to planning ahead, having liquid savings, and spending less than earned. These associations reflect common findings from the scholarly literature review regarding important financial behaviors (e.g., using a budget, saving money, and maintaining an emergency fund).

THEME 4: VALUE OF FINANCIAL EDUCATION

In addition to the contributing factors identified in Theme 3, financial education was highlighted as a key component relating to the financial well-being of Service members and their families. Several reports emphasized the need for effective financial education, evaluating current efforts and ideas for enhancing future efforts. For instance, CFPB (2017) reported on five principles for effective financial education: (a) knowing who is served; (b) providing actionable, relevant, and timely information; (c) improving key financial skills; (d) building on motivation; and (e) making it easier for individuals to make sound financial decisions. They also described recommendations for implementing these principles in education efforts.

THEME 5: DOD FINANCIAL LITERACY EFFORTS

Relevant policy documents (e.g., DoD Instruction 1322.34) provided an understanding of assigned responsibilities, procedures, and requirements to address financial literacy education and training efforts. These military financial readiness efforts are designed to reduce the adverse effects of financial challenges on Service members, thereby improving individual performance and mission readiness. Examples of significant lines of DoD financial readiness efforts include providing financial literacy education across a Service member's career lifecycle, offering no-cost financial counseling for Service members and their spouses, and ongoing programmatic assessments.

Conclusion

Drawing on law, policy, and nonacademic perspectives, the documents reviewed provided an enhanced understanding of financial well-being among Service members and their families, particularly concerning financial literacy education and training efforts. This contextual knowledge was crucial for accurately mapping the findings of the scholarly literature review onto the military and societal context, in particular. More specifically, understanding areas of prior and current focus on military-specific populations supports and clarifies the scholarly research review and what remains to be done to understand better the financial well-being of Service members and their families.



APPENDIX C – WHAT IS PREVENTION SCIENCE AND HOW DOES IT ALIGN WITH DEPARTMENT OF DEFENSE (DOD) FINANCIAL READINESS PROGRAMS?

Prevention science aims to enhance the health and well-being of individuals, families, and communities by fostering resilience and thwarting problems before they develop or worsen (Flay et al., 2005; Gottfredson et al., 2015). Prevention science specifically focuses on identifying and employing evidence-based strategies to *reduce risk factors* and *increase protective factors*. Prevention science interventions are designed to be either *proactive* (preventing the occurrence of) or *reactive* (reducing the risk of reoccurrence) and can be *universal* (broadly available) or *targeted* (focused on specific at-risk populations). They are offered along a continuum of services for all levels of risk, allowing efforts to increase in intensity and focus based on the needs of targeted individuals or families (Borden et al., 2017).

The focused efforts to promote financial literacy through education and training in support of the health and well-being (specifically, financial stability and well-being) of Service members and their families reflect a prevention science approach.

Ongoing military-specific financial literacy education and training efforts (DoD Instruction 1322.34), or interventions, may be generally categorized as *proactive* and *universal*, with additional support available for those with greater need. Notably, these interventions are proactive as they generally do not respond to a specific financial hardship but are universally available (and sometimes mandatory) to all Service members, who may experience varying levels of financial well-being or hardship. The gearing of training toward Service members at the start of their career to prevent later financial hardship (e.g., excessive consumer debt, no emergency savings) also reflects proactivity.

Programs that utilize a prevention science approach implement research-based activities and systematic, data-driven tactics to reach the desired outcome. Consistent with their prioritization of evidence-based strategies, these programs often implement some level of continuous evaluation to measure and enhance the effectiveness of specified activities (Chinman et al., 2023; Coie et al., 1993; Komro et al., 2016).

Notably, the prevention science approach is common across the programming geared toward military audiences and is not specific to financial literacy education and training. Current prevention science efforts within the military include emotional, psychological, and physical harm reduction. Examples include preventing intimate partner violence (e.g., Frye-Cox et al., 2020), peer aggression/peer victimization (e.g., Frye-Cox et al., 2021), and child maltreatment, including neglect and sexual abuse (e.g., Borden et al., 2017).

While the benefits of prevention science are well documented, there remain significant challenges to effectively implementing and evaluating preventive interventions. For instance, evidence suggests that subgroups within the targeted population do not share improvements equally and that scaling up evidence-based interventions to the population level may be difficult (Fagan et al., 2019). Additionally, limited compliance in program attendance and participation and variation in program delivery skills and perspectives of program delivery staff can reduce intervention impact and threaten program fidelity and standardization, further complicating evaluation efforts (Castro et al., 2010).

Arguably the most “fundamental problem” for prevention science is measuring the counterfactual, or *what does not occur* (Holland, 1986, p. 947). Although a researcher can measure (a) what happens after the intervention or (b) what happens if no intervention is provided, both cannot be measured for the same individual (Gangl, 2010; Rubin, 1990; West & Thoemmes, 2010). Moreover, although “showing that a problem did not occur due to the implementation of the intervention” is the best evidence of the program’s “efficacy and effectiveness,” it is also immensely challenging and sometimes not possible (Henry et al., 2017, p. 672).

These limitations also affect empirical research designs, including the “gold standard” of randomized controlled trials. Each empirical approach to determining the causal effects of preventive efforts has both strengths and weaknesses. Evaluators are encouraged to operate from a real-world evaluation approach that:

- centers methodological and scientific rigor to provide confidence in the findings and help rule out alternative explanations;
- accounts for input from diverse stakeholders (e.g., intervention developers, participants, funders) in deciding short-, mid-, and long-term outcomes; and

- considers the practical, everyday context (e.g., intervention delivery modality, resource limitations for programming and evaluation) when developing the evaluation design.

Although evaluating prevention science efforts presents challenges (e.g., how can we measure something that did not happen?), demonstrating evidence of effectiveness at multiple levels (e.g., participant satisfaction, perceived knowledge gain, behavior change, well-being indicators) helps support the importance of a given intervention or, in cases where evidence of effectiveness cannot be readily established, provide a rationale for modifying intervention content.

This page
intentionally left
blank.