Parental financial socialization and the development of financial capability in young adults: A college student sample

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Parental financial socialization and the development of financial capability in young adults:
A college student sample

by

Jesse B. Jurgenson

A dissertation submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Major: Human Development and Family Studies

Program of Study Committee:
Jonathan Fox, Co-major Professor
Suzanne Bartholomae, Co-major Professor
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The student author, whose presentation of the scholarship herein was approved by the program of study committee, is solely responsible for the content of this dissertation. The Graduate College will ensure this dissertation is globally accessible and will not permit alterations after a degree is conferred.

Iowa State University
Ames, Iowa
2019

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DEDICATION

To my family and loved ones for whom this work would not be possible.
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This research utilizes data from the Arizona Pathways to Life Success for University Students Project (APLUS), directed by Dr. Joyce Serido at the University of Minnesota, Twin Cities and founded and co-directed by Dr. Soyeon Shim at the University of Wisconsin-Madison. Information on how to obtain access to the APLUS data files is available on the APLUS website www.APLUSHappiness.org. APLUS data collection was funded by the National Endowment for Financial Education (NEFE), Great Lakes Higher Education Corporation & Affiliates, and CITI Foundation.
ABSTRACT

Young adults face a growing number of impactful financial decisions in an ever-complex financial marketplace. Many of these decisions may have long-term effects not only for their financial lives but also impact their interpersonal relationships and overall sense of well-being (Xiao, Chatterjee, & Kim, 2014). Sadly, there is increasing evidence that young adults in the U.S. are lacking the necessary financial knowledge, capability, and confidence to effectively evaluate their alternatives and make a correct selection for their situation (Lusardi, Mitchell, & Curto, 2010). Other environmental concerns such as the need for advanced education (Settersten & Ray, 2010) are holding young adults back from reaching financial independence at ages previously experienced by older cohorts and increasing their dependence on their parents for both financial support and behavioral guidance (Lowe et al., 2013) with corresponding implications to economic, societal, and policy structures at the national level. To better assist and prepare young adults for the financial decision-making process, we must understand where and by what means young adults obtain their financial knowledge, attitudes, and behaviors and from which sources they are learning from as they develop their own financial skills.

Financial socialization refers to the mechanisms used by young adults during their path to financial independence and eventual adulthood which encompasses the how, where, and from who they pick up their financial behaviors, values, and attitudes throughout their own development (Danes, 1994). Although the available literature on financial socialization points towards it being an influential and predictive factor in the financial health and well-being of young adults (Jorgensen & Savla, 2010; Lyons, 2004), there is still a lot not known about this association and how those relationships interact in both the short-and long-term to mold the financial behaviors and resulting level of overall financial well-being. Based on the primary
theoretical framework of the Family Financial Socialization (FFS) Model (Gudmunson & Danes, 2011) and an expansion on the Student Financial Well-being Model (Shim et al., 2010), this dissertation seeks to 1) better understand how anticipatory socialization variables (i.e. parental financial behavior and parent direct financial teaching), financial learning variables (adopting parental financial role modeling, financial knowledge), attitudinal indicators (parent subjective norms, perceived behavioral control, financial attitudes), and behavioral indicators (financial relationship with parents, financial satisfaction behavior, displaying healthy financial behaviors) change over time; and 2) how does the relationship among anticipatory socialization (parent, school, work), financial learning processes (adopting parental role modeling and financial knowledge), financial attitude, and financial behavioral indicators change over time.

This dissertation utilizes all four available waves of the longitudinal Arizona Pathways to Life Success for University Students (APLUS) survey. The Wave 1 survey recruited a total of 2,098 first-year college students and who were between the ages of 18 - 21. The Wave 2 survey was conducted during the fall of their fourth year (2010 - 2011) and students were between the ages of 21 - 24 (N = 1,924). Wave 3 data, collected in spring/summer 2013 when participants were of the ages 23 - 26, yielded 977 surveys. Finally, Wave 4 data was obtained (N = 855) in spring/summer 2016 and participants ranged in age from 26 – 29 (APLUS, 2019). One-way repeated measures ANOVA was performed to examine the wave-by-wave differences in single variables while structural equation modeling (SEM), following the analytical model set forth by Shim et al. (2010), was utilized to explore the relationship among anticipatory socialization (parent, school, work), financial learning processes (adopting parental role modeling and financial knowledge), and financial behavioral indicators change over time.
Results suggest that these young college educated adults are less likely to make financial decisions based on what their parents have done in a similar situation and to report their parents to be financial role models as they grow older. Similarly, students are less likely to perform positive financial behaviors in relation to their parent’s expectations they do so as they move into their late-20s although they do actually report performing more positive financial behaviors in Waves 3 and 4. While objective financial knowledge increases with age, subjective financial knowledge significantly decreases after the respondent’s traditional undergraduate years. Contrary to larger economic conditions, this sample of college students displayed increase financial satisfaction behavior as they aged past traditionally-aged undergraduate study.

SEM analyses suggest there are changes in the relationship of the anticipatory socialization constructions of parent SES, parent financial behavior, parent direct teaching, high school work experiences, and high school financial education with the hypothesized mediator’s wave over wave. First, a higher value of parental financial behaviors predicted a higher value of adopting parental financial role modeling across all Waves. Increased levels of financial knowledge were significantly predicted by increased exposure to parent direct teaching, high school employment (Wave 1 and 2 only), and high school financial education (Wave 1 and 2 only). Interestingly, higher values of parental financial role modeling significantly predicted increased rates parent financial norms, perceived behavioral control, and financial attitude. Higher scores of financial knowledge significantly predicted increased perceived behavioral control, healthy financial behaviors, and financial attitude. Lastly, increased prevalence of recently performing healthy financial behaviors were predicted by higher rates of financial knowledge, parent financial norms (Waves 1-3 only), and financial attitude.
The results provide additional support for the Shim et al. (2010) conceptual model as a device for understanding the associations between these variables and how young adults who chose to attend college develop healthy financial behaviors and attitudes. Results also suggest movement towards high school employment losing its predictive power to increase financial knowledge as the respondent ages. In contrast, more formal financial education exposure in high school may be have an increasingly positive effect on the objective and subjective financial knowledge of these 21 – 24-year-old young adults. This may indicate that although high school employment does give young adults a head-start in their financial knowledge through experiential learning, other individuals do catch-up with formal financial education exposures having a larger connection to financial knowledge later in life.

The importance of parental influence on the financial behaviors and outcomes of their children continues to be strong. Therefore, efforts to better examine the youth financial socialization exposures and financial environment from which they grew up may provide a path to a better understanding about why individuals exhibit specific money behaviors or attitudes.
CHAPTER 1. INTRODUCTION

Young adults face a growing number of complex, impactful, and enduring financial decisions. Examples of these complicated and multi-faceted decisions include financing an education, choosing health-care coverage, or determining which job offer to accept (Durband & Britt, 2012; Jorgensen & Savla, 2010; Xiao, Chatterjee, & Kim, 2014). These decisions also have a wide-reaching impact on several other aspects of a young adult’s life. Financial decision-making is not only associated with an individual’s level of personal well-being, but also with close relationships such as marriage and family (Britt & Huston, 2012; Dew, 2007). In addition, financial decision making by young adults can result in other personal, family, and societal difficulties leading to a reduced level of well-being (Hira, 2012; Xiao, Chatterjee, & Kim, 2014).

Ideally, as young adults navigate financial decisions, they progress towards a state of financial independence.

Financial independence is described as an individual no longer needing to receive financial assistance from their parents for an extended period of time. Whittington and Peters (1996) further defined that a child is financially independent if they live alone in a non-institution setting, join the military, or exit the family home for marriage. Financial independence is a necessary component in the continued development of a healthy economy. Young adults who continue to live with their parents are less likely to establish their own independent households and become homeowners than those young adults who live independently (Choi, Zhu, & Goodman, 2019). Other research has shown that the transition to financial independence is changing for younger generations due to a number of potential reasons including reduced income earning potential (Whittington & Peters, 1996), fewer employment opportunities, and increased rental costs (Matsudaira, 2010). Specifically, the percentage of young adults (aged 25-
still living with their parents rose from 1.9% to 22% from 2000 to 2017 (Choi, Zhu, & Goodman, 2019). With young adults relying on family financial assistance for longer, families are spending money out of their current income in support of their adult children (Settersten & Ray, 2010) thus reducing the amount of funds available to work towards their own financial goals such as funding retirement. It has also been shown that the length of time to financial independence is elongated due to the increased need for specialized training and education (Settersten & Ray, 2010). When examining the contributing factors of a young adults transition to financial independence, Xiao, Chatterjee, and Kim (2014) found economic-focused considerations, such as income, assets, employment status, and level of education attainment, were positively related to financial independence whereas family economic factors, such as parental income, holding stocks as an investment, and receipt of financial assistance, had a negative relationship.

The foundation upon which young adults are making choices in their transition to financial independence may be weak as the student population in the U.S. are displaying low rates of financial knowledge and financial capabilities (Babiarz & Robb, 2014; Lusardi, Michell, & Curto, 2010). Specifically, Lusardi, Mitchell, and Curto (2010) reported that measures of financial literacy were quite low among young adults such that only 27% could correctly answer foundational personal finance questions surrounding inflation, risk diversification in investments, and interest rate calculations. This evidence is concerning as the period of young adulthood reflects a time when an individual’s financial attitudes and behavior are developing and financial independence is gradually being established (Durband & Britt, 2012; Xiao, Chatterjee, & Kim, 2014). Furthermore, the life milestones achieved by previous generations (marriage, homeownership, etc.) are becoming increasingly difficult to achieve for today’s young adults
(Lowe, Dillon, Rhodes, & Zwiebach, 2013; Saad, 2015). There is growing evidence that the off
timing of these milestones may not be a sudden aberration but instead a troubling trend, creating
a barrier to some young adult’s ability to achieve financial independence and financial
independence being delayed for prolonged periods (Settersten, 2012). With these increased
barriers to financial independence and longer transitions to traditional adult milestones, an
increasing proportion of young adults rely on their parents for resources to survive for a longer
period of time compared to previous generations (Fingerman et al., 2015; Wightman & Schoeni,
2012). To better assist and prepare young adults for the financial decision-making process, and to
facilitate financial independence, it is important to understand where and by what means young
adults obtain the foundational components such as financial knowledge, attitudes, and behaviors,
and which sources they are learning from as they develop their own financial skills.

Financial socialization refers to the mechanisms used by young adults during their path to
financial independence and eventual adulthood, and it encompasses the how, where, and from
whom they pick up their financial behaviors, values, and attitudes throughout their own
development (Danes, 1994). Available literature on financial socialization points towards it
being an influential and predictive process and factor in the financial health and well-being of
young adults (Jorgensen & Savla, 2010; Lyons, 2004). However, questions remain about the
influence and association of financial socialization, how relationships in this process interact in
the short- and long-term, and how the financial socialization process molds financial behaviors
and impacts financial and overall well-being.

Empirical literature has slowly expanded in the past decade, however, there remains a
lack of research which tests conceptual models across time and populations to build a body of
evidence towards its effectiveness in understanding the relationship between socialization
variables and financial well-being outcomes. Therefore, the overarching goal of this dissertation is a replication and expansion of previous scholarship (Shim, Barber, Card, Xiao, and Serido, 2010). Specifically, this study will examine whether the relationships and associations between financial socialization constructs and positive financial well-being outcomes for young adults found at an earlier time point, and in a previous analysis, hold up in subsequent time points and over time.

The scientific process depends on the ability of independent observers to repeat and confirm the findings of other researchers. In general, and specific to the financial socialization literature, experiments must be repeated and hypotheses constantly reevaluated. In this context, replication is not only legitimate, but essential (Institute of Medicine, 1991). Valuable benefits derived from replication research include 1) adding to the available evidence and confirming the validity and reliability of results; 2) reassessing the generalizability of the findings or examining how extraneous variables may interact with the other variables; and 3) providing a spark for the creation of new research which integrates prior and related findings and extends the boundaries of available literature (Heffner, 2017). The goal of the current study is to extend the benefits of replication to the financial socialization literature.

This dissertation utilizes the Arizona Pathways to Life Success for University Students (APLUS), one of the few longitudinal data sets with information on the financial socialization process and young adult’s well-being. The APLUS project follows the same sample of young adults starting from their first year as an undergraduate student (ages 18 - 21) through their transition into adulthood (ages 26 - 29). The theoretically-based project is specifically interested in understanding the processes by which individuals develop financial capability, financial knowledge, financial skills, and financial values and its relationship with characteristics of their
adult lives such as their career trajectory, starting a family, health outcomes, and overall happiness and well-being (APLUS, 2019). As noted by the APLUS scholars “In the face of changing personal and external circumstances, individuals must continually adapt their financial knowledge, skills and behaviors to make the best financial choices to maintain long-term financial well-being” (APLUS, 2019, n.p.). A strength of this data collection project is the ability for researchers to examine how variables intersect over time and how these intersections are affected by other variables. Additionally, it allows the exploration of relationships over time as this study takes advantage of the four available waves of the APLUS survey to test the robustness of a theoretical model of financial socialization and the reliability of earlier scholarship (Shim et al. 2010) using the first wave of the APLUS data.

This study replicates Shim et al. (2010), a study that employed cross-sectional data (Wave I) to examine the impact of “anticipatory socialization” (i.e. parent financial behaviors, parental direct financial teaching, high school work experience, and high school financial education) during adolescence on financial learning (i.e. financial knowledge and parental financial role modeling), attitudes, and behaviors (i.e. tracking expenses, saving money regularly) exhibited when participants were the ages of 18 - 21. The results of Shim et al. (2010) show that the role of parents was most predictive of young adults’ financial learning, financial attitude towards performing positive financial actions, and actually performing those healthy financial behaviors recently in their own lives. Their work also highlighted the association of being employed outside of the home during high school and formal high school financial education. However, the authors cautioned that the findings and the relationships may change over time such that “Future longitudinal research is also needed in order to establish temporal primacy among these constructs as a means of better understanding their relations across time”
They suggested future research examine the long-term effect of the parent-child financial relationship and how the relationships may shift over time (Shim et al., 2010).

Another study based on the APLUS Wave 1 data examined parental impact on the development of financial independence among first-year college students (Serido et al., 2010). The findings of Serido et al. (2010) were significant as they suggest that the quality of communication between the parent and the student was a significant predictor of student financial, psychological, and personal well-being. The results of Serido et al. (2010) are also clear to state that they may not be applicable or transferable to other aged population, and note that additional research is warranted to better determine how this relationship may change over time. Specifically, the authors state:

It is possible that young adult factors (e.g., maturity, communication style) account for the perceived quality of parent-emerging adult financial interactions. Future longitudinal research is needed as a means of better understanding the relation of perceived financial parenting to financial coping behaviors and well-being across time (p. 462).

Longitudinal studies (or cohort/panel studies) where the same individuals are compared over time have unique strengths in research. Longitudinal studies are better able to identify connections between earlier circumstances and to determine “how persistent particular circumstances are, and thus enable evaluation of the differing impacts of continuing circumstances on later well-being” (Young Lives, 2017, p.1). This study will address the current gap in the literature by utilizing the longitudinal nature of the APLUS to examine the persistence of and changes in the financial socialization process over time and its relationship with well-being outcomes.
Research Questions

This dissertation seeks to answer two research questions that will provide additional evidence on the role of child and adolescent financial socialization and, specifically, parental financial socialization, and help explain the subsequent financial behaviors, attitudes, and financial satisfaction of young college educated adults:

RQ1: How do anticipatory socialization variables (i.e. parental financial behavior and parent direct financial teaching), financial learning variables (adopting parental financial role modeling, financial knowledge), parent and child attitudinal indicators (parent subjective norms, perceived behavioral control, financial attitudes), and behavioral indicators (financial relationship with parents, financial satisfaction behavior, displaying healthy financial behaviors) change over time? and;

RQ2: How does the relationship among anticipatory socialization (parent, school, work), financial learning processes (adopting parental role modeling and financial knowledge), financial attitude, and financial behavioral indicators change over time?

The next chapter contains a review of the literature which will explore what is currently known about the connection and predictive relationship between parental financial socialization and financial knowledge, financial self-efficacy (perceived behavioral control), and financial behavior. The pathways previously discovered between financial knowledge, financial behavior, and overall young adult financial well-being are also discussed in Chapter 2. In Chapter 3, the conceptual framework upon which this research is based, the Family Financial Socialization (FFS) model (Gudmunson & Danes, 2011), theory of consumer socialization (Moschis, 1987), theory of planned behavior (Azjen, 1991), and the expanded conceptual model of student financial well-being presented in Shim et al. (2010) are discussed to ground why these construct relationships may exist. Chapter 4 provides a detailed discussion of the Arizona Pathways to Life
Success for University Students (APLUS) dataset that is utilized in this research and provides specific information on the study measures. It further describes the analyses including the one-way repeated measures ANOVA procedures performed to explore the wave-by-wave changes and the structural equation modeling (SEM) process utilized to examine how the predictive relationships between the constructs changes as respondents age from Wave 1 to Wave 4.

Chapter 5 presents a discussion of the results of the one-way repeated measures ANOVAs and SEM procedures. Chapter 6 provides an interpretation and description of the significance of the results in relation to what is currently known in the literature about the role of youth and adolescent financial socialization on future financial behaviors. Chapter 6 also includes insights about how this research adds to the current body of literature, study limitations and suggestions for future research directions.
CHAPTER 2. REVIEW OF LITERATURE

The following review of literature offers a foundation of what the literature currently states about the relationships between youth financial socialization, the role of parents in financial in the financial socialization process, and the impact of financial socialization on financial knowledge. This chapter outlines the need for continued long-term study about how the relationships and associations between these constructs may change over time and impact the personal development of young adults. It starts with an overview discussion about financial socialization, followed by a review of literature related to the Family Financial Socialization (FSS) model, the role of parents in financial socialization, and then the relationship between financial socialization and financial knowledge.

Financial Socialization

Financial socialization is a mechanism from which individuals display an increased belief in their own abilities around financial issues, known as financial self-efficacy. Financial socialization emerges from Moschis (1987) and Ward’s (1974) theory of consumer socialization that suggests that it occurs through discussions, observations, deliberate actions, and shared experiences with various types of socialization agents available to a child or adolescent while growing up. The theory proposes that children and adolescents are continually establishing skills, retaining knowledge, and developing attitudes towards topics which they will use themselves later on as consumers in a complex marketplace.

The process by which financial socialization is enacted by parents and transmitted in other socializing domains from individual to individual is varied. Some individuals engage in formal financial education opportunities offered in a high school or college classroom by way of
a financial literacy or consumer economics course. Socialization also happens in other ways such as gaining knowledge through the process of being employed and earning a wage.

The following section contains a review of the empirical literature on child and adolescent financial socialization and its relationship to the financial well-being of young adults. Results consistently illustrate that child and adolescent financial socialization is significantly related to positive changes in variables related to financial well-being. Utilizing a randomized sample of undergraduate and graduate university students (N = 781), Shim et al. (2009) found that self-actualizing personal values, at-home financial education, and at-school financial education interact to have a significant impact on how young adults form financial attitudes and gain financial knowledge through this increased financial socialization. As those researchers were specifically interested in examining the relationship between parents, educators, or other socialization agents and the participants development of skills which will aid them as a consumer, their model was guided by the theoretical framework of the theory of consumer socialization (Moschis, 1987) and employed structural equation modeling (SEM) to arrive at their model and subsequent findings (Shim et al., 2009). Although this study was able to show a link between financial socialization and financial well-being in young adults, they specifically state that longitudinal research is necessary to lend additional evidence and details concerning the findings (Shim et al., 2009). In a sample of 530 middle-income Taiwanese households where participants were at least 18 years of age, Grohman et al. (2015) sought to better understand the elements which contribute to an individual’s financial literacy in adulthood. An analysis of the participants retrospective reports of if their parents taught them to budget or encouraged savings, if they received an allowance, worked as a youth, and if they had taken economics as a school course. The results of Grohman et al. (2015) show that that the two main paths which were
significantly related to levels of financial literacy included from their parents followed by having taken an economics course previously and increasing numeracy skills. Interestingly, Grohman et al. (2015) then continued the analyses by reporting a significant positive relationship between the higher levels of financial literacy and better financial decisions in adulthood.

In a survey of first year college students, and the foundational study expanded upon in this dissertation, Shim et al. (2010) examined the influence of direct financial teaching, parental financial behaviors, financial education obtained in high school, and high school work experience on financial knowledge. Modeled as a common latent construct, financial knowledge was measured using both objective and subjective measures. Study participants were asked a single question to provide a rating of their overall understanding of money management concepts as a means to measure their subjective financial knowledge. To measure their objective financial knowledge, fifteen true or false questions were asked. Their results suggested that direct parental teaching, high school financial education, and experience working in high school displayed significant direct effect on financial knowledge (Shim et al., 2010).

In summation, the level of financial socialization experienced by children and adolescents have consistently been shown to have a significant impact on financial well-being indicators of young adults through both direct teachings by parents and educators but also through other sources such as work experiences (Shim et al., 2009; Shim et al., 2010; Grohman et al., 2015). Next, the Family Financial Socialization (FFS) model is explored followed by the role of parents in financial socialization and finally the impact of financial socialization on the financial knowledge of young adults.
**Family Financial Socialization Model**

The Family Financial Socialization conceptual model introduced by Gudmunson and Danes (2011) seeks to better understand the relationship between financial socialization and observed differences in the level of financial literacy across individuals. It is important to note that the singular term financial literacy should not be viewed narrowly or solely as the personal accumulation of information and facts pertaining to personal financial topics, but instead encompasses “the ability to interpret, communicate, compute, and develop independent judgements, and to take actions resulting in those processes, in order to thrive in the complex financial world” (Danes & Yang, 2014, p. 60). It has also been suggested that this wider definition may also be defined as financial capability with consideration to the inclusion of the individual applying their knowledge to perform financial actions (Sherraden, 2010). What is unique about the application of this model is the consideration given to the role of interactions within the family, the interpersonal relationships between family members, and finally the inclusion of purposive, or purposeful, financial socialization from the agent to the recipient (Danes & Yang, 2014). A deeper discussion pertaining to the use of the FFS model as a theoretical framework is presented in Chapter 3.

This model has been utilized in empirical research to examine how family financial socialization may interact, or predict, outcome variables such as the financial knowledge, financial attitudes, and financial behavior of individuals. These measures, in turn, increase the financial literacy/capability of the individual or family along with the financial level of well-being (Danes, 1994). As the conceptual model suggests that earlier financial socialization affects the financial attitudes of the individual which then impacts financial behaviors, Jorgensen et al. (2017) added support for the model when they found that, first, financial achievement and power attitudes, and sensible spending behavior did differ across three separate geographic regions of
the U.S. and one international area; and second that there was a significant relationship between financial achievement attitudes and financial power attitudes in that they were connected to a reduced level of responsible spending behaviors. Also adapting the model for an international population, Chow and Despard (2014) found within a sample of children ages 12 - 19 living in sub-Saharan Africa, financial socialization was a predictor of the child’s financial behaviors. Also, it is of note that in this research it was not only the child’s reporting of the presence of financial socialization which was a significant predictor, but also the parents report of the amount of financial socialization which had occurred. Additional work by Rea, Danes, Serido, Borden, and Shim (2018) further confirm the FFS constructs by finding that young adults utilize both implicit and explicit family interactions in how they perceive communication about money and well-being related to their finances. Rea et al. (2018) then expands the model by stating “that an individual’s cognitive interpretation of finances and financial well-being emanate from family financial socialization processes as the foundational base for the continual development of their financial attitudes, knowledge, and capabilities” (p. 262).

Financial Socialization and the Role of Parents

The primary socialization agent for children are their parents and family who serve as a medium from which information passes from the outside world into the child’s more intimate world. It occurs through the lens of the parents and therefore impacts the role information plays in the development of that child’s view about finances (Danes, 1994; Gudmunson & Danes, 2011). The learning gained by observing parents can stick with children well into their adult years and, therefore, parental financial behaviors are important to understand when attempting to better comprehend the development of an individual’s own financial behaviors (Garrison & Gutter, 2010). The strength of parental influence holds as the most impactful, even in the
presence of other potential socialization agents, such as educators or even peers (Mimura et al., 2015; Watson & Barber, 2016). The process of socializing young children and how they interact with financial matters falls upon parents who may speak directly to their children about financial topics or illustrate financial and/or consumer activities explicitly. Parents serve as a socializing agent when they model how to behave in the larger marketplace and display actions or share strategies relating to becoming a discerning and responsible consumer.

Parents also set norms on how to act, and demonstrate contextual rules that the child will be expected to follow when they behave as financially independent adults and influence in their own future financial behaviors (Allen, 2010). Parents may demonstrate their own beliefs and expectations to their children by engaging in such actions as encouraging a relationship with a financial institution through opening up a checking or savings account or by encouraging the child to save money regularly for long-term financial goals. These parental actions end up directly or indirectly transmitting financial beliefs and attitudes about money, how money is to be treated, and the role that it plays in their own lives to their children. Another common method that parents utilize as a mechanism to teach about money management is to provide a tangible allowance to their children (Hira, 1997) although this practice has been found to have an adverse impact on levels of financial self-efficacy in youth and may be seen as a kind of entitlement rather than a financial education opportunity (Lee & Mortimer, 2009). In sum, it is fairly well established that parents serve as the most significant financial socialization agent for youth as they grow and develop their own financial behaviors (Gudmunson & Danes, 2011; Garrison & Gutter, 2010; Mimura et al., 2015; Watson & Barber, 2016).
Financial Socialization and Financial Knowledge

Previous research has illustrated that financial socialization has an impact on increased rates of financial knowledge, which in turn, has a positive relationship with the rates of financial self-efficacy (Grohman, Kouwenberg, & Menkoff, 2015; Lapp, 2010; Serido et al., 2013; Shim, Barber, Card, Xiao, & Serido, 2009; Shim et al., 2009). Montford and Goldsmith (2016) add to the currently available evidence that financial behaviors have a positive relationship with both financial knowledge and financial self-efficacy (Babiarz & Robb, 2013; Henager & Cude, 2016). Although socialization has been shown to impact financial behaviors, findings are inconsistent when exploring specific socialization actions (Jorgensen, Rappleyea, Scweichler, Fang, & Moran, 2017; Kim & Chatterjee, 2013; Serido et al., 2010).

Financial socialization activities may be classified as implicit or explicit. Examples of implicit socialization activities would include the child mostly observing the parents financial behaviors or learning through examples while little direct teaching or discussions took place while explicit financial socialization activities would include a larger amount of direct communication or actions (i.e. budgeting, use of a credit card) about finances and implies an inclusion of implicit socialization as well (Jorgensen & Savla, 2010). Additional studies have reported differences in how implicit and explicit socialization activities may influence the child’s financial knowledge (Grohmann et al., 2015; Jorgensen & Savla, 2010). In an effort to explore the process of how individuals foster financial behaviors and choose financial paths, Jorgensen and Savla (2010) utilized social learning theory (Bandura, 1986) to view learning over time. It is through an individual’s interactions with those around them, mainly parents, that are thought to contribute to how they form financial attitudes, values, and beliefs. The researchers employed the College Student Financial Literacy Survey (CSFLS), an 82-item survey consisting of questions related to financial knowledge, financial attitudes, financial behaviors, perceived financial
influences, and demographic variables. The survey addressed the shortcomings of previous financial literacy surveys by including items related to financial knowledge, attitudes, and behaviors and administering it to undergraduate students across a half-dozen U.S. states. Their analyses suggest that parents were perceived to have a direct influence on the young adult’s financial attitude along with an indirect yet significant influence on financial behavior mediated through financial attitude. Interestingly, the young adults in the study did not perceive parents to influence their financial knowledge, yet students in the sample still expected to learn financial knowledge from their parents, this supports the notion that parents are not taking an active role in educating their children about finances (Jorgensen & Savla, 2010).

Parental Financial Socialization and Financial Self-efficacy

Financial self-efficacy is an individual’s level of confidence in their own ability to manage their finances and accomplish a financial goal. The APLUS data set utilized in this present research operationalizes the spirit of this construct through the terminology of “perceived behavioral control.” Heckman and Grable (2011) conducted research examining the direct relationship of parental debt attitudes, student income, and dependency status on a young adult’s financial knowledge along with the indirect effect of these items on the respondent’s financial self-efficacy. They reported that study participants who experienced increased levels of income also displayed greater levels of financial knowledge and an increased rate of financial self-efficacy. Students who were still financially dependent on their parents displayed a lower level of financial knowledge and financial self-efficacy although those results were not statistically significant (Heckman & Grable, 2011).

While the above work did find a positive relationship between financial self-efficacy and financial socialization, that has not been the consistent case over time. For example, Lee and
Mortimer (2009) followed students for six years starting their freshman year in high school to examine if family financial socialization influenced their self-perceived rate of financial self-efficacy based on their positive or negative outlook on their future professional and financial lives. Females displayed a greater likelihood of believing they will hold a job they enjoy in the future while overall levels of self-efficacy between the genders was not significantly different. Lee and Mortimer (2009) additionally examined the role of family background and academic performance on self-efficacy where many different variables were shown to have a positive impact on their perceived economic self-efficacy such as the household income level, academic achievement, and the education level of the parent(s). When examining the role of socialization on self-efficacy, children who reported their parents having talked with them about their employment had greater economic self-efficacy. Interestingly, the common practice of providing a child with a monetary allowance as a mechanism to practice financial behaviors and decision-making was shown to have a negative effect on reported financial self-efficacy of the high school student respondents (Lee & Mortimer, 2009).

There is evidence of a connection between financial socialization and financial self-efficacy of college students over a period of time. Utilizing the first two waves of the APLUS data set where students were in their first year and fourth year of undergraduate study, Shim, Serido, Tang, and Card (2015) analyzed perceived parental financial role modeling, perceived parental communication about finances, perceived parental financial expectations, perceived friend’s financial behaviors, classroom learning, and self-learning to explore if differentiation in the socialization agent (i.e. parent versus classroom) may have impacted financial self-efficacy. Results indicated the changes in self-efficacy were influenced by variations in the level of communication by the parents and variation in the classroom setting (Shim et al., 2015).
Parental Financial Socialization and Financial Behavior

Several studies examine the relationship between parent financial socialization and financial behaviors. The body of literature consistently finds that there is a significant positive predictive relationship between parental child and adolescent financial socialization and financial behaviors.

Jorgensen et al. (2017) reported that increased communication about financial matters between parents and children yielded statistically significant positive changes with cash management and prevalence of budgeting behavior, increased saving and investing behaviors, more positive credit usage, and increased purposeful planning behavior for long-term financial goals. Cho, Gutter, Kim, & Mauldin (2012) examined low and moderate-income adults aged 24 - 66 and similarly found that talking about finances was connected with reporting an increase in more positive financial behaviors. More specifically, when respondents stated that their parents discussed foundational financial behaviors with them such as the importance of saving for the future, using a spending plan, and managing credit responsibly they were more likely to display those same behaviors (i.e. spending within a budget and financial goal setting) themselves in their own lives (Cho et al., 2012).

The way that parents behave with their own finances has been shown to have an impact on how their children interact and view money as well (Cho et al., 2012; Webley & Nyhus, 2006). Cho et al. (2012) looked specifically on the transfer of money behaviors from parents to children and found that when adults were asked to characterize their parents as spenders or savers, those who said their parents were savers were significantly more likely to perform foundational financial planning behaviors than were respondents who would not classify their parents as financial savers. Researchers suggested that this result may stem from the concept that when respondents were willing to characterize their parents as savers, it implied a likelihood of
the style of parental financial socialization they themselves experienced during their childhood and adolescence which understandably meant an increased likelihood that the importance of saving money for future financial goals was communicated often to them as children. Webley and Nyhus (2006) utilized a sample of families with older children and reported that when comparing the amount of money saved by the parents and the amount of money saved by the children, there was a significant positive relationship between the two which provides evidence to the impact and result of parental financial socialization through implicit and explicit socialization mechanisms.

However, there is evidence that there may be differences between family characteristics in how, where, and how often parental financial socialization occurs. Qualitative research by Luhr (2018) reports that middle-class families displayed more purposeful behaviors in teaching their children about finances than were working-class households. In comparison, parents within working-class families were found to communicate increased feelings of being unqualified, unprepared, and reflected a reduced level of confidence that they were able to teach quality financial knowledge to their children. Working-class families were also found to display an increase desire to shield their children from the household’s financial situation than were middle-class households (Luhr, 2018). Mimura et al. (2008) found that there was reduced self-reported perceived communication within the family about financial topics when the was child living in a household with married parents when compared with single-parent households. Specifically, they reported that the frequency of the financial communication was greater in the single-parent household and resulted in having a higher impact on the savings actions of the child.

Given the wide array of avenues in which financial socialization may occur, it is understandable that conflict may occur in terms of which avenues may be more advantageous or
effective at efficiently generating the desired end goal. Webley and Nyhus (2006) found that parents who spoke to their children directly about financial matters, the youth being employed and earning a wage, and parents supporting a relationship with a financial institution for money management had children who were more likely to save remaining money instead of spending it. Similarly, previous literature has suggested that children who have a savings account at a financial institution, have engaged parents who supervised how they spent their money, and who had jobs outside of the home and paid a wage were more likely to own certain investment products or other non-bank liquid assets as a young adult (Kim & Chatterjee, 2013).

A comparatively small amount of qualitative research has also been done in this area in an effort to gain a deeper insight into the financial socialization process and its connection to downstream financial behaviors. LeBaron, Hill, Rosa, and Marks (2018) interviewed college-aged students for details about how their parents or grandparents taught them about finances and on what topic(s). Their results suggest that the most repeated method for which the participants received financial socialization was through the modeling behavior of their parent or grandparent, followed then by explicit discussion between family members about money-related topics (i.e. directly addressing needs versus wants in a store), and lastly through the parent or grandparent offering experiential learning opportunities such as encouraging them to have a relationship with a financial institution (i.e. opening up a checking account and using a debit card) (LeBaron et al., 2018). These findings were in agreement with previous qualitative work by Solheim et al. (2011) which reported that college-aged students reported learning about financial topics, norms, and behaviors by watching their parent’s actions (modeling) and through direct discussions.
Interestingly, the receipt of a monetary allowance during childhood does not have a consistent impact across different studies. Kim et al. (2011) examined adolescent financial behaviors and reported that they did not find a relationship between if the individual had received a monetary allowance when they were a child and the likelihood of that person owning a savings account along with not being related to the prevalence of savings money for educational purposes among those who did have a savings account. Interestingly, While adult children of college age who stated they had received an allowance were found to be more likely to carry a balance on a credit card, less likely to report anxiety related to their finances, and to be fully responsible for the management of their own financial affairs rather than remaining financially dependent on their parents (Kim & Chatterjee, 2013).

**Financial Knowledge and Financial Self-efficacy**

How much an individual feels they know about a subject, or their personal amount of accumulated knowledge on a specific topic, can have a significant impact on the individual attitude toward actually performing a related task (Hilgert et al., 2003). Therefore, Shim et al. (2009) points out that in financial terms, primary financial socialization agents such as parents should consider their role as a teacher of financial knowledge (i.e. direct discussions about financial topics) as important to the development of the child or adolescents’ financial self-efficacy.

It is important to acknowledge the significant differences between objective and subjective financial knowledge used within the literature. Objective financial knowledge is what an individual actually knows about personal finance concepts and topics which is often measured by way of a series of questions where a number of correctly answered questions or a proportion
of correct answers are utilized to reflect the construct, while subjective financial knowledge is what a person thinks they know about personal finance and is commonly a one-item measure.

Previous research by Serido et al. (2013) was interested in better understanding the potential relationship between objective financial knowledge, subjective financial knowledge, and financial self-efficacy in a sample of undergraduate students and how those relationships may change over a roughly four-year time frame. A single-item asking the study participant to rate their overall level of understanding of personal finance practices and concepts was utilized to measure subjective financial knowledge. Objective financial knowledge was assessed by way of a fifteen-item true or false quiz on various foundational financial topics related to spending, saving, borrowing, and risk management which was adapted from Hilgert et al. (2003). Results from Serido et al. (2013) utilizing this scale indicated that between years one and four, students displayed significant increases in both subjective and objective financial knowledge in additional to increased financial self-efficacy. When they explored the specific relationship between objective and subjective financial knowledge and financial self-efficacy, it was found that changes in subjective financial knowledge was significantly related to changes in financial self-efficacy although change in objective financial knowledge did not influence a change in financial self-efficacy. Due to the conflicting results of the impact of the two variants of financial knowledge on self-efficacy, the concept that what students believe they know about personal finance topics may have a stronger connection to how confident they are in their financial abilities than what they actually know is an intriguing thought for reassessing the relevant outcome variables from financial literacy interventions.

Much previous research has been conducted on the connection between financial education and level of financial knowledge. For example, Lapp (2010) analyzed the results of a
financial training workshop and tasked the participants with completing questionnaires asking about their subjective financial knowledge and financial self-efficacy prior to them partaking in the training. Participants were then asked the same questions one year after completing the financial training workshop. Results imply that subjective financial knowledge did increase significantly one year after the intervention and was additionally found to be significantly related to changes in the participants self-rated financial self-efficacy also suggesting a link between financial knowledge and financial self-efficacy (Lapp, 2010). Similarly, Danes et al. (1999) examined data from a formal financial education intervention for high school students and surmised that students reported a significant increase in both objective and subjective financial knowledge in additional to reporting an increase in financial self-efficacy lending additional support to the suggestion of a link between financial knowledge and self-efficacy.

**Financial Knowledge and Financial Behavior**

Previous literature has identified a potential link between levels of financial knowledge and the prevalence of the individual performing healthy financial behaviors in their lives. Objective and subjective financial knowledge has been found to be positively related with individuals having an emergency fund, participating in retirement planning, spending less money than is earned, not carrying a balance on credit cards, investment ownership, and not having a negative balance in a checking account (Angrisani, Kapteyen, & Lusardi, 2016; Chatterjee, Fan, Jacobs, & Hass, 2017; de Bassa Scheresberg, 2013; Henager & Cude, 2016). Partaking in high cost borrowing, such as through a payday lending institution or vehicle title loan company is commonly seen as a less-than-positive financial behavior for most consumers. In an interesting result, de Bassa Scheresberg (2013) reported that higher reported levels of objective financial knowledge were associated with reduced prevalence of borrowing from high-cost lending
institutions which indicates a distinct and immediate application of knowledge to either manage one’s finances as to not need such high-cost financial services, or an increased ability to recognize and pursue more positive alternatives. Robb and Woodyard (2011) were interested in examining the potential relationship between objective and subjective financial knowledge and positive financial behaviors related to savings, credit report management, money management, and risk-management. Their results suggest that more positive financial behaviors were associated with higher levels of both objective and subjective knowledge.

Serido et al. (2013), using a dataset of undergraduate students with two data collection periods four years apart, was interested in gaining a better understanding of how the levels of financial knowledge and reported financial behaviors change over time along with how the association may change between the measures themselves. For this study, financial knowledge was operationalized through the use of a fifteen-item true or false questionnaire adapted from Hilgert et al. (2003) and the prevalence of healthy financial behaviors was measured through a six-item scale where the respondent is asked to respond if they have done the stated task (i.e. tracked their expenses, saved money each month, etc.) within the last six months. They report that although a change in objective financial knowledge did not have a significant relationship with a change in financial behaviors, they did observe a significant positive relationship between change in subjective financial knowledge and change in financial behaviors (Serido, 2013).

Within the growing research which seeks to better understand the factors which make up financial well-being and the connection between financial knowledge and financial behaviors, there has been literature on the impact of the interpersonal relationships of young adults. Totenhagen (2019) utilized a longitudinal sample to examine how levels of financial knowledge may impact relationship satisfaction. Their results indicate that increased levels of subjective
financial knowledge were in fact related to higher reported levels of relationship satisfaction along with also being associated with higher rates of the individual performing positive financial behaviors.

An increasing amount of literature is contributing to the evidence that objective financial knowledge may be linked to a reduction in negative financial behaviors (Nghia & Scott, 2018; Xiao, Chen, & Chen, 2014). Nghia and Scott (2018) found that when an individual displayed a higher level of financial knowledge, they had a lower likelihood of being behind in important financial behaviors such as not saving for retirement or being late on a mortgage payment. On the same tone, Xiao, Chen, and Chen (2014) report a negative relationship between objective financial knowledge and negative financial behaviors and suggest that a higher a person’s financial knowledge, the less likely the study participant was to report negative financial behaviors such as spending more than their income, not paying off a credit card balance each month, making debt payments late, or taking out a loan against a 401(k) retirement savings account. Xiao et al. (2014) additionally investigated the association of financial knowledge on financial behaviors and reported that study participants who displayed higher rates of financial knowledge were also more likely to report more positive financial behaviors such as setting money aside for emergencies, partaking in financial planning behaviors like calculating their financial needs in retirement, keeping aware of the contents within their credit report, shopping around, and comparing offers for borrowing (Xiao et al., 2014). As there have been multiple strategies utilized in the literature to measure financial knowledge, it should be noted here that in both Xiao et al. (2014) and Nghia and Scott (2018), objective financial knowledge was operationalized with five multiple-choice questions revolving around fundamental personal finance topics such as interest rates, inflation, stocks, mortgage payments, and bond prices.
Financial Self-efficacy and Financial Behavior

Bandura (1977) defines efficacy expectations as to whether an individual has confidence that they can effectively achieve a behavior. This measure may also contribute to the amount of resources, including effort, that an individual may be willing to dedicate to performing a particular task or action. Efficacy expectations are impacted by four distinct judgements which include 1) performance outcomes, which measures if the individual has failed or succeeded at a similar task previously; 2) verbal persuasion, which includes the encouragement or discouragement that the individual receives in relation to the completion of the behavior; 3) vicarious experiences, which is whether the individual has seen other people succeed or fail at a similar tasks such that they are able to effectively compare their own level of competency against the other persons; and 4) physiological feedback, which are the sensations and feelings the individual may experiences in relation to the behavior, such as anxiety, which may impact the persons perceived ability to successfully complete the task (Bandura, 1977).

Socialization agents such as parents may utilize this construct of self-efficacy for more positive financial behavioral outcomes through the use of financial socialization methods such as choosing appropriate, smaller tasks which are likely to be accomplished as to encourage confidence in the youth’s willingness to attempt increasingly complex behaviors. Other strategies may include to offer consistent encouragement that the child has the ability and skill to accomplish the given behavior, allow the child to observe the socialization agent and others successfully complete a similar task, and allow the child to better understand, recognize, and work through their bodies natural response to a new and unfamiliar situation such as sweaty palms or an increased heart rate.
Montford and Goldsmith (2016) presented results which suggested that increased rates of financial self-efficacy were significantly associated with an increased likelihood of making risky investment decisions. Farrell et al. (2016) reported that women with an increased amount of financial self-efficacy were more likely to display more positive financial behaviors and financial status in owning a mortgage, a savings account, or investments while having a lower probability of less positive financial behaviors such as holding credit card or loan debt. Similarly, increased rates of self-efficacy are associated with increased amounts of savings (Ascebedo et al., 2018; Lapp, 2010), reduced amounts of debt, fewer financial dilemmas, and lower investment portfolio withdrawal rates (Ascebedo & Browning, 2017). Specifically regarding the college student population, Gutter, Copur, and Garrison (2009) reported that students who engaged in positive financial behaviors such as spending within a budget, recently viewing their credit report, and saved regularly for future financial goals had significantly higher rates of financial self-efficacy than did students who did not report performing these healthy financial behaviors.

Young Adult Financial Well-being

It is common that financial well-being is thought of most with material wealth (Plagnol, 2011). However, this type of tangible wealth does not singularly account for the satisfaction with one’s current financial situation (Ng & Diener, 2014). Previous research by Dever et al. (2015) suggests that the level of resources available does influence their perception of financial well-being. Easterlin (2006) concludes that well-being is built by an individual’s self-appraisal of both objective and subjective variables. However, there is a disconnect between being satisfied with one’s current financial situation as stated in Ng and Diener (2014) and feeling satisfied with one’s financial ability to attain a desired financial level (Plagnol, 2011).
The Consumer Financial Protection Bureau (CFPB) offers a definition of financial well-being which states it is the “feeling of security and control of one’s financial obligations, and sufficient financial resources to enjoy life” (CFPB, 2015, n.p.). Even though financial well-being has been constructed as financial satisfaction (Brown, Durand, Harris, & Weterings, 2014), financial wellness (Gerrans, Speelman, & Campitelli, 2014), financial health (Tescher & Schneider, 2015) and economic well-being (Lofstrom, 2013), a similar thread between them is the subjective assessment of the individual’s own satisfaction and the control they feel they have of their current financial circumstances.

Previous research conducted by Robb and Woodyard (2011) finds that financial well-being is a strong predictor of overall adult well-being. Similarly, Ng & Diener (2014) report that an increased level of financial well-being was predictive of more positive feelings and the view of life to be more positive as well. In addition, Stein et al. (2013) shows a direct relationship between undergraduate college student’s perceived economic situation, defined as their ability to meet the material needs, and subjective well-being. Researchers have also linked feelings of economic pressures to general anxiety and depressive moods (Stein et al., 2013). Alternately, reports of higher financial well-being were related with reduced levels of stress across multiple types of college student debt products (Archuleta, Dale, & Spann, 2013).
CHAPTER 3. THEORETICAL FRAMEWORK

In this chapter, the structure and support for this analysis is examined through the theoretical framework comprised of four key pillars, the Family Financial Socialization (FFS) model, theory of consumer socialization, theory of planned behavior, and an expanded model of the student financial well-being model. The integration and connection between these theories and models provide the lens to which this research views the relationship(s) between financial socialization, financial attitudes, financial satisfaction, and financial behaviors.

Family Financial Socialization

Previous research by Gudmunson and Danes (2011) sought to better incorporate the importance of financial socialization within the family social context when examining differences in financial knowledge, behavior, and well-being through the development of the Family Financial Socialization (FFS) conceptual model (figure 1). The FFS model suggests that children are socialized to learn about finances from their families and it is the family which provide children with contextually relevant information through their actions and behaviors in observable social settings. The model is comprised of two distinct scopes: family socialization processes and financial socialization outcomes. The interest of the present study is to better understand how family socialization processes, such as purposive financial socialization efforts, influence young adults longer term financial behaviors and well-being – a financial socialization outcome.

As described by Danes and Yang (2014), “each pathway designates relationships between model constructs and relationship directions” (p. 62). Pathway A contains the assumption that personal and family characteristics play a part in the family interactions and relationships.
Examples of such personal characteristics would be an individual’s age and gender while family characteristics would include factors such as family socioeconomic status and household composition. Family interactions are classified simply as the communication and behaviors amongst family members along with the family roles in which the financial socialization takes place. Family relationships are defined as being built by the communication between family members and the trust built among them as a result of those actions and time spent together (Gudmunson & Danes, 2011). Purposive financial socialization takes place when family members deliberately make efforts toward financially socializing one another (Gudmunson & Danes, 2011). It is interesting to note that the model does suggest that the financial socialization processes can be different across race, ethnicity, and nationality which means that FFS assumes that these personal and family characteristics do influence purposive financial socialization (Danes & Yang, 2014). Although previous research has reported that young adults who experience this deliberate financial education from their parents experience better outcomes measured by more positive financial behaviors and a higher well-being (Clark, Heaton, Israelson, & Eggett, 2005; Jorgensen & Salva, 2010; Shim et al., 2010), it is also reasonable that children learn about financial behavior through observation and imitation within the family relationship context (Bandura, 1986) thus both aspects, or avenues, are considered.

Financial knowledge and attitudes are a product of the individual's own personal family financial socialization through the specific opinions and beliefs gained through their explicit financial actions and observations with family members (Gudmunson & Danes, 2011; Danes & Yang, 2014). There has been support for this path as research by Jorgensen and Salva (2010) report that 67% of young adults were of the opinion that their parents were the main individuals from whom they acquired financial knowledge and influence their financial attitudes and
behaviors. Financial capabilities are described as what a person is “able to do, rather than skills which emphasize what is done proficiently” (Gudmunson & Danes, 2011, p. 649). However, Danes and Yang (2014) suggest that the term capability may also refer to an individual’s internal motivation such as the desire for self-sufficiency.

Financial well-being is described as being thoughtful of both subjective and objective aspects of items such as net worth and income and thus should be treated as two separate concepts and indicators of financial well-being (Gudmunson & Danes, 2011; Danes & Yang, 2014). The FFS model does assert that there is a direct relationship between an individual’s financial attitudes, knowledge, and capabilities to their financial behavior along with their overall financial well-being as shown in figure 1.

![Figure 1. Family Financial Socialization Model (Gudmunson & Danes, 2011)](image)

**Theory of Consumer Socialization and Theory of Planned Behavior**

This analysis will additionally utilize a similar conceptual framework of the seminal articles being replicated and expanded. This means it will be grounded in the theory of consumer
socialization (Moschis, 1987) and the theory of planned behavior (Ajzen, 1991). The theory of consumer socialization (Moschis, 1978; 1987) suggests that individuals obtain the knowledge, attitudes, and values which guide our behaviors and skills in the marketplace by watching and interacting with other individuals called “socialization agents” (figure 2). It is especially helpful in this current research as it views families, specifically parents, as important in both the financial socialization process from which their children develop into consumers through their observations, interactions, and education along with the continued conversations which occur between parent and child after the child leaves the family home (Curren et al., 2018). Although this process of consumer socialization occurs throughout the lifespan, childhood and adolescence are periods of heightened development (Moschis, 1987) and frequent communication within the family, especially when it comes to financial matters may be of the utmost importance (Moschis, 1985).

Figure 2. Representation of Theory of Consumer Socialization (Moschis & Churchill, 1978)
The theory of planned behavior (TPB) has been widely utilized by social scientists as a mechanism to better understand individual behaviors, including behaviors which have a long-term reward such as health decisions (Ajzen, 1991; Godin & Kok, 1996). TPB provides guidance on how some individual responds to certain influences in their decision to perform a certain behavior or not. It suggests that an individual’s intention, or motivation, will be influenced by the three factors. First, attitudinal factors of subjective norms are how the individual feels others will react should they perform the behavior. Second, their attitude towards the behavior which is the person’s overall consideration of the action. Third, perceived behavioral control is the level to which the individual believes the certain behavior is under their personal control (Ajzen, 1991) (figure 3). As stated in the International Encyclopedia of the Social and Behavioral Sciences “according to the TPB, individuals are likely to engage in a health behavior if they believe that the behavior will lead to outcomes which they value, if they believe that people whose views they value think they should carry out the behavior, and if they feel that they have the necessary resources and opportunities to perform the behavior” (Connor, 2001, n.p.). For this research, healthy financial behaviors are defined as a broad set of actions that reasonably lead to the young adult gaining financial independence and achieving applicable financial goals. Several behavioral indicators such as the respondent’s financial relationship with their parents, overall financial satisfaction, and the prevalence of performing of healthy financial behaviors within the last six months (Shim et al., 2010) will be examined.
Shim et al. (2009) introduced a conceptual model of student financial well-being which sought to better understand the process of how emerging adults may learn and develop positive financial behaviors. Additionally, Shim et al. (2009) were interested in how those processes may relate to a larger measure of overall individual well-being such as physical health or self-rated measures of life satisfaction. Specifically, their work revolved around the relationships and associations between three primary domains relating to financial well-being of 1) socialization agents and personal values, 2) financial knowledge, attitudes, behaviors and well-being, and 3) overall life success (Shim et al., 2009) which are illustrated in figure 4. Following the left to right path depicted in the figure, researchers laid out a model in which a young adult who is developing in their financial knowledge, financial attitudes, and financial behaviors (labelled as “financial domain” in figure 4) are affected by “antecedents,” or previous experiences such as the presence of parental socialization, financial knowledge gained from formal settings (i.e. schools), and their own personal ideals. Next, Shim et al. (2009) discuss in their conceptual model that the emerging adults own level of financial knowledge (objective and subjective),
behaviors, and attitudes are joined together with the individuals amount of perceived behavioral control over their financial matters and parental expectations that they act in a certain way to be connected to a larger holistic measure of the persons “life success,” as comprised of measures representing “overall life satisfaction,” “physical health,” “academic success,” and “physiological adjustment.”

![Student Financial Well-being Model](image)

Figure 4. Student Financial Well-being Model (Shim et al., 2009, p. 710)

In testing their conceptual model, Shim et al. (2009) utilized structural equation modeling with a large cross-sectional data set of undergraduate college students ($N = 781$) at a large southwestern university to explore the potential relationship of financial well-being to a young adult’s overall life satisfaction and well-being. Their results supported the model in that varying levels of socialization were significantly related to measures of subjective financial knowledge, financial attitudes, and financial behaviors. These three constructs were then connected to the
respondent’s level of financial well-being which, in turn, was connected to the young adult’s measure of overall life satisfaction, physical health, academic success, and psychological health.

Similarly, Shim et al. (2010) constructed a conceptual model with the purpose to better explore the process of socialization and its impact on young adult financial behaviors, attitudes, and knowledge – with a distinct focus on the role of parents, work, and education. In an expansion of the model introduced by Shim et al. (2009), Shim et al. (2010) presented a hierarchal four-level model in which measures of “anticipatory socialization,” such as the young adults parents financial behaviors or parent direct teaching about financial matters and concepts during adolescence, leads to or predicts “financial learning,” such as financial knowledge, which then leads to or predicts “financial attitude” which then finally leads to or predicts “financial behavioral indicators,” such as the young adults own financial behaviors or their financial relationship with their parents (figure 5). As also seen in Shim et al. (2009), the Shim et al. (2010) model is rooted in both the theory of planned behavior (Azjen, 1991) and the theory of consumer socialization (Moschis, 1987) and has a distinct focus on the impact of socialization agents and exposures during adolescence and how those experiences are connected to later life financial attitudes and healthy financial behaviors. It is important to note that the construct of anticipatory socialization in this context is defined as “the unconscious or conscious learning of financial knowledge, skills, attitudes, and behavior…taught by key socialization agents such as parents, school, and work, while they were adolescents” (Shim et al., 2010, p. 1459). How these constructs appear to relate and interact with each other additionally reflect the concepts presented in the theory of planned behavior (TPB) (Azjen, 1991). As stated previously, TPB opines that a person’s own behavior is impacted by their views towards three factors: what is their own attitude towards the behavior, how others feel about that behavior, and the level of control the
individual feels they have over the situation. In relation, Shim et al. (2010) constructs parallel variables encompassing measures of how the young adult feels about performing a particular healthy financial behavior (i.e. spending with a budget, saving for the future), parent subjective norms which outlines their perceived level of their parents expectations about how they should act regarding financial matters (i.e. “my parents feel it is important for me to spend within the budget”), and finally a measure of how much control the young adult feels they have to accomplish a financial plan.

Figure 5. Expanded Student Financial Well-being Model (Shim et al., 2010)

The preceding theoretical framework discussion outlined the guiding principles for these research questions concerning the exploration of youth and adolescent parental financial socialization as an avenue to explain future financial behaviors and placed them within a theoretical context. The Family Financial Socialization Model (FFS), theory of consumer
socialization, theory of planned behavior, and the expanded model of student financial well-being provide the necessary rationale for the following research design. In the next section, the data which is used to investigate these relationships are detailed including the descriptive statistics, how the variables and constructs of interest were operationalized, and discussion of the quantitative analyses utilized are presented.
CHAPTER 4. METHODOLOGY

The following section provides detailed information on the longitudinal dataset used in this analysis including background information on the data collection timeframes and numbers of participants wave-over-wave and if the separate sample, or waves, significantly differ from each other on key demographic variables. It also contains more information on how the constructs were operationalized and how scales were compiled or summary scores computed. Lastly, this section provides the rationale and description of the one-way repeated measures ANOVA utilized for exploring the wave-by-wave changes observed by each variables and structural equation modeling (SEM) procedure used for examining the potential predictive relationship between constructs and how that association may evolve and change across subsequent waves.

Data

The data for this study comes from multiple waves of the Arizona Pathways to Life Success for University Students (APLUS). All participants of the survey attended a large, southwestern, public, land grant university and were part of the 2007 - 2008 first-year cohort of students. The Wave 1 survey recruited a total of 2,098 first-year students who were enrolled in a minimum of 12-credits during the spring semester and who were between the ages of 18 - 21. The Wave 2 survey was conducted during the fall of their fourth year (2010-2011) and students were between the ages of 21 - 24. Of the 2,098 students who participated in the Wave 1 survey, APLUS researchers were able to successfully contact 92% of the original Wave 1 survey participants (N = 1,924). Of the 1,924 students, 1,511 (79%) completed the full survey. Wave 3 data, collected in spring/summer 2013 when participants were of the ages 23 - 26, yielded 977 fully completed surveys. Finally, Wave 4 data was obtained (N = 855) in spring/summer 2016 and participants ranged in age from 26 – 29 (APLUS, 2019).
Differences Between Waves

Although longitudinal data provides many positive benefits and opportunities to the research community, it also has drawbacks. One of which is the risk of the results containing bias due to participants “dropping out” of the study and not completing all collection waves. If the participants who continue to participate in the subsequent waves of survey collection are different than those who choose to no longer participate, then the results are unlikely to be an accurate representation of the original sample population (van Belle et al., 2004). An exploratory analysis of the longitudinal data was undertaken to determine if there were patterns of variation between the samples.

To first examine if there are differences in the sample characteristics, multiple one-way Welch ANOVAs were conducted to determine if the Wave specific sample of participants were statistically significantly different than each other on key variables such as gender, ethnicity, parent income, participant income, marital status, parent SES, presence of children, and degree completion as the data allows. The Welch ANOVA is appropriate as there are three or more groups being analyzed (Moder, 2007). This approach allows for better interpretability of the results across different Waves and may help frame any significant differences uncovered.

When examining potential sample characteristic differences between Wave 1 and Wave 2, participants were classified into two groups: Wave 2 participants ($N = 1563$) and Wave 2 non-participants ($N = 531$). Due to the longitudinal nature of the data set, Wave 2 participants and Wave 2 non-participants together comprised the Wave 1 sample. There were no outliers, as assessed by boxplots, data was normally distributed for each group, as assessed by a visual inspection of the Normal Q-Q Plots due to the higher sample size although ANOVA is a robust test against the assumption of normality (Kutner et al., 2005), and there was a consistent violation of the assumption of homogeneity of variances across the various Wave 1 demographic
variables, as assessed by Levene’s test of homogeneity of variances \((p < 0.05)\) such that the use of a Welch ANOVA is recommended over traditional ANOVA to limit the nominal type I error rate with a small number of groups such as in this case (Moder, 2010). It was observed that the two groups were not statistically significantly different from one another in terms of the respondents gender [Welch’s \(F(1, 899.814) = 2.996, p = 0.084\)], primary ethnicity [Welch’s \(F(1, 907.498) = 0.848, p = 0.357\)], living situation [Welch’s \(F(1, 975.950) = 0.470, p = 0.493\)], marital status [Welch’s \(F(1, 1009.644) = 0.121, p = 0.728\)], perceived financial independence from parents [Welch’s \(F(1, 854.846) = 1.901, p = 0.168\)], respondents monthly income [Welch’s \(F(1, 856.839) = 2.235, p = 0.135\)], parents combined gross annual income [Welch’s \(F(1, 877.984) = 0.410, p = 0.522\)], and parents SES [Welch’s \(F(1, 813.608) = 1.939, p = 0.164\)].

When examining potential sample characteristic differences between Wave 2 and Wave 3, participants were classified into two groups: Wave 3 participants \((N = 1,010)\) and Wave 3 non-participants \((N = 1,085)\). Due to the longitudinal nature of the data set, Wave 3 complete participants and Wave 3 non-participants together comprised the Wave 1 sample. There were no outliers, as assessed by boxplots, data was normally distributed for each group, as assessed by a visual inspection of the Normal Q-Q Plots due to the higher sample size although ANOVA is a robust test against the assumption of normality (Kutner et al., 2005), and there was a consistent violation of the assumption of homogeneity of variances across the various Wave 1 and Wave 2 (if available) demographic variables, as assessed by Levene’s test of homogeneity of variances \((p < 0.05)\) such that the use of a Welch ANOVA is recommended over traditional ANOVA to limit the nominal type I error rate with a small number of groups such as in this case (Moder, 2010). It was observed that the two groups were not statistically significantly different from one another in terms of the respondents Wave 1 primary ethnicity [Welch’s \(F(1, 2073.599) = 0.354, p = 0.552\)],
Wave 2 living situation [Welch’s $F(1, 1371.620) = 3.188, p = 0.074$], Wave 2 marital status [Welch’s $F(1, 1095.059) = 2.026, p = 0.155$], Wave 2 perceived financial independence from parents [Welch’s $F(1, 1285.347) = 0.888, p = 0.346$], Wave 2 respondents monthly income [Welch’s $F(1, 737.107) = 2.405, p = 0.121$], Wave 1 parents combined gross annual income [Welch’s $F(1, 2044.938) = 1.701, p = 0.192$], Wave 2 having children [Welch’s $F(1, 1146.663) = .204, p = 0.651$], and Wave 1 parents SES [Welch’s $F(1, 2029.904) = 0.362, p = 0.548$]. However, there was a statistically significant difference observed between these two groups concerning the respondent’s gender as reported in Wave 1 [Welch’s $F(1, 2086.538) = 3.950, p = 0.047$]. Respondents who were participants in Wave 3 had a higher mean value ($n = 1009, M = 1.64$) for this variable compared with Wave 3 non-participants ($n = 1,085, M = 1.60$) where $1 =$ Male and $2 =$ Female meaning that Wave 3 respondents were statistically significantly more likely to have reported being female at Wave 1 than Wave 3 non-respondents.

When examining potential sample characteristic differences between Wave 3 and Wave 4, participants were classified into two groups: Wave 4 participants ($N = 869$), Wave 4 non-participants ($N = 1,229$). Due to the longitudinal nature of the data set, Wave 4 complete participants and Wave 4 non-participants together comprised the Wave 1 sample. There were no outliers, as assessed by boxplots, data was normally distributed for each group, as assessed by a visual inspection of the Normal Q-Q Plots due to the higher sample size although ANOVA is a robust test against the assumption of normality (Kutner et al., 2005), and there was a consistent violation of the assumption of homogeneity of variances across the various Wave 1, Wave 2, and Wave 3 (if available) demographic variables, as assessed by Levene’s test of homogeneity of variances ($p < 0.05$) such that the use of a Welch ANOVA is recommended over traditional ANOVA to limit the nominal type I error rate with a small number of groups such as in this case.
(Moder, 2010). It was observed that the two groups were not statistically significantly different from one another in terms of the respondents Wave 1 gender [Welch’s $F(1, 1876.322) = 0.586, p = 0.444$], Wave 1 primary ethnicity [Welch’s $F(1, 1861.499) = 0.410, p = 0.522$], Wave 3 living situation [Welch’s $F(1, 548.560) = 0.055, p = 0.815$], Wave 2 perceived financial independence from parents [Welch’s $F(1, 1514.097) = 0.176, p = 0.675$], Wave 3 respondents annual gross income [Welch’s $F(1, 522.080) = 0.004, p = 0.949$], Wave 1 parents combined gross annual income [Welch’s $F(1, 1887.715) = 0.379, p = 0.538$], Wave 3 have children [Welch’s $F(1, 491.034) = 0.518, p = 0.472$], and Wave 1 parents SES [Welch’s $F(1, 1857.996) = 0.002, p = 0.960$]. However, there was a statistically significant difference observed between these groups in Wave 4 concerning how they responded to a question about if they had completed an undergraduate degree or not at Wave 3 [Welch’s $F(1, 471.731) = 5.085, p = 0.025$].

Respondents who were not participants in Wave 4 had a higher mean score ($n = 295, M = 1.20$) compared with Wave 4 participants ($N = 704, M = 1.12$) where 1 = Yes, I have completed my undergraduate degree; 2 = Not yet, I am still enrolled in undergraduate classes; and 3 = Did not graduate. This result indicates that non-respondents in Wave 4 were statistically significantly more likely to report that they have not completed an undergraduate degree at Wave 3 than were Wave 4 respondents.

**Method**

**One-way repeated measures ANOVA**

The longitudinal design of the APLUS data set is the ability to look at how one measure may change over time within the same individual. To accomplish this, a one-way repeated measure analysis of variance (ANOVA) was ran on the same measure over multiple waves of data. Whereas a paired-samples t-test is often used when the data only contains two categorical
levels or two time points collected from the same individual(s), the data used in this analysis contains four distinct categorical levels through the three or four waves of survey data collection (three or four time points) and therefore requires ANOVA with repeated measures. This approach also allows for an effect size, or size of the difference between the mean levels of the within-subjects factor, to be calculated and evaluated.

For each one-way repeated measures ANOVA, only respondents who have recorded responses for all included Waves of available data for that particular question or set of questions are utilized. For example, if a question is included on the Wave 1 – Wave 3 of the APLUS survey, only respondents who have answered that question for Wave 1, Wave 2, and Wave 3 will be included in the analysis. This procedure for sample selection reduces the potential concerns surrounding missing data as only respondents with full data are used.

**Structural Equation Modeling**

This work seeks to better understand the interactions, structure, and associations of many variables which may influence financial attitude, healthy financial behaviors, and financial satisfaction of young adults over time. The constructs of interest are largely unobservable, or latent, variables in that they cannot be directly measured. For example, the construct of financial attitude is internal to the respondent and must be indirectly examined through means such as a questionnaire, scale, survey, interview, etc. in order to be able to quantify the construct since financial attitude itself cannot be directly observed. These can sometimes lead to complex relationships between other variables and constructs with whom it may interact. One such method to effectively examine the relationships and associations between latent constructions is by using structural equation modeling, or SEM. Schreiber et al. (2006) states that by examining the covariation among the variables that researchers are able to directly see, such as the Likert-
item scales present in this present dataset, the total number of variables is able to be reduced down to a smaller amount of latent variables. This extends the opportunity to detect relationships between the latent variables (Schreiber et al., 2006) and allows researchers to explore multiple questions regarding these relationships between dependent and independent variables at the same time (Gerbing & Anderson, 1988) and therefore allowing for movement towards establishing a cause-effect relationship through the effective testing and refinement of theoretical models. Given that these models can get large and complicated due to their size and number of variables involved, an advantage of an SEM approach is the availability of a global fit indicator(s) which allows for a more parsimonious approach to assessing the fit of the model as a whole instead of piece-by-piece which is often needed with a traditional regression approach (Tomarken & Waller, 2005). Hox and Bechger (1998) describe SEM as combining elements of both factor analysis and regression or alternatively path analysis. When there is an interest in examining the relationship between two or more latent constructs, or variables, SEM is able to represent that association by regression or path coefficients that is illustrated between them. It is the model which infers that there is a structure present for the covariances between latent variables and the observed, or measured, variables (Hox & Bechger, 1998). This model, as stated in Tarka (2018) “refers to a set of equations with accompanying assumptions of the analyzed system, in which the parameters are determined on the basis of statistical observation” (p. 313). The benefits of such as structure is the ability to indirectly measure latent constructs through the use of potentially several measured, or observed, variables and by examining the results of SEM between the latent constructs of interest for evidence of what may be defined as causal effects (Tarka, 2018).
Measures

In keeping consistent with the work of Shim et al. (2010), this work employs multiple variables related to child and adolescent financial socialization, parental behaviors, and overall financial well-being which are utilized as observed or latent variables within the analysis. These include parent SES, perceived parent financial behavior, parent direct teaching, high school work and financial education experiences, adopting parental financial role modeling, financial attitude, and financial behaviors. The following section provides additional details on how the variables used in this research are constructed, defined, and measured. In case of scaled or latent constructs, information on their computation or construction is discussed. Table 1 offers additional statistical information on each of the measures presented.

Parent Socioeconomic Status (SES)

Following the lead of Shim et al. (2010), parent socioeconomic status was measured by a combination of the respondent’s parents’ level of education and household income at Wave 1. Specifically, survey participants were asked the question “What is your parent(s) combined annual gross income (before taxes)?” and asked to indicate such on a 7-point scale from 1 = Less than $50,000 to 7 = Over $150,000. For this question, Wave 1 produced 2,056 responses with a mean score of 2.65 and a standard deviation of 1.23. Next, the respondent was asked about their father’s and mother’s level of education separately by responding on a 5-point scale from 1 = Less than a high school diploma to 5 = Graduate school or professional degree (i.e., M.A., M.B.A., Ph.D.). For father’s education, Wave 1 generated 2,072 responses with a mean value of 3.622 and a standard deviation of 1.19. For mother’s education, Wave 1 produced 2,087 responses with a mean score of 3.517 and a standard deviation of 1.11.
The mean score of these three questions was computed and utilized as the Parent SES such that the corresponding range of available Parent SES was between 1.00 and 5.67. In Wave 1, there were a total of 2,091 valid responses with a mean score of 3.268 and a standard deviation of 0.93 for Parental SES.

**Parental Financial Behavior**

The college students participating in the study were asked to share their perception of their parent’s financial behaviors before they began undergraduate study (Shim et al., 2010). Students were asked to indicate on a five-point scale 1 (never) to 5 (always) the extent to which they thought their parent(s) engaged in five positive financial behaviors such that a higher score indicates the student respondent reporting their parents engaged in more positive financial behaviors.

1. *Before coming to college, to what extent did your parent(s): Tracked monthly expenses*
   a. *Wave 2: To what extent do you think your parent(s): Tracked monthly expenses*

2. *Before coming to college, to what extent did your parent(s): Spent within a budget*
   a. *Wave 2: To what extent do you think your parent(s): Spent within a budget*

3. *Before coming to college, to what extent did your parent(s): Paid credit card balances in full each month*
   a. *Wave 2: To what extent do you think your parent(s): Paid credit card balances in full each month*

4. *Before coming to college, to what extent did your parent(s): Saved money each month for the future*
   a. *Wave 2: To what extent do you think your parent(s): Saved money each month for the future*
5. Before coming to college, to what extent did your parent(s): Invested for long-term financial goals regularly

   a. Wave 2: To what extent do you think your parent(s): Invested for long-term financial goals regularly

For question 1, there were 2,090 valid responses in Wave 1 with a mean score of 4.23 and standard deviation of 1.04. Wave 2 consisted of 1,512 responses with a mean score of 4.34 and a standard deviation of 1.00.

For question 2, there were 2,090 total responses in Wave 1 with a mean score of 4.06 and a standard deviation of 1.03. Wave 2 consisted of 1,506 valid responses with a mean score of 4.08 and a standard deviation of 1.06.

Wave 1 of question 3 included 2,088 survey respondents with a mean score of 3.92 and a standard deviation of 1.21. Wave 2 contained 1,508 valid answers with a mean score of 3.99 and a standard deviation of 1.18.

For question 4, there were 2,090 valid responses in Wave1 with a mean score of 3.96 and a standard deviation of 1.17. Wave 2 comprised of 1,518 respondents with a mean score of 4.04 and a standard deviation of 1.18.

Related to question 5, there were 2,090 valid responses in Wave1 with a mean score of 3.81 and a standard deviation of 1.27. Wave 2 comprised of 1,507 respondents with a mean score of 3.90 and a standard deviation of 1.27.

Overall, all five questions taken together to form a general measure of parent financial behaviors in Wave 1 resulted in a mean score of 4.00 and a standard deviation of 0.95 with 2,090
valid responses. All questions taken together in Wave 2 resulted in a mean score of 4.07 and standard deviation of 0.97 with 1,514 valid responses.

**Parental Direct Teaching**

Shim et al. (2010) describes the grouping of questions reflecting parental direct teaching as how the student survey respondent perceived their parent’s efforts to involve them in family financial matters and/or directly showing or discussing financial topics with them. In addition to discussing family financial matters with the youth, other fundamental personal finance topics such as overt teaching about savings, shopping, use of credit cards, building good credit, and strategies for education funding are explored. Participants were asked to assess on a five-point scale 1 (strongly disagree) to 5 (strongly agree) the extent to which they thought their parents engaged in six direct teaching methods such that a higher reported value reflects the respondent reporting that the parents engaged in a higher level of direct financial teaching prior to college. As these questions are retrospective and unlikely to change as time moves forward, this information was only collected once during Wave 1.

1. *Before coming to college, to what extent did your parent(s): discussed family financial matters with me.*

2. *Before coming to college, to what extent did your parent(s): spoke to me about the importance of saving.*

3. *Before coming to college, to what extent did your parent(s): taught me how to be a smart shopper.*

4. *Before coming to college, to what extent did your parent(s): taught me how to use a credit card appropriately.*
5. Before coming to college, to what extent did your parent(s): discussed how to establish a good credit rating.

6. Before coming to college, to what extent did your parent(s): discussed how to finance my college education with me.

Question 1 contained 2,089 valid responses with a mean score of 3.15 and a standard deviation of 1.21. Question 2 comprised of 2,090 valid responses with a mean score of 3.94 and a standard deviation of 1.03. Question 3 had 2,090 survey respondents answers with a mean score of 3.97 and a standard deviation of 1.04. Question 4 comprised of 2,089 valid responses with a mean score of 3.51 and a standard deviation of 1.27. Question 5 contained 2,090 valid answers with a mean score of 3.31 and standard deviation of 1.29. Question 6 had 2,090 responses with a mean score of 3.51 and a standard deviation of 1.22.

Taking all 6 questions in Wave 1 which comprised parent direct financial teaching together results in a mean score of 3.56 and a standard deviation of 0.89 over 2,090 valid responses.

**High School Work Experience and Financial Education**

Students were asked to respond on a three-point scale 1 (no), 2 (summers only), or 3 (summer and during school year) whether they were employed outside of their residence while attending high school. A higher value indicates a higher level of outside the home work being completed, on an annual basis. Respondents were additionally asked to indicate how many courses they completed in high school which were related to financial management or related topics. Similarly, respondents were asked to report if they attended any financial management-focused seminars or programs. Selection options for these final two questions are a scale ranging from 1 to 4 where 1 = None and 4 = 3 or more courses / seminars / workshops. As these
questions are retrospective in nature and unlikely to change as time moves forward, they were only asked during Wave 1 of data collection.

1. Were you employed outside of the home during high school (including summer jobs)?
2. While in high school, how many courses did you take related to financial management, consumer education, economics, or business courses?
3. During your high school years, how many seminars, workshops, or after school programs that taught financial management did you attend?

For question 1, the Wave 1 data collection yielded 2,073 valid responses with a mean score of 2.33 and a standard deviation of 0.78. Question 2 comprised of a mean score of 2.05 and a standard deviation of 0.84 from 2,093 valid respondents. Question 3 contained 2,091 responses with a mean score of 1.41 and a standard deviation of 0.75. When question 2 and question 3 are joined together for a more global measure of high school financial education exposure, it yields 2,091 valid responses with a mean score of 1.73 and a standard deviation of 0.65.

**Adopting Parental Financial Role Modeling**

Survey respondents were asked to answer questions regarding to what degree they feel they currently adopt similar money management strategies and financial actions as their parent(s). As stated in Shim et al. (2010), The measure was constructed first through conducting focus group interviews and second through a pilot study to further refine the questions. Students were asked in Wave 1, Wave 2, and Wave 3 to indicate on a five-point scale 1 (strongly disagree) to 5 (strongly agree) their agreement with four statements such that a higher value indicates a higher level of parental financial role modeling being reported by the student respondent.
1. I make financial decisions based on what my parent(s) have done in similar situations.

2. When it comes to managing money, I look to my parent(s) as my role models.

3. My parent(s) are role models for me about how to manage financial matters.

4. My parent(s) have a positive influence on me when it comes to managing money.

Concerning question 1, there were 2,091 valid responses in Wave 1 with a mean score of 3.26 and standard deviation of 1.12. Wave 2 consisted of 1,520 responses with a mean score of 3.32 and a standard deviation of 1.22. Wave 3 contained 966 individual responses with a mean score of 3.08 and a standard deviation of 1.18.

For question 2, there were 2,092 total responses in Wave 1 with a mean score of 3.64 and a standard deviation of 1.17. Wave 2 consisted of 1,519 valid responses with a mean score of 3.64 and a standard deviation of 1.28. Wave 3 comprised of 962 respondents with a mean score of 3.36 and a standard deviation of 1.28.

Wave 1 of question 3 included 2,091 survey respondents with a mean score of 3.70 and a standard deviation of 1.14. Wave 2 contained 1,519 valid answers with a mean score of 3.62 and a standard deviation of 1.28. Wave 3 comprised of 962 responses with a mean score of 3.40 and a standard deviation of 1.31.

Related to question 4, there were 2,091 valid responses in Wave 1 with a mean score of 3.86 and a standard deviation of 1.03. Wave 2 comprised of 1,514 respondents with a mean score of 3.82 and a standard deviation of 1.16. There were 958 included answers in Wave 3 with a mean score of 3.66 and a standard deviation of 1.31.
Overall, all four questions taken together to form a general measure of adopting parental financial role modeling in Wave 1 resulted in a mean score of 3.61 and a standard deviation of 0.96 with 2,092 valid responses. All questions taken together in Wave 2 resulted in a mean score of 3.60 and standard deviation of 1.10 with 1,514 valid responses. A Wave 3 culmination of all four questions comprised of 967 survey respondents and a mean score of 3.37 and a standard deviation of 1.10.

**Objective and Subjective Financial Knowledge**

Students’ objective and subjective financial knowledge was measured and examined. Subjective financial knowledge was obtained by means of a single item asking students to reflect, on a five-point scale 1 (very low) to 5 (very high) such that a higher value indicates a higher self-assessment of their own subjective financial knowledge. The respondents overall understanding of money management concepts and was collected at all four Waves of the APLUS survey.

1. *How would you rate your overall understanding of personal finance and money management concepts and practice?*

Pertaining to question 1, Wave 1 comprised of 2,089 valid responses with a mean score of 3.14 and a standard deviation of 0.81. Wave 2 yielded 1,531 survey answers with a mean score of 3.53 and a standard deviation of 0.86. Wave 3 consisted of 981 responses with a mean score of 3.46 and a standard deviation of 0.90. Wave 4 compiled 855 valid respondents which reflected a mean score of 3.45 and a standard deviation of 0.87.

To obtain the students’ objective financial knowledge, Shim et al. (2010) devised a 15-item scale comprised of true/false questions selected from Hilgert et al. (2003) and relating to foundational personal finance concepts such as money management, using and building credit, and saving for the future. These measures were collected at all four Waves of the APLUS survey.
1. If you expect to carry a balance on your credit card, the APR is the most important thing to look at when comparing credit card offers.

2. Your credit report includes employment data, your payment history, and any inquiries made by creditors, and any public record information.

3. If you have a savings account at a bank, you may have to pay taxes on the interest you earn.

4. Mutual funds pay a guaranteed rate of return.

5. If you have any negative information on your credit report, a credit repair agency can help you remove that information.

6. If the interest rate on an adjustable-rate mortgage loan goes up, your monthly mortgage payments will also go up.

7. If you buy certificates of deposit, saving bonds, or Treasury bills, you can earn higher returns than you can earn on a savings account, with little or no added risks.

8. You could save thousands of dollars in interest costs by choosing a 15-year mortgage rather than a 30-year mortgage.

9. Making payments late on your bills can make taking out a loan more difficult.

10. With compound interest, you earn interest on your interest as well as on your principal.

11. Your credit rating is not affected by how much you charge on your credit cards.

12. A stock mutual fund combines the money of many investors to buy a variety of stocks.

13. The finance charge on your credit card statement is what you pay in order to use credit.

14. Over the long term, stocks have the highest rate of return on money invested.
15. Using extra money in a bank savings account to pay off a high-interest-rate credit card debt is a good idea.

To aid in the exploration and analysis of objective financial knowledge, a summative scale score was created where the number of correct answers the respondent provided was compared against the number of questions presented to arrive at a percentage of correctly answered financial knowledge questions. Five ordered categories numbered 1 – 5 where a higher score indicates a higher number of questions answered correctly and being used as a measure of objective financial knowledge. The categories used for this corresponding analysis include 1) 0%-20%; 2) 20.1%-40%; 3) 40.1%-60%; 4) 60.1%-80%; and 5) 80.1%-100%. Wave 1 comprised of 2,080 responses with a mean score of 3.53 and a standard deviation of 0.91. Wave 2 consisted of 1,507 survey respondents with a mean score of 3.80 and a standard deviation of 0.88. Wave 3 yielded 969 total responses with a mean score of 4.07 and a standard deviation of 0.77. Lastly, Wave 4 consisted of 852 valid respondents with a mean score of 4.21 and a standard deviation of 0.75.

Financial Attitudinal Indicators

Parental subjective norms

Information concerning the parental subjective norms experienced by the student participant along with a measure of the likelihood that the student will comply with their parent’s desires to manage their personal finances in a specific manner was collected in two scales (Shim et al., 2010). Students were asked to indicate on a five-point scale 1 (strongly disagree) to 5 (strongly agree) the extent to which their parents thought they should engage in each of five positive financial behaviors whereas a higher score reflects the student respondents having a
higher perception of parental expectations to engage in the stated financial management activity. Data on parental subjective norms was collected for Wave 1 – Wave 3.

1. To what extent do you agree: my parent(s) think that I should track my monthly expenses.

2. To what extent do you agree: my parent(s) think that I should spend within a budget.

3. To what extent do you agree: my parent(s) think that I should pay credit card balances in full each month.

4. To what extent do you agree: my parent(s) think that I should save money each month for the future.

5. To what extent do you agree: my parent(s) think that I should invest for long-term financial goals.

For question 1, Wave 1 produced 2,092 valid responses with a mean score of 3.84 and a standard deviation of 1.18. Wave 2 resulted in 1,518 respondents with a mean score of 3.99 and a standard deviation of 1.13. Wave 3 drew 544 respondent answers with a mean score of 4.06 and a standard deviation of 1.10.

Concerning question 2, Wave 1 induced 2,092 valid responses with a mean score of 4.14 and a standard deviation of 1.00. Wave 2 prompted 1,516 answers with a mean score of 4.34 and a standard deviation of 0.92. Wave 3 yielded 541 responses with a mean score of 4.30 and a standard deviation of 0.97.

Related to question 3, Wave 1 managed 2,085 valid responses with a mean score of 3.96 and a standard deviation of 1.20. Wave 2 brought 1,519 respondents with a mean score of 4.32 and a standard deviation of 1.05. Wave 3 induced 540 survey answers with a mean score of 4.27 and a standard deviation of 1.05.
For question 4, Wave 1 produced 2,091 valid responses with a mean score of 4.05 and a standard deviation of 1.06. Wave 2 resulted in 1,507 respondents with a mean value of 4.17 and a standard deviation of 1.01. Wave 3 drew 538 valid responses with a mean score of 4.26 and a standard deviation of 1.05.

Linked to question 5, Wave 1 contributed 2,092 valid responses with a mean value of 3.70 and a standard deviation of 1.18. Wave 2 generated 1,517 respondent answers with a mean value of 3.79 and a standard deviation of 1.17. Wave 3 beget 326 valid responses with a mean score of 3.18 and a standard deviation of 0.92.

Following the lead of Shim et al. (2010), both the parental expectations for a student respondent to engage in positive financial management actions and what the overall influence of the parent(s) is for that student to actually perform in a such a way that was influenced by these parental expectations are taken into consideration. In short, the parents simply expecting certain behavior may not result in the student displaying those behaviors if the student reports that their parent(s) have little or no influence over their actions. This desire is reflected in the following two-step process of parsing out overall parental influence and then computing parental influence specifically for each of the five financial management actions.

To complete step one, this analysis utilizes one (Wave 1) and two (Waves 2 - 3) questions which reflects the student respondent’s perception of the influence of their parent(s) on their own behaviors. Respondents were asked to respond to the questions on a scale of 1 (not influenced at all) to 5 (strongly influenced) whereas a higher score indicated their parents having a higher influence on their financial actions. For Wave 1, the question utilized is:

1. When it comes to money matters, to what degree do you think your own behaviors are influenced by your parents?
Starting in Wave 2 and continuing in Wave 3, APLUS survey investigators separated out this question to gain a better understanding of the distinct roles of fathers and mothers on the financial matters of student respondents. The available responses continued to be on a 1 (not influenced at all) to 5 (strongly influenced) scale with a higher score indicating the parent having a higher influence on the student’s financial actions.

1. *When it comes to money matters, to what degree are your behaviors influenced by: Mother*

2. *When it comes to money matters, to what degree are your behaviors influenced by: Father*

For consistency with the single Wave 1 question, a computed score where the mean value of the two questions present in Waves 2 and 3 is used in this analysis as to be used as a single-item factor for Waves 1-3. Wave 1 generated 2,088 valid responses with a mean score of 3.60 and a standard deviation of 1.11. Wave 2 amounted to 1,511 respondent answers with a mean score of 3.94 and a standard deviation of 1.01. Wave 3 consisted of 961 valid responses with a mean score of 3.92 and a standard deviation of 1.08.

Step two in the process to better explore the parental influence on student respondents’ financial actions over time involves computing a variable which multiplies the level of overall parental influence on personal financial actions by the respondents answer to each of the five specific financial management questions to arrive at five distinct measures of parental subjective norms and influence. The aim of this process is to be able to best reflect the influence of parents on actions related to different topics of personal financial management including spending, saving, debt management, and investing for long-term goals. The potential range of results for this computed variable is 1 – 25 with a higher value indicating a higher level of parental
influence on that specific action. For example, a Wave 1 student respondent indicating that they “strongly agree” (5) with the question 1 statement “to what extent do you agree: my parent(s) think that I should track my monthly expenses” along with reporting that their own financial behaviors are “highly influenced” (5) by their parents in Wave 1 would have a Wave 1, question 1 parental subjective norms score of 25 (5 multiplied by 5) for that specific question.

Using this measure as outlined in Shim et al. (2010), question 1 (track monthly expenses) had 2,088 valid responses with a mean score of 14.15 and a standard deviation of 6.63. Wave 2 produced 1,505 respondent answers with a mean score of 16.05 with a standard deviation of 6.43. Wave 3 yielded 540 valid responses with a mean score of 16.03 with a standard deviation of 7.00.

Concerning question 2 (spend within a budget), Wave 1 consisted of 2,088 valid responses with a mean score of 15.25 and a standard deviation of 6.45. Wave 2 reached 1,504 respondents with a mean score of 17.36 and a standard deviation of 6.07. Wave 3 amounted to 16.94 with a standard deviation of 6.88.

For question 3 (pay credit card balances in full each month), Wave 1 brought 2,091 valid responses with a mean score of 14.62 and a standard deviation of 6.86. Wave 2 beget 1,505 respondent answers with a mean score of 17.32 and a standard deviation of 6.46. Wave 3 generated 536 valid responses with a mean value of 16.83 and a standard deviation of 7.07.

Resulting from question 4 (save money each month for the future), Wave 1 amounted to 2,087 responses with a mean score of 14.83 with a standard deviation of 6.44. Wave 2 produced 1,494 valid respondents with a mean value of 16.68 with a standard deviation of 6.25. Wave 3 consisted of 534 responses with a mean score of 16.74 and a standard deviation of 6.93.
For question 5 (invest for long-term financial goals regularly), Wave 1 came to 2,088 valid responses with a mean value of 13.65 and standard deviation of 6.62. Wave 2 amounted to 1,504 respondent answers with a mean score of 15.22 and a standard deviation of 6.48. Wave 3 reached 326 valid answers with a mean value of 11.72 and a standard deviation of 5.38.

**Perceived behavioral control**

A seven-point scale from 1 (difficult) to 7 (easy) identifying how difficult or easy it was for them to stick to their plans when it comes to money matters was utilized as a measure of perceived behavioral control. The scale indicates that a higher value reflects a higher degree of perceived control the respondent has to adhere to their financial plan. Data was collected from respondents from all four wave of the APLUS survey.

1. *When it comes to managing your money, how easy or difficult is it to stick to your plans?*

Wave 1 produced 2,085 valid responses with a mean value of 4.50 and a standard deviation of 1.52. Wave 2 yielded 1,536 respondent answers with a mean score of 4.64 and a standard deviation of 1.47. Wave 3 equaled 976 valid responses with a mean score of 4.73 and a standard deviation of 1.45. Wave 4 amounted to 854 survey respondents with a mean value of 4.70 and a standard deviation of 1.55.

**Financial attitude**

To measure the college student’s financial attitude, respondents were asked to indicate on a five-point scale 1 (very unfavorable) to 5 (very favorable) their feelings about performing five foundational, positive financial behaviors whereas a higher reported value reflects a more positive attitude towards that action. Data was collected on these measures for Wave 1, Wave 2, and Wave 3.
1. How favorably or unfavorably do you feel toward: tracking monthly expenses.

2. How favorably or unfavorably do you feel toward: spending with a budget.

3. How favorably or unfavorably do you feel toward: paying credit card balances in full each month.

4. How favorably or unfavorably do you feel toward: saving money each month for the future.

5. How favorably or unfavorably do you feel toward: investing for long-term financial goals.

For question 1, Wave 1 produced 2,089 valid responses with a mean score of 3.88 and a standard deviation of 1.08. Wave 2 resulted in 1,538 respondents with a mean score of 3.56 and a standard deviation of 1.15. Wave 3 drew 981 respondent answers with a mean score of 3.71 and a standard deviation of 1.16.

Regarding question 2, Wave 1 induced 2,089 valid responses with a mean score of 4.14 and a standard deviation of 1.00. Wave 2 prompted 1,533 answers with a mean score of 3.85 and a standard deviation of 1.03. Wave 3 yielded 980 responses with a mean score of 3.93 and a standard deviation of 1.05.

Resulting from question 3, Wave 1 yielded 2,085 valid responses with a mean score of 4.23 and a standard deviation of 1.04. Wave 2 brought 1,530 respondents with a mean score of 4.11 and a standard deviation of 1.18. Wave 3 comprised of 979 survey answers with a mean score of 4.24 and a standard deviation of 1.13.

For question 4, Wave 1 produced 2,087 valid responses with a mean score of 4.14 and a standard deviation of 0.98. Wave 2 resulted in 1,533 respondents with a mean value of 3.73 and
a standard deviation of 1.20. Wave 3 beget 980 valid responses with a mean score of 3.99 and a standard deviation of 1.14.

Concerning question 5, Wave 1 contributed 2,088 valid responses with a mean value of 3.90 and a standard deviation of 1.08. Wave 2 generated 1,531 valid responses with a mean value of 3.49 and a standard deviation of 1.21. Wave 3 resulted in 977 valid responses with a mean score of 3.68 and a standard deviation of 1.23.

For a broader view of the student respondents’ attitude towards performing healthy financial behaviors, a mean score variable was created which encompassed these five questions and is utilized as a single measure of the respondent’s financial attitude over time. This measure was created for each data collection effort from Wave 1 – Wave 3. The range of values remains consistent of 1 – 5 with a higher value reflecting a more positive financial attitudes for clarity of interpretation. Concerning Wave 1, there were 2,089 valid responses with a mean score of 4.06 and a standard deviation of 0.83. Wave 2 produced 1,540 valid answers with a mean score of 3.75 and a standard deviation of 0.87. Wave 3 generated 982 responses with a mean score of 3.91 and a standard deviation of 0.85.

**Indicators of Healthy Financial Behavior**

**Financial relationship with parents**

Students were asked to indicate on a five-point scale 1(strongly disagree) to 5 (strongly agree) the degree to which they agreed or disagreed with three items adapted from Allen et al. (2007) to reflect the type of financial relationship the respondent experiences with their parents over time. To ease the interpretation of the results given the negative wording of the questions, the original APLUS responses were recoded such that a higher value indicates a more positive
financial relationship with their parents. These questions were collected from respondents in Wave 1, Wave 2, and Wave 3.

1. To what extent do you agree: since coming to college my relationship with my parents is not good because of money issues.

2. To what extent do you agree: since coming to college, my parents do not approve of my spending patterns in general.

3. To what extent do you agree: since coming to college, I argue a lot with my parent(s) about money matters.

Addressing question 1, Wave 1 produced 2,092 valid responses with a mean score of 4.47 and a standard deviation of 0.93. Wave 2 induced 1,516 respondent answers with a mean score of 4.57 and a standard deviation of 0.91. Wave 3 mustered 965 valid responses with a mean score of 4.61 and a standard deviation of 0.81.

For question 2, Wave 1 generated 2,091 valid responses with a mean score of 3.95 and a standard deviation of 1.07. Wave 2 secured 1,521 student responses with a mean value of 4.00 and a standard deviation of 1.10. Wave 3 produced 966 valid answers with a mean score of 4.11 and a standard deviation of 1.02.

Regarding the final question 3, Wave 1 beget 2,092 valid responses with a mean score of 4.24 and a standard deviation of 1.09. Wave 2 yielded 1,521 respondent answers with a mean score of 4.30 and a standard deviation of 1.08. Wave 3 secured 965 valid responses with a mean value of 4.45 and a standard deviation of 0.92.

For a broader view of the student respondents’ perceptions of their parental financial relationship, a mean score variable was created which encompassed these three questions and is utilized as a single measure of the respondent’s financial relationship with their parent(s). This
measure was created for each data collection effort from Wave 1 – Wave 3. The range of values remains consistent of 1 – 5 with a higher value reflecting a more positive financial relationship with their parents due to recording the original data for clarity of interpretation. Concerning Wave 1, there were 2,092 valid responses with a mean score of 4.22 and a standard deviation of 0.86. Wave 2 produced 1,524 valid answers with a mean score of 4.29 and a standard deviation of 0.84. Wave 3 generated 967 responses with a mean score of 4.39 and a standard deviation of 0.75.

**Financial satisfaction**

Three specific questions were utilized to measure the survey participant’s level of satisfaction of dissatisfaction with their current financial situation which were adopted from Shim et al. (2009). Students were asked to indicate on a five-point scale 1 (strongly disagree) to 5 (strongly agree) the extent to which they agreed or disagreed with each statement whereas a higher value indicates a higher level of satisfaction with their financial status over time. Two of these scale items are negatively worded which necessitated a recoding to remain consistent in their interpretability that a higher value indicates a higher level of satisfaction. These scale items were collected from respondents in all four Waves.

1. *I am satisfied with my current financial status.*
2. *I have difficulty paying for things (reversed).*
3. *I am constantly worried about money (reversed).*

For question 1, Wave 1 bore 2,092 valid responses with a mean score of 3.14 and a standard deviation of 1.16. Wave 2 contributed 1,546 respondent answers with a mean score of 3.04 and a standard deviation of 1.16. Wave 3 comprised of 985 responses with a mean value of
2.91 and a standard deviation of 1.25. Wave 4 yielded 857 answers with a mean score of 3.07 and a standard deviation of 1.23.

Resulting from question 2, Wave 1 consisted of 2,092 valid responses with a mean score of 3.32 and a standard deviation of 1.15. Wave 2 amounted to 1,547 respondent answers with a mean score of 3.15 and a standard deviation of 1.15. Wave 3 consisted of 985 valid responses with a mean value of 3.47 and a standard deviation of 1.21. Wave 4 reached 856 with a mean value of 3.68 and a standard deviation of 1.16.

Regarding question 3, Wave 1 consisted of 2,091 valid responses with a mean value of 3.14 and a standard deviation of 1.23. Wave 2 yielded 1,548 respondent answers with a mean score of 2.91 and a standard deviation of 1.17. Wave 3 comprised of 983 valid responses with a mean score of 3.08 and a standard deviation of 1.21. Wave 4 amounted to 855 valid responses with a mean value of 3.21 and a standard deviation of 1.29.

On order to create a single measure of the respondent’s financial satisfaction over time. A mean variable was created from the three financial satisfaction questions and utilized to examine how satisfaction and relationships may change over time. The range of computed results remained consistent in 1 – 5 with a higher value indicating a higher level of financial satisfaction. For Wave 1, there were 2,029 valid responses with a mean score of 3.20 and a standard deviation of 1.03. Wave 2 consisted of 1,549 valid responses with a mean value of 3.03 and a standard deviation of 1.00. Wave 3 comprised of 985 valid responses with a mean score of 3.15 and a standard deviation of 1.05. Finally Wave 4 contributed 857 respondent answers with a mean value of 3.32 and a standard deviation of 1.05.
Healthy financial behaviors

A four-item scale is included in the APLUS dataset with the intent to measure the respondents’ self-reported frequency of performing positive, healthy foundational financial behaviors revolving around spending, tracking expenses, and saving. Students were asked to indicate how often 1 (never) to 5 (very often) they performed each of the four healthy financial behaviors whereas a higher score reflects a higher frequency of the respondent performing those actions within the last six months. This scale was presented to respondents at all four Waves.

1. **Within the past six months, how often have you: tracked monthly expenses.**

2. **Within the past six months, how often have you: spent with the budget**

3. **Within the past six months, how often have you: saved money each month for the future.**

4. **Within the past six months, how often have you: invested for long-term financial goals.**

For question 1, Wave 1 consisted of 2,090 valid responses with a mean score of 3.60 and a standard deviation of 1.11. Wave 2 contributed 1,524 respondent answers with a mean score of 3.43 and a standard deviation of 1.21. Wave 3 comprised of 971 responses with a mean value of 3.58 and a standard deviation of 1.27. Wave 4 yielded 854 answers with a mean score of 3.77 and a standard deviation of 1.23.

Addressing question 2, Wave 1 consisted of 2,089 valid responses with a mean score of 3.89 and a standard deviation of 0.99. Wave 2 amounted to 1,524 respondent answers with a mean score of 3.70 and a standard deviation of 1.05. Wave 3 consisted of 967 valid responses with a mean value of 3.72 and a standard deviation of 1.08. Wave 4 secured 853 valid responses with a mean value of 3.68 and a standard deviation of 1.16.
Regarding question 3, Wave 1 consisted of 2,067 valid responses with a mean value of 3.17 and a standard deviation of 1.23. Wave 2 yielded 1,524 respondent answers with a mean score of 2.84 and a standard deviation of 1.26. Wave 3 comprised of 973 valid responses with a mean score of 3.11 and a standard deviation of 1.43. Wave 4 amounted to 854 valid responses with a mean value of 3.61 and a standard deviation of 1.39.

Resulting from question 4, Wave 1 amounted to 2,068 responses with a mean score of 2.36 with a standard deviation of 1.32. Wave 2 produced 1,523 valid respondents with a mean value of 2.02 with a standard deviation of 1.27. Wave 3 consisted of 973 responses with a mean score of 2.34 and a standard deviation of 1.50. Wave 4 contributed 855 valid responses with a mean value of 3.01 and a standard deviation of 1.61.

Similar to other scale items, a single-item factor to reflect an overall measure of the respondents self-reported financial behavior was created by taking the mean value of all four questions combined. This mean variable was created to more easily examine how healthy financial behaviors and other relationships may change over time. The range of computed results remained consistent in 1 – 5 with a higher value indicating a higher self-reported frequency of performing healthy financial behaviors related to spending, tracking expenses, and saving for the future. For Wave 1, there were 2,090 valid responses with a mean score of 3.26 and a standard deviation of 0.82. Wave 2 consisted of 1,528 valid responses with a mean value of 3.00 and a standard deviation of 0.85. Wave 3 comprised of 974 valid responses with a mean score of 3.18 and a standard deviation of 0.93. Finally, Wave 4 contributed 855 respondent answers with a mean value of 3.52 and a standard deviation of 0.96.

The preceding Chapter 4 outlined the sample sizes of the four waves of the APLUS survey data, the timeframes in which data was collected to provide a larger macroeconomic
background, and the approximate ages of the respondents. Statistical analyses were presented to illustrate that the separate samples, or waves, did not statistically significantly differ from each other on key demographic variables except in only singular and slight instances. It also justified the use of one-way repeated measures ANOVA and structural equation modeling (SEM) as appropriate methods to explore the research questions. Next, the results of the one-way repeated measures ANOVA and structural equation modeling (SEM) are presented which will sketch the relationship between youth and adolescent financial socialization, financial attitudes, financial satisfaction, and financial behaviors of young adults over time.

**Tables and Figures**

Table 1. Measures mean score and standard deviations

<table>
<thead>
<tr>
<th></th>
<th>Wave 1</th>
<th>Wave 2</th>
<th>Wave 3</th>
<th>Wave 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent SES+</td>
<td>4.00 (0.95)</td>
<td>4.07 (0.97)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Parent Financial Behavior*</td>
<td>4.00 (0.95)</td>
<td>4.07 (0.97)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Track monthly expenses</td>
<td>4.23 (1.04)</td>
<td>4.34 (1.00)</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Spend within the budge</td>
<td>4.06 (1.03)</td>
<td>4.08 (1.06)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pay credit card balances in full</td>
<td>3.92 (1.21)</td>
<td>3.96 (1.18)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Invest for long-term goals</td>
<td>3.81 (1.27)</td>
<td>3.90 (1.27)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Parent Direct Teaching**</td>
<td>3.56 (0.89)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Discussed family financial matters with me</td>
<td>3.15 (1.21)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Spoke with me about the importance of saving</td>
<td>3.94 (1.03)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Taught me how to be a smart shopper</td>
<td>3.97 (1.04)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Taught me how to use a credit card appropriately</td>
<td>3.51 (1.27)</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Discussed how to establish a good credit rating</td>
<td>3.31 (1.29)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Discussed how to finance my college education with me</td>
<td>3.51 (1.22)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Table 1 Continued</td>
<td>Wave 1</td>
<td>Wave 2</td>
<td>Wave 3</td>
<td>Wave 4</td>
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<td>-------------------</td>
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<tr>
<td><strong>High School Work Experience</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Employed outside of the home during high school</td>
<td>2.33 (0.78)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>High School Financial Education</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many courses did you take related to financial management, consumer education, economics, or business courses</td>
<td>2.05 (0.84)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>How many seminars, workshops, or after school programs that taught financial management did you attend</td>
<td>1.41 (0.75)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Adopting Parent Financial Role Modeling</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I make financial decisions based on what my parent(s) have done in similar situations</td>
<td>3.61 (0.96)</td>
<td>3.60 (1.10)</td>
<td>3.37 (1.10)</td>
<td>-</td>
</tr>
<tr>
<td>When it comes to managing money, I look to my parent(s) as my role models</td>
<td>3.26 (1.12)</td>
<td>3.32 (1.22)</td>
<td>3.08 (1.18)</td>
<td>-</td>
</tr>
<tr>
<td>My parent(s) are role models for me about how to manage financial matters</td>
<td>3.64 (1.17)</td>
<td>3.64 (1.28)</td>
<td>3.36 (1.28)</td>
<td>-</td>
</tr>
<tr>
<td>My parent(s) have a positive influence on me when it comes to managing money</td>
<td>3.70 (1.14)</td>
<td>3.62 (1.28)</td>
<td>3.40 (1.31)</td>
<td>-</td>
</tr>
<tr>
<td><strong>Financial Knowledge</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subjective***</td>
<td>3.14 (0.81)</td>
<td>3.53 (0.86)</td>
<td>3.46 (0.90)</td>
<td>3.45 (0.87)</td>
</tr>
<tr>
<td>Objective ++</td>
<td>3.53 (0.91)</td>
<td>3.80 (0.88)</td>
<td>4.07 (0.77)</td>
<td>4.21 (0.75)</td>
</tr>
<tr>
<td><strong>Parental Subjective Norms</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Track monthly expenses</td>
<td>3.84 (1.18)</td>
<td>3.99 (1.13)</td>
<td>4.06 (1.10)</td>
<td>-</td>
</tr>
<tr>
<td>Spend within the budget</td>
<td>4.14 (1.00)</td>
<td>4.34 (0.92)</td>
<td>4.30 (0.97)</td>
<td>-</td>
</tr>
<tr>
<td>Pay credit cards in full</td>
<td>3.96 (1.20)</td>
<td>4.32 (1.05)</td>
<td>4.27 (1.05)</td>
<td>-</td>
</tr>
<tr>
<td>Save money each month</td>
<td>4.05 (1.06)</td>
<td>4.17 (1.01)</td>
<td>4.26 (1.05)</td>
<td>-</td>
</tr>
<tr>
<td>Invest for long-term goals</td>
<td>3.70 (1.18)</td>
<td>3.79 (1.17)</td>
<td>3.18 (0.92)</td>
<td>-</td>
</tr>
<tr>
<td>Table 1 Continued</td>
<td>Wave 1</td>
<td>Wave 2</td>
<td>Wave 3</td>
<td>Wave 4</td>
</tr>
<tr>
<td>-------------------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
</tr>
</tbody>
</table>
| Perceived Behavioral Control^  
  When it comes to managing my money, how easy or difficult is it for you to stick to your plans | 4.50 (1.52) | 4.64 (1.47) | 4.73 (1.45) | 4.70 (1.55) |
| Financial Attitude^^  
  Track monthly expenses | 4.06 (0.83) | 3.75 (0.87) | 3.91 (0.85) | - |
|  | Spend within the budget | 3.88 (1.08) | 3.56 (1.15) | 3.71 (1.16) | - |
|  | Pay credit cards in full | 4.14 (1.00) | 3.85 (1.03) | 3.93 (1.05) | - |
|  | Save money each month | 4.23 (1.04) | 4.11 (1.18) | 4.24 (1.13) | - |
|  | Invest for long-term goals | 4.14 (0.98) | 3.73 (1.20) | 3.99 (1.14) | - |
| Financial Relationship with Parents**  
  My relationship with my parents is not good because of money issues | 4.22 (0.86) | 4.29 (0.84) | 4.39 (0.75) | - |
|  | My parents do not approve of my spending patterns in general | 4.47 (0.93) | 4.57 (0.91) | 4.61 (0.81) | - |
|  | I argue a lot with my parents about money matters | 3.95 (1.07) | 4.00 (1.10) | 4.11 (1.02) | - |
| Financial Satisfaction**  
  I am satisfied with the way I pay my bills | 3.20 (1.03) | 3.03 (1.00) | 3.15 (1.05) | 3.32 (1.05) |
|  | I have difficulty paying for things (reversed) | 3.14 (1.16) | 3.04 (1.16) | 2.91 (1.25) | 3.07 (1.23) |
|  | I am constantly worried about money (reversed) | 3.32 (1.15) | 3.15 (1.15) | 3.47 (1.21) | 3.68 (1.16) |
| Healthy Financial Behavior^^^  
  Track monthly expenses | 3.26 (0.82) | 3.00 (0.85) | 3.18 (0.93) | 3.52 (0.96) |
|  | Spend within the budget | 3.60 (1.11) | 3.43 (1.21) | 3.58 (1.27) | 3.77 (1.23) |
|  | Save money each month | 3.89 (0.99) | 3.70 (1.05) | 3.72 (1.08) | 3.68 (1.16) |
|  | Invest for long-term goals | 3.17 (1.23) | 2.84 (1.26) | 3.11 (1.43) | 3.61 (1.39) |

Note. Figures are presented as mean values with standard deviation in parentheses. *Computed mean score of three questions where possible range is from 1 = Low to 5.67 = High. **Available selections include 5 options ranging from 1=Never to 5=Always. ***Available selections include 5 options ranging from 1=Strongly Disagree to 5=Strongly Agree. ****Available selections include 5 options ranging from 1=Very Low to 5=Very High. ** Quintile of percentage of correct answers submitted. ^ Available selections include 7 options ranging from 1=Difficult to 7=Easy. ^^ Available selections include 5 options ranging from 1=Very Unfavorable to 5=Very Favorable. ^^^Available selections include 5 options ranging from 1=Never to 5=Very Often.
Table 2. Sample descriptive statistics Wave 1 - Wave 4

<table>
<thead>
<tr>
<th></th>
<th>Wave 1 N = 2098</th>
<th>Wave 2 N = 1566</th>
<th>Wave 3 N = 977</th>
<th>Wave 4 N = 855</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>1297 (61.9)</td>
<td>982 (63.2)</td>
<td>627 (64.2)</td>
<td>540 (63.2)</td>
</tr>
<tr>
<td>Male</td>
<td>797 (38.1)</td>
<td>571 (36.8)</td>
<td>349 (35.7)</td>
<td>314 (36.7)</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American/Black</td>
<td>71 (3.4)</td>
<td>49 (3.1)</td>
<td>26 (2.7)</td>
<td>26 (3)</td>
</tr>
<tr>
<td>Asian/Asian</td>
<td>189 (9)</td>
<td>147 (9.4)</td>
<td>100 (10.2)</td>
<td>83 (9.7)</td>
</tr>
<tr>
<td>American/Pacific Islander</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>311 (14.9)</td>
<td>221 (14.1)</td>
<td>146 (14.9)</td>
<td>136 (15.9)</td>
</tr>
<tr>
<td>Native American/other</td>
<td>111 (5.3)</td>
<td>75 (4.8)</td>
<td>45 (4.6)</td>
<td>41 (4.8)</td>
</tr>
<tr>
<td>White</td>
<td>1411 (67.4)</td>
<td>1071 (68.3)</td>
<td>659 (67.5)</td>
<td>568 (66.4)</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not married</td>
<td>2041 (97.3)</td>
<td>1516 (97.2)</td>
<td>892 (89.3)</td>
<td>612 (70.4)</td>
</tr>
<tr>
<td>Married</td>
<td>10 (0.5)</td>
<td>43 (2.8)</td>
<td>106 (10.6)</td>
<td>251 (28.9)</td>
</tr>
<tr>
<td><strong>Living Situation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In a residential hall</td>
<td>1424 (68)</td>
<td>47 (3)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>In a fraternity/sorority</td>
<td>5 (0.2)</td>
<td>41 (2.6)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>In an apartment or house (rent)</td>
<td>334 (16)</td>
<td>1086 (69.7)</td>
<td>633 (63.6)</td>
<td>505 (58.1)</td>
</tr>
<tr>
<td>In my own home (own)</td>
<td>59 (2.8)</td>
<td>153 (9.8)</td>
<td>84 (8.4)</td>
<td>247 (28.4)</td>
</tr>
<tr>
<td>Other</td>
<td>35 (1.7)</td>
<td>23 (1.5)</td>
<td>17 (1.7)</td>
<td>27 (3.2)</td>
</tr>
<tr>
<td>At home with parents / relatives</td>
<td>237 (11.3)</td>
<td>207 (13.3)</td>
<td>196 (19.6)</td>
<td>90 (10.4)</td>
</tr>
<tr>
<td>In home my parents own</td>
<td>-</td>
<td>-</td>
<td>68 (6.8)</td>
<td>-</td>
</tr>
<tr>
<td><strong>Academic Standing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freshman</td>
<td>2098 (100)</td>
<td>4 (0.3)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sophomore</td>
<td>0</td>
<td>25 (1.6)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Junior</td>
<td>0</td>
<td>147 (9.6)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Senior</td>
<td>0</td>
<td>1361 (88.5)</td>
<td>-</td>
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Table 2 Continued

<table>
<thead>
<tr>
<th></th>
<th>Wave 1</th>
<th>Wave 2</th>
<th>Wave 3</th>
<th>Wave 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N = 2098</td>
<td>N = 1566</td>
<td>N = 977</td>
<td>N = 855</td>
</tr>
<tr>
<td><strong>Parents Gross Income</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than $50,000</td>
<td>335 (16.3)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>$50,000 - $99,000</td>
<td>661 (32.1)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>$100,000 - $200,000</td>
<td>693 (33.7)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Over $200,000</td>
<td>367 (17.9)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Father Education</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than high school diploma</td>
<td>98 (4.7)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Completed high school</td>
<td>343 (16.6)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Some college (including Associates Degree, Vocational or Technical degree)</td>
<td>387 (18.7)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>College degree (B.A., B.S.)</td>
<td>660 (31.9)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Graduate school or professional degree (i.e., M.A., M.B.A., Ph.D.)</td>
<td>584 (28.2)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Mother Education</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than high school diploma</td>
<td>79 (3.8)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Completed high school</td>
<td>361 (17.3)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Some college (including Associates Degree, Vocational or Technical degree)</td>
<td>471 (22.6)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>College degree (B.A., B.S.)</td>
<td>755 (36.2)</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Graduate school or professional degree (i.e., M.A., M.B.A., Ph.D.)</td>
<td>421 (20.2)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Financial Independence from Parents</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>1853 (88.5)</td>
<td>1213 (78)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Yes</td>
<td>240 (11.5)</td>
<td>342 (22)</td>
<td>-</td>
<td>-</td>
</tr>
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Table 2 Continued

<table>
<thead>
<tr>
<th></th>
<th>Wave 1</th>
<th>Wave 2</th>
<th>Wave 3</th>
<th>Wave 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N = 2098</td>
<td>N = 1566</td>
<td>N = 977</td>
<td>N = 855</td>
</tr>
<tr>
<td><strong>Own Monthly Gross Income</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I do not work</td>
<td>1317 (64)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>$1-$249</td>
<td>230 (11.2)</td>
<td>217 (21.4)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>$250-$499</td>
<td>300 (14.6)</td>
<td>356 (35.2)</td>
<td>-</td>
<td>-</td>
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<tr>
<td>$500-$749</td>
<td>126 (6.1)</td>
<td>258 (25.5)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>$750-$999</td>
<td>41 (2)</td>
<td>95 (9.4)</td>
<td>-</td>
<td>-</td>
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<tr>
<td>More than $1000</td>
<td>45 (2.2)</td>
<td>86 (8.5)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Own Annual Gross Income</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than $24,999</td>
<td>-</td>
<td>-</td>
<td>491 (49.7)</td>
<td>150 (17.4)</td>
</tr>
<tr>
<td>$25,000 - $39,999</td>
<td>-</td>
<td>-</td>
<td>254 (25.7)</td>
<td>175 (20.3)</td>
</tr>
<tr>
<td>$40,000 - $59,999</td>
<td>-</td>
<td>-</td>
<td>168 (17)</td>
<td>238 (27.5)</td>
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<tr>
<td>$60,000 - $74,999</td>
<td>-</td>
<td>-</td>
<td>46 (4.7)</td>
<td>135 (15.6)</td>
</tr>
<tr>
<td>$74,999 +</td>
<td>-</td>
<td>-</td>
<td>29 (2.9)</td>
<td>166 (19.2)</td>
</tr>
<tr>
<td><strong>Undergraduate Degree</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>-</td>
<td>-</td>
<td>886 (88.7)</td>
<td>826 (96.6)</td>
</tr>
<tr>
<td>Still Enrolled</td>
<td>-</td>
<td>-</td>
<td>81 (8.1)</td>
<td>-</td>
</tr>
<tr>
<td>No</td>
<td>-</td>
<td>-</td>
<td>32 (3.3)</td>
<td>29 (3.4)</td>
</tr>
<tr>
<td><strong>Has Children</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>-</td>
<td>1527 (98.6)</td>
<td>964 (96.6)</td>
<td>780 (89.8)</td>
</tr>
<tr>
<td>Yes</td>
<td>-</td>
<td>21 (1.4)</td>
<td>34 (3.4)</td>
<td>89 (10.2)</td>
</tr>
</tbody>
</table>

*Note. Figures are presented as frequency with proportion of per wave valid cases in parentheses.*
CHAPTER 5. RESULTS

The following section provides the descriptive statistics of the sample utilized for this analysis and are important to better place the results in the correct context. It also describes the results of the one-way repeated measures ANOVA and structural equation modeling (SEM) procedures performed to explore 1) how variables related to financial well-being such as financial knowledge, financial attitudes, and financial satisfaction change over time; and 2) how the predictive relationship between child and adolescent financial socialization experiences and future financial behaviors, attitudes, and satisfaction changes between Wave 1 and Wave 4.

Sample Descriptive Statistics

Wave 1 was comprised entirely of first-year students (N = 2,098) enrolled at a large, southwestern, public, university. A majority of the respondents were female (nearly 62%) while 38% were male. Over 67% were White, nearly 15% Hispanic/Latino, and 9% reported being Asian/Asian American/Pacific Islander. A large percentage were not married (97.3%) and living in a residence hall (68%) while 16% reported living in a rented home or apartment. Interestingly, over 51% of the Wave 1 sample answered that their parent(s) gross household income to be $100,000 or greater with nearly 18% of that group stating it to be over $200,000. A majority (60%) of the father’s held at least one college degree (B.A., B.S.) while the student’s mother’s level of education was a slightly lower proportion where 56.4% held a B.A., B.S., or greater. Understandably, a majority of respondents did not feel financially independent from their parents (88.5%) and 64% reported they did not work.

Wave 2 (N = 1,566) was made up of mostly senior-level students (88.5%). Similar to Wave 1, over 60% of the sample was female and over 65% were White, 14.1% Hispanic/Latino,
and 10.2% Asian/Asian American/Pacific Islander. Although Wave 2 data was collected several years later, a majority was unmarried (97.2%) with nearly 70% now reporting that they lived in a rented apartment or house either by themselves or with others and 13.3% of respondents reported living at home with their parents at Wave 2. Consistent with the previous Wave, over 78% stated they do not feel financial independent from their parents and of those participants who stated they do work, less than 40% report their monthly gross income to be more than $500. An overwhelming majority also respond that they do not have children (98.6%).

Wave 3 (N = 977) mirrored many of the same demographic characteristics of the previous Waves in that over 60% were female and 89.3% reporting they were not married. Over 65% were White, nearly 15% were Hispanic/Latino, and over 10% were Asian/Asian American/Pacific Islander. A large proportion were living in a rented home or apartment (63.6%) by themselves or with others while a smaller proportion do report owning their own home (8.4%) while 19.6% of respondents state they lived at home with their parents or other relatives which is an increase from the 13.3% reflected in Wave 2. Now collecting annual gross income instead of monthly gross income, nearly half (49.7%) state they earn less than $24,999 gross annually and only 2.9% report earning gross annual gross income of greater than $74,999. Due to the timing of the data collection, information regarding their postsecondary achievements became available in that 88.7% report that they did receive an undergraduate degree, 8.1% stating they are still working on earning the degree and/or are still enrolled, and 3.3% stating they have neither earned a degree nor are still enrolled.

The most recent Wave 4 (N = 855) descriptive statistics show that 63.2% of the respondents were female, over 65% were White, over 15% were Hispanic/Latino, 9.7% were Asian/Asian American/Pacific Islander, and 3% were African American/Black. A slightly higher
proportion reported as being married (70.4%) and living in their own home (28.4%) although a majority stated they living in a rental home or apartment by themselves or with others (58.1%). Interestingly, in a reduction from Wave 3, 10.4% of respondents living at home with their parents or other relatives at Wave 4. Nearly 35% stated they earned an annual gross income of at least $60,000 while 17.4% report earning less than $24,999 gross annually. A large majority (96.6%) say they received an undergraduate degree and nearly 90% state they do not have children. Additional information on descriptive statistics may be found in table 2.

**One-Way Repeated Measures ANOVA**

A one-way repeated measures ANOVA was conducted on each survey item to determine whether there were statistically significant differences in the reported mean score of agreement on the corresponding five option Likert item questions. The specific options of Likert item questions such as from 1=Strongly Disagree to 5=Strongly Agree or 1=Always to 5=Never are presented below for reference and increased clarity. Additionally, the necessary assumptions for a one-way repeated measures ANOVA such as the presence of outliers, distribution normality, and sphericity are examined and reported for each question. As previously stated, only participants who submitted full data for all applicable Waves of data are included in the analysis with the total number of Waves and respondents being listed as it does vary slightly between questions or scales. Please see the preceding Chapter 4 section titled “Differences Between Waves” for a discussion on how, except in a few instances, the demographic statistics of the waves are not statistically significantly different than each other.

**Parent Financial Behaviors**

Parental financial behavior was measured by asking the students’ perceptions of their parents’ financial behaviors prior to their leaving for college (Shim et al., 2009). Students were
asked to indicate on a five-point scale 1 (never) to 5 (always) the extent to which they thought their parent(s) engaged in five positive financial behaviors such that a higher score indicates the student respondent reporting their parents engaged in more positive financial behaviors.

First, concerning the statement “Before coming to college, to what extent did your parent(s): Tracked monthly expenses,” an analysis was conducted between Wave 1 and Wave 2 of data collection. A total of 1,510 study participants recorded answers for both waves of data and are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The different time points elicited statistically significant changes in how the respondents answered the question between the Waves, \( F(1, 1509) = 12.991, p < .001 \), partial \( \eta^2 = 0.009 \), with scores slightly increasing from Wave 1 (respondent ages 18-21) \( (M = 4.230, SD = 1.04) \) to Wave 2 (respondent ages 21-24) \( (M = 4.340, SD = 1.00) \) (figure 6). Post hoc analysis revealed that study participants level of agreement with the statement statistically significantly increased from Wave 1 to Wave 2 \( (M = 0.110, 95\% \text{ CI } [0.050, 0.170], p < 0.001) \). These results suggest that this sample of young adults were significantly more likely to report their parents as having tracked their monthly expenses at the time of the second wave of data collection versus a time prior to the respondent beginning college.
Concerning the statement “Before coming to college, to what extent did your parent(s): Spent within a budget.”: an analysis was conducted between Wave 1 and Wave 2 of data collection. A total of 1,504 study participants recorded answers for both waves of data and are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The different time points elicited no statistically significant changes in how the respondents answered the question over time, $F(1, 1503) = 0.132, p = 0.716$, partial $\eta^2 = 0.000$, with scores slightly increasing from Wave 1 (respondent ages 18-21) ($M = 4.069, SD = 1.03$) to Wave 2 (respondent ages 21-24) ($M = 4.080, SD = 1.06$) (figure 7). Post hoc analysis revealed that study participants level of agreement with the statement did not statistically significantly change from Wave 1 to Wave 2 ($M = 0.011, 95\% \text{ CI } [-0.047, 0.068], p = 0.716$). These results suggest that this sample of young adults were not significantly more or less likely to report their parents as having spent within a budget at the time of the second wave of data collection versus a time prior to the respondent beginning college.
Third, concerning the statement “Before coming to college, to what extent did your parent(s): Paid credit card balances in full each month”: an analysis was conducted between Wave 1 and Wave 2 of data collection. A total of 1,505 study participants recorded answers for both waves of data and are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The different time points elicited no statistically significant changes in how the respondents answered the question over time, $F(1, 1504) = 3.102, p = 0.078$, partial $\eta^2 = 0.002$, with scores slightly increasing from Wave 1 (respondent ages 18-21) ($M = 3.936, SD = 1.21$) to Wave 2 (respondent ages 21-24) ($M = 3.992, SD = 1.24$) (figure 8). Post hoc analysis revealed that study participants level of agreement with the statement resulted in only marginally statistically significantly change from Wave 1 to Wave 2 ($M = 0.056, 95\% \text{ CI } [-0.006, 0.118], p = 0.078$). These results suggest that this sample of young adults were only slightly significantly more likely to report their parents as having paid their credit card balances in full
each month at the time of the second wave of data collection versus a time prior to the respondent beginning college.

Figure 8. Before Coming to College, to What Extent Did Your Parent(s): Paid Credit Card Balances in Full Each Month

Fourth, concerning the statement “Before coming to college, to what extent did your parent(s): Saved money each month for the future.”: an analysis was conducted between Wave 1 and Wave 2 of data collection. A total of 1,506 study participants recorded answers for both waves of data and are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The different time points elicited statistically significant changes in how the respondents answered the question over time, $F(1, 1505) = 5.986, p < 0.05$, partial $\eta^2 = 0.004$, with scores slightly increasing from Wave 1 (respondent ages 18-21) ($M = 3.962, SD = 1.18$) to Wave 2 (respondent ages 21-24) ($M = 4.035, SD = 1.18$) (figure 9). Post hoc analysis revealed that study participants level of agreement with the statement statistically significantly changed from Wave 1 to Wave 2 ($M = 0.074, 95\% CI [0.015, 0.133], p < 0.05$). These results suggest that
this sample of young adults were significantly more likely to report their parents as having saved
money each month for the future at the time of the second wave of data collection versus a time
prior to the respondent beginning college.

Figure 9. Before Coming to College, to What Extent Did Your Parent(s): Saved Money Each
Month for the Future

Fifth, concerning the statement “Before coming to college, to what extent did your
parent(s): Invested for long-term financial goals.”: an analysis was conducted between Wave 1
and Wave 2 of data collection. A total of 1,505 study participants recorded answers for both
waves of data and are included in this analysis. There were no outliers and the data were
normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each
Waves scores. The different time points elicited statistically significant changes in how the
respondents answered the question over time, $F(1, 1504) = 6.093, p < 0.05, \text{ partial } \eta^2 = 0.004$,
with scores slightly increasing from Wave 1 (respondent ages 18-21) ($M = 3.826, SD = 1.28$) to
Wave 2 (respondent ages 21-24) ($M = 3.903, SD = 1.27$) (figure 10). Post hoc analysis revealed
that study participants level of agreement with the statement statistically significantly changed from Wave 1 to Wave 2 (\( M = 0.077, 95\% \) CI [0.016, 0.138], \( p < 0.05 \)). These results suggest that this sample of young adults were significantly more likely to report their parents as having invested for long-term financial goals at the time of the second wave of data collection versus a time prior to the respondent beginning college.

![Graph showing estimated marginal means](image)

**Figure 10.** Before Coming to College, To What Extent Did Your Parent(s): Invested for Long-Term Financial Goals Regularly

To gain a more complete picture of the respondents perception of their parent(s) financial behaviors from before they started college until their roughly mid-20s, a mean score of all five Parent Financial Behavior questions was created and analyzed between Wave 1 and Wave 2 where a higher value indicates an increase in the prevalence of positive parent financial behaviors as reported by the respondent. A total of 1,512 study participants are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The different time points elicited statistically significant changes in how the respondents answered the question over
time, $F(1, 1511) = 7.759, p < 0.05$, partial $\eta^2 = 0.004$, with scores increasing from Wave 1 (respondent ages 18-21) ($M = 4.004, SD = 0.95$) to Wave 2 (respondent ages 21-24) ($M = 4.069, SD = 0.97$) (figure 11). Post hoc analysis revealed that study participants mean level of agreement for the five questions pertaining to their perception of their parent’s financial behaviors statistically significantly increased from Wave 1 to Wave 2 ($M = 0.065, 95\%$ CI [0.019, 0.111], $p < 0.01$). These results suggest that this sample of young adults were significantly more likely to report their parents as more displaying more positive financial behaviors surrounding spending, borrowing, saving, and investing at the time of the second wave of data collection versus a time prior to the respondent beginning college.

![Figure 11. Mean Score of All Five Parent Financial Behavior Questions](image)

**Parent Direct Teaching**

Data pertaining to parent direct teaching was only collected in Wave 1 of the APLUS survey (respondent ages 18-21). Thus, a multiple wave analysis is not possible. The descriptive statistics of Wave 1 data are as follows. Question 1 “Before coming to college, to what extent did
your parent(s): discussed family financial matters with me.” contained 2,089 valid responses with a mean score of 3.15 and a standard deviation of 1.21. Question 2 “Before coming to college, to what extent did your parent(s): spoke to me about the importance of saving.” comprised of 2,090 valid responses with a mean score of 3.94 and a standard deviation of 1.03. Question 3 “Before coming to college, to what extent did your parent(s): taught me how to be a smart shopper.” had 2,090 survey respondents answers with a mean score of 3.97 and a standard deviation of 1.04. Question 4 “Before coming to college, to what extent did your parent(s): taught me how to use a credit card appropriately.” comprised of 2,089 valid responses with a mean score of 3.51 and a standard deviation of 1.27. Question 5 “Before coming to college, to what extent did your parent(s): discussed how to establish a good credit rating.” contained 2,090 valid answers with a mean score of 3.31 and standard deviation of 1.29. Question 6 “Before coming to college, to what extent did your parent(s): discussed how to finance my college education with me.” had 2,090 responses with a mean score of 3.51 and a standard deviation of 1.22.

Taking all 6 questions in Wave 1 which comprised parent direct financial teaching together results in a mean score of 3.56 and a standard deviation of 0.89 over 2,090 valid responses.

**High School Work Experience and Financial Education**

Data pertaining to high school work experience and high school financial education was only collected in Wave 1 of the APLUS survey (respondent ages 18-21). Thus, a multiple wave analysis is not possible. The descriptive statistics of Wave 1 data are as follows.

For question1 “Were you employed outside of the home during high school (including summer jobs)” the Wave 1 data collection yielded 2,073 valid responses with a mean score of
2.33 and a standard deviation of 0.78. Question 2 “While in high school, how many courses did you take related to financial management, consumer education, economics, or business courses?” comprised of a mean score of 2.05 and a standard deviation of 0.84 from 2,093 valid respondents. Question 3 “During your high school years, how many seminars, workshops, or after school programs that taught financial management did you attend?” contained 2,091 responses with a mean core of 1.41 and a standard deviation of 0.75. When question 2 and question 3 are joined together for a more global measure of high school financial education exposure, it yields 2,091 valid responses with a mean score of 1.73 and a standard deviation of 0.65.

**Parental Financial Role Modeling**

A one-way repeated measures ANOVA was conducted to determine whether there were statistically significant differences in the reported mean score of agreement on a five option Likert item question (from 1=Strongly Disagree to 5=Strongly Agree) to the corresponding four statements.

First, concerning the statement “To what extent do you agree: I make financial decisions based on what my parents have done in similar situations.”: an analysis was conducted between Wave 1, Wave 2, and Wave 3 of data collection. A total of 918 study participants recorded answers for all three waves of data and are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The assumption of sphericity was violated, as assessed by Mauchly's test of sphericity, $\chi^2(2) = 6.390, p = .041$, although Weinfurt (2000) suggests that such a violation is difficult to avoid given the sensitivity of the test in large samples (Kesselman et al., 1980). Therefore, a Greenhouse-Geisser correction (Greenhouse & Geisser, 1959) was applied ($\varepsilon = 0.993$) to control for the potential bias of too easily returning a statistically significant result from
the repeated measures one-way ANOVA by adjusting the degrees of freedom utilized in the results (Maxwell & Delaney, 2004). The different time points elicited statistically significant changes in how the respondents answered the question over time, $F(1.986, 1821.339) = 25.797, p < .001$, partial $\eta^2 = 0.027$, with scores increasing from Wave 1 (respondent ages 18-21) ($M = 3.307, SD = 1.13$) to Wave 2 (respondent ages 21-24) ($M = 3.344, SD = 1.22$) but then decreasing in Wave 3 (respondent ages 23-26) ($M = 3.08, SD = 1.18$) (figure 12). Post hoc analysis with a Bonferroni adjustment for multiple comparisons revealed that study participants level of agreement with the statement statistically significantly decreased from Wave 1 to Wave 3 ($M = -0.227, 95\% CI [-0.326, -0.127], p < .001$), and from Wave 2 to Wave 3 ($M = -0.264, 95\% CI [-0.356, -0.171], p < .001$), but not from Wave 1 to Wave 2 ($M = -0.037, 95\% CI [-0.131, -0.57], p = 1.00$). These results illustrate that this sample of young adults are less likely to base their own financial decisions on what their parents have done as they grow older.

Figure 12. I Make Financial Decisions Based on What My Parents Have Done in Similar Situations
Second, concerning the statement “To what extent do you agree: when it comes to managing money, I look to my parent(s) as my role models.”: an analysis was conducted between Wave 1, Wave 2, and Wave 3 of data collection. A total of 913 study participants recorded answers for all three waves of data and are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The assumption of sphericity was violated, as assessed by Mauchly's test of sphericity, \( \chi^2(2) = 25.759, p < 0.001 \), although Weinfurt (2000) suggests that such a violation is difficult to avoid given the sensitivity of the test in large samples (Kesselman et al., 1980). Therefore, a Greenhouse-Geisser correction (Greenhouse & Geisser, 1959) was applied (\( \varepsilon = 0.973 \)) to control for the potential bias of too easily returning a statistically significant result from the repeated measures one-way ANOVA by adjusting the degrees of freedom utilized in the results (Maxwell & Delaney, 2004). The different time points elicited statistically significant changes in how the respondents answered the question over time, \( F(1.946, 1774.527) = 50.961, p < .001 \), partial \( \eta^2 = 0.053 \), with scores slightly decreasing from Wave 1 (respondent ages 18-21) (\( M = 3.714, SD = 1.15 \)) to Wave 2 (respondent ages 21-24) (\( M = 3.664, SD = 1.26 \)) and again decreasing further in Wave 3 (respondent ages 23-26) (\( M = 3.359, SD = 1.28 \)) (figure 13). Post hoc analysis with a Bonferroni adjustment for multiple comparisons revealed that study participants level of agreement with the statement statistically significantly decreased from Wave 1 to Wave 3 (\( M = -0.355, 95\% \text{ CI } [-0.453, -0.257], p < .001 \)), and from Wave 2 to Wave 3 (\( M = -0.304, 95\% \text{ CI } [-0.389, -0.220], p < .001 \)), but not from Wave 1 to Wave 2 (\( M = 0.05, 95\% \text{ CI } [-0.040, 0.141], p = 0.55 \)). These results illustrate that this sample of young adults are less likely to look to their parent(s) as role models when it comes to managing money as they get older.
Figure 13. When It Comes to Managing Money, I Look to My Parent(s) As My Role Models

Third, concerning the statement “To what extent do you agree: my parent(s) are role models for me about how to manage financial matters.”: an analysis was conducted between Wave 1, Wave 2, and Wave 3 of data collection. A total of 911 study participants recorded answers for all three waves of data and are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The assumption of sphericity was violated, as assessed by Mauchly's test of sphericity, $\chi^2(2) = 12.017, p < 0.01$, although Weinfurt (2000) suggests that such a violation is difficult to avoid given the sensitivity of the test in large samples (Kesselman et al., 1980). Therefore, a Greenhouse-Geisser correction (Greenhouse & Geisser, 1959) was applied ($\varepsilon = 0.987$) to control for the potential bias of too easily returning a statistically significant result from the repeated measures one-way ANOVA by adjusting the degrees of freedom utilized in the results (Maxwell & Delaney, 2004). The different time points elicited statistically significant changes in how the respondents answered the question over time, $F(1.974, 1796.408) =$
41.838, $p < .001$, partial $\eta^2 = 0.044$, with scores slightly decreasing from Wave 1 (respondent ages 18-21) ($M = 3.767, SD = 1.10$) to Wave 2 (respondent ages 21-24) ($M = 3.606, SD = 1.28$) and again decreasing further in Wave 3 (respondent ages 23-26) ($M = 3.406, SD = 1.31$) (figure 14). Post hoc analysis with a Bonferroni adjustment for multiple comparisons revealed that study participants level of agreement with the statement statistically significantly decreased from Wave 1 to Wave 3 ($M = -0.361, 95\% CI [-0.461, -0.261], p < .001$), and from Wave 2 to Wave 3 ($M = -0.200, 95\% CI [-0.293, -0.107], p < .001$), and again from Wave 1 to Wave 2 ($M = -0.161, 95\% CI [-0.253, -0.070], p < .001$). These results illustrate that this sample of young adults are less likely to look to their parent(s) as role models when it comes to managing money as they age.

Figure 14. My Parent(s) Are Role Models for Me About How to Manage Financial Matters

Fourth, concerning the statement “To what extent do you agree: my parent(s) have a positive influence on me when it comes to managing money.”: an analysis was conducted between Wave 1, Wave 2, and Wave 3 of data collection. A total of 906 study participants recorded answers for all three waves of data and are included in this analysis. There were no
outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The assumption of sphericity was not violated, as assessed by Mauchly's test of sphericity, $\chi^2(2) = 0.665, p = 0.717$. The different time points elicited statistically significant changes in how the respondents answered the question over time, $F(2, 16.514) = 26.273, p < .001$, partial $\eta^2 = 0.028$, with mean scores decreasing from Wave 1 (respondent ages 18-21) ($M = 3.938, SD = 0.98$) to Wave 2 (respondent ages 21-24) ($M = 3.861, SD = 1.14$) and again decreasing further in Wave 3 (respondent ages 23-26) ($M = 3.676, SD = 1.14$) (figure 15). Post hoc analysis with a Bonferroni adjustment for multiple comparisons revealed that study participants level of agreement with the statement statistically significantly decreased from Wave 1 to Wave 3 ($M = -0.263, 95\% \text{ CI } [-0.353, -0.173], p < .001$), and from Wave 2 to Wave 3 ($M = -0.185, 95\% \text{ CI } [-0.274, -0.097], p < .001$), but not from Wave 1 to Wave 2 ($M = -0.077, 95\% \text{ CI } [-0.167, 0.013], p = 0.119$). These results illustrate that this sample of young adults are less likely to view their parent(s) as being a positive influence on them when it comes to money management as they grow older.

![Figure 15. My Parent(s) Have a Positive Influence on Me When it Comes to Managing Money](image)
To gain a deeper understanding about how parental role modeling may change over time, an analysis was conducted between Wave 1, Wave 2, and Wave 3 of data collection where a mean score of all four scale questions was utilized. A total of 921 study participants recorded answers for the parent role modeling scale questions and are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The assumption of sphericity was violated, as assessed by Mauchly's test of sphericity, $\chi^2(2) = 14.767, p < 0.01$, although Weinfurt (2000) suggests that such a violation is difficult to avoid given the sensitivity of the test in large samples (Kesselman et al., 1980). Therefore, a Greenhouse-Geisser correction (Greenhouse & Geisser, 1959) was applied ($\varepsilon = 0.984$) to control for the potential bias of too easily returning a statistically significant result from the repeated measures one-way ANOVA by adjusting the degrees of freedom utilized in the results (Maxwell & Delaney, 2004). The different time points elicited statistically significant changes in how the respondents answered the question over time, $F(1.969, 1811.13) = 55.135, p < .001$, partial $\eta^2 = 0.057$, with scores slightly decreasing from Wave 1 (respondent ages 18-21) ($M = 3.686, SD = 0.93$) to Wave 2 (respondent ages 21-24) ($M = 3.622, SD = 1.10$) and again decreasing further in Wave 3 (respondent ages 23-26) ($M = 3.382, SD = 1.10$) (figure 16). Post hoc analysis with a Bonferroni adjustment for multiple comparisons revealed that study participants level of agreement with the statement statistically significantly decreased from Wave 1 to Wave 3 ($M = -0.304, 95\%\ CI [-0.382, -0.227], p < .001$), and from Wave 2 to Wave 3 ($M = -0.240, 95\%\ CI [-0.310, -0.170], p < .001$), but not from Wave 1 to Wave 2 ($M = 0.064, 95\%\ CI [-0.007, 0.136], p = 0.95$). These results suggest that this
sample of young adults are less likely to view as role models and be influenced by their parent(s) previous actions overall when it comes to their own finances.

Figure 16. Mean Score of All Parental Role Model Questions

Financial Knowledge

Objective Financial Knowledge

Participants were asked a series of fifteen true/false questions adapted from Hilger et al. (2003) to assess their knowledge of foundational personal finance topics such as spending, saving, investing, and risk management. The number of correct answers submitted was then compared against the total amount of available questions to arrive at a quintile ranging from 1 = 0 - 20% to 5 = 81% - 100% whereas a higher number indicates a higher number of correct answers submitted.

An analysis was conducted between Wave 1, Wave 2, Wave 3, and Wave 4 of data collection. A total of 653 study participants recorded answers for all four waves of data and are included in this analysis. There were no outliers and the data were normally distributed, as
assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The assumption of sphericity was violated, as assessed by Mauchly's test of sphericity, $\chi^2(5) = 53.248, p < 0.001$, although Weinfurt (2000) suggests that such a violation is difficult to avoid given the sensitivity of the test in large samples (Kesselman et al., 1980). Therefore, a Greenhouse-Geisser correction (Greenhouse & Geisser, 1959) was applied ($\varepsilon = 0.946$) to control for the potential bias of too easily returning a statistically significant result from the repeated measures one-way ANOVA by adjusting the degrees of freedom utilized in the results (Maxwell & Delaney, 2004). The different time points resulted in statistically significant changes in how the respondents answered the question over time, $F(2.838, 1850.699) = 92.879, p < .001$, partial $\eta^2 = 0.125$, with scores increasing from Wave 1 (respondent ages 18-21) ($M = 3.633, SD = 0.90$) to Wave 2 (respondent ages 21-24) ($M = 3.867, SD = 0.85$), to Wave 3 (respondent ages 23-26) ($M = 4.095, SD = 0.75$), and again to Wave 4 (respondent ages 26-29) ($M = 4.237, SD = 0.72$) (figure 8). Post hoc analysis with a Bonferroni adjustment for multiple comparisons revealed that study participants percent of correct answers increased in a statistically significantly manner not only from Wave 1 to Wave 4 ($M = 0.605, 95\% \text{CI} [0.494, 0.716], p < .001$), but also from Wave 2 to Wave 3 ($M = 0.228, 95\% \text{CI} [0.133, 0.323], p < .001$), from Wave 1 to Wave 2 ($M = 0.234, 95\% \text{CI} [0.121, 0.347], p < 0.001$), and finally from Wave 3 to Wave 4 ($M = 0.142, 95\% \text{CI} [0.052, 0.233], p < 0.001$) (figure 17). These results illustrate that this sample of young adults are increasing in their level of objective financial knowledge as measured by this 15-item scale (Hilger et al., 2003) as they increase in age.
Subjective Financial Knowledge

An analysis was conducted between Wave 1, Wave 2, Wave 3, and Wave 4 of data collection to examine the one-item measure of subjective financial knowledge. A total of 666 study participants recorded answers for all four waves of data and are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The assumption of sphericity was violated, as assessed by Mauchly's test of sphericity, $\chi^2(5) = 30.617, p < 0.001$, although Weinfurt (2000) suggests that such a violation is difficult to avoid given the sensitivity of the test in large samples (Kesselman et al., 1980). Therefore, a Greenhouse-Geisser correction (Greenhouse & Geisser, 1959) was applied ($\varepsilon = 0.969$) to control for the potential bias of too easily returning a statistically significant result from the repeated measures one-way ANOVA by adjusting the degrees of freedom utilized in the results (Maxwell & Delaney, 2004). The different time points resulted in statistically significant changes in how the respondents answered.
the question over time, $F(2.908, 1933.883) = 56.035, p < .001$, partial $\eta^2 = 0.078$, with scores increasing from Wave 1 (respondent ages 18-21) ($M = 3.149$, $SD = 0.80$) to Wave 2 (respondent ages 21-24) ($M = 3.575$, $SD = 0.85$), but then slightly decreasing to Wave 3 (respondent ages 23-26) ($M = 3.502$, $SD = 0.90$), and decreasing again to Wave 4 (respondent ages 26-29) ($M = 3.452$, $SD = 0.87$) (figure 18). Post hoc analysis with a Bonferroni adjustment for multiple comparisons revealed that although study participants percent of correct answers increased in a statistically significantly manner from Wave 1 to Wave 2 ($M = -0.426$, 95% CI [-0.516, -0.337], $p < 0.001$) and overall from Wave 1 to Wave 4 ($M = 0.303$, 95% CI [0.206, 0.400], $p < .001$), there was also a statistically significant decrease from Wave 2 to Wave 4 ($M = -0.123$, 95% CI [-0.219, -0.027], $p < 0.01$). These results suggest that this sample of young adults experienced a significant increase in their perceived understanding of personal finance and money management concepts during their early undergraduate years which peaked during 21 – 24 years of age. The data then illustrates their confidence began to erode as they grew older and continued to trend downwards as they transitioned into their later 20s.

Figure 18. Subjective Financial Knowledge
Parental Subjective Norms

Separate analyses were conducted to examine how respondent’s answers to five questions surrounding the expectations parents have for their money management behaviors may change over time along with a measure of their compliance their parent’s expectations. Students were asked to indicate on a five-point scale 1 (strongly disagree) to 5 (strongly agree) the extent to which their parents thought they should engage in each of five positive financial behaviors whereas a higher score reflects the student respondents having a higher perception of parental expectations to engage in the stated financial management activity.

First, concerning the statement “To what extent do you agree: my parent(s) think that I should track my monthly expenses.”, an analysis was conducted between Wave 1, Wave 2, and Wave 3 of data collection. A total of 520 study participants recorded answers for all three waves of data and are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The assumption of sphericity was not violated, as assessed by Mauchly's test of sphericity, $\chi^2(2) = 4.155, p = 0.125$. The different time points elicited statistically significant changes in how the respondents answered the question over time, $F(2, 1038.00) = 3.308, p < .05$, partial $\eta^2 = 0.006$, with scores slightly decreasing from Wave 1 (respondent ages 18-21) ($M = 3.912, SD = 1.20$) to Wave 2 (respondent ages 21-24) ($M = 3.973, SD = 1.16$) and again decreasing further in Wave 3 (respondent ages 23-26) ($M = 4.06, SD = 1.11$) (figure 19). Post hoc analysis with a Bonferroni adjustment for multiple comparisons revealed that study participants level of agreement with the statement statistically significantly increased from Wave 1 to Wave 3 ($M = 0.148, 95\% \text{ CI } [0.003, 0.293], p < .05$). However, no statistically significant difference was registered from Wave 1 to Wave 2 ($M = -0.062, 95\% \text{ CI } [-0.197, 0.074], p =$
0.832) or Wave 2 to Wave 3 ($M = -0.087$, 95% CI [-0.222, 0.049], $p = .378$). These results suggest that this sample of young adults were more likely to experience increased expectations from their parents to track their monthly expenses as they grew older.

![Graph showing estimated marginal means over time.](image)

**Figure 19. My Parent(s) Think That I Should Track My Monthly Expenses**

Second, concerning the statement “To what extent do you agree: my parent(s) think that I should spend within a budget.”: an analysis was conducted between Wave 1, Wave 2, and Wave 3 of data collection. A total of 516 study participants recorded answers for all three waves of data and are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The assumption of sphericity was violated, as assessed by Mauchly's test of sphericity, $\chi^2(2) = 16.484$, $p < 0.001$, although Weinfurt (2000) suggests that such a violation is difficult to avoid given the sensitivity of the test in large samples (Kesselman et al., 1980). Therefore, a Greenhouse-Geisser correction (Greenhouse & Geisser, 1959) was applied ($\varepsilon = 0.973$) to control for the potential bias of too easily returning a statistically significant result from the repeated measures one-way ANOVA by adjusting the degrees of freedom utilized in the results (Maxwell...
The different time points elicited marginally statistically significant changes in how the respondents answered the question over time, $F(1.939, 998.486) = 2.995, p < 0.10$, partial $\eta^2 = 0.006$, with scores increasing from Wave 1 (respondent ages 18-21) ($M = 4.244, SD = 0.95$) to Wave 2 (respondent ages 21-24) ($M = 4.357, SD = 0.91$) but then decreasing slightly in Wave 3 (respondent ages 23-26) ($M = 4.304, SD = 0.97$) (figure 20). Post hoc analysis with a Bonferroni adjustment for multiple comparisons revealed that although study participants level of agreement with the statement statistically significantly increased from Wave 1 to Wave 2 ($M = -0.112, 95% CI [-0.218, -0.007], p < .05$), there was no statistically significant change from Wave 2 to Wave 3 ($M = 0.52, 95% CI [-0.053, 0.158], p = 0.701$) nor overall from Wave 1 to Wave 3 ($M = 0.060, 95% CI [-0.060, 0.180], p = 0.687$). These findings suggest that the student respondents in these three waves of the survey only experienced a significant increase in the parental expectation that they spend within a budget from the start of their undergraduate career to the relative end of their undergraduate career followed by an insignificant decrease in their agreement with the statement thereafter.

Figure 20. My Parent(s) Think That I Should Spend Within a Budget
Third, concerning the statement “To what extent do you agree: my parent(s) think that I should pay credit card balances in full each month.”: an analysis was conducted between Wave 1, Wave 2, and Wave 3 of data collection. A total of 514 study participants recorded answers for all three waves of data and are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The assumption of sphericity was violated, as assessed by Mauchly's test of sphericity, \( \chi^2(2) = 18.282, p < 0.001 \), although Weinfurt (2000) suggests that such a violation is difficult to avoid given the sensitivity of the test in large samples (Kesselman et al., 1980). Therefore, a Greenhouse-Geisser correction (Greenhouse & Geisser, 1959) was applied (\( \varepsilon = 0.970 \)) to control for the potential bias of too easily returning a statistically significant result from the repeated measures one-way ANOVA by adjusting the degrees of freedom utilized in the results (Maxwell & Delaney, 2004). The different time points elicited statistically significant changes in how the respondents answered the question over time, \( F(1.932, 991.230) = 11.842, p < 0.001 \), partial \( \eta^2 = 0.023 \), with scores increasing from Wave 1 (respondent ages 18-21) \( (M = 4.128, SD = 1.13) \) to Wave 2 (respondent ages 21-24) \( (M = 4.393, SD = 1.01) \) but then decreasing slightly in Wave 3 (respondent ages 23-26) \( (M = 4.288, SD = 1.05) \) (figure 21). Post hoc analysis with a Bonferroni adjustment for multiple comparisons revealed that study participants level of agreement with the statement statistically significantly increased from Wave 1 to Wave 2 \( (M = -0.265, 95\% \text{ CI [-0.398, -0.132]}, p < .001) \) along with overall from Wave 1 to Wave 3 \( (M = 0.160, 95\% \text{ CI [0.19, 0.301]}, p < 0.05) \). However, there was no statistically significant change from Wave 2 to Wave 3 \( (M = 0.105, 95\% \text{ CI [-0.015, 0.225]}, p = 0.106) \). These findings suggest that this sample of student respondents experienced a statistically
significant increase in parental expectations that they pay off their credit card balances owed in full each month as they grew older.

Figure 21. My Parent(s) Think That I Should Pay Credit Card Balances in Full Each Month

Fourth, concerning the statement “To what extent do you agree: my parent(s) think that I should save money each month for the future.”: an analysis was conducted between Wave 1, Wave 2, and Wave 3 of data collection. A total of 512 study participants recorded answers for all three waves of data and are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The assumption of sphericity was violated, as assessed by Mauchly's test of sphericity, \( \chi^2(2) = 8.411, p < 0.05 \), although Weinfurt (2000) suggests that such a violation is difficult to avoid given the sensitivity of the test in large samples (Kesselman et al., 1980). Therefore, a Greenhouse-Geisser correction (Greenhouse & Geisser, 1959) was applied (\( \varepsilon = 0.984 \)) to control for the potential bias of too easily returning a statistically significant result from the repeated measures one-way ANOVA by adjusting the degrees of freedom utilized in the results (Maxwell & Delaney, 2004). The different time points elicited statistically significant
changes in how the respondents answered the question over time, $F(1.968, 1005.552) = 4.056, p < 0.05$, partial $\eta^2 = 0.008$, with scores increasing slightly from Wave 1 (respondent ages 18-21) ($M = 4.127, SD = 1.03$) to Wave 2 (respondent ages 21-24) ($M = 4.17, SD = 1.00$) and again increasing in Wave 3 (respondent ages 23-26) ($M = 4.273, SD = 1.03$) (figure 22). Post hoc analysis with a Bonferroni adjustment for multiple comparisons revealed that study participants level of agreement with the statement statistically significantly increased from Wave 1 to Wave 3 ($M = 0.146, 95\% \text{ CI } [0.12, 0.281], p < .05$) but not from Wave 1 to Wave 2 ($M = -0.043, 95\% \text{ CI } [-0.165, 0.079], p = 1.000$) or Wave 2 to Wave 3 ($M = -0.104, 95\% \text{ CI } [-0.228, 0.021], p = 0.137$). These findings suggest that this sample of student respondents experienced a statistically significant increase in parental expectations that they save money each month for their future as they grew older.

Figure 22. My Parent(s) Think That I Should Save Money Each Month for The Future

Fifth, concerning the statement “To what extent do you agree: my parent(s) think that I should invest for long-term financial goals regularly.”: an analysis was conducted between Wave
1, Wave 2, and Wave 3 of data collection. A total of 310 study participants recorded answers for all three waves of data and are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The assumption of sphericity was not violated, as assessed by Mauchly's test of sphericity, \( \chi^2(2) = 4.750, p = 0.093 \). The different time points elicited statistically significant changes in how the respondents answered the question over time, \( F(2, 618) = 17.455, p < 0.001, \) partial \( \eta^2 = 0.053 \), with scores increasing slightly from Wave 1 (respondent ages 18-21) (\( M = 3.584, SD = 1.17 \)) to Wave 2 (respondent ages 21-24) (\( M = 3.542, SD = 1.16 \)) and again increasing in Wave 3 (respondent ages 23-26) (\( M = 3.168, SD = 0.94 \)) (figure 23). Post hoc analysis with a Bonferroni adjustment for multiple comparisons revealed that study participants level of agreement with the statement decreased in a statistically significant manner from Wave 1 to Wave 3 (\( M = -0.416, 95\% CI [-0.606, -0.226], p < .001 \)) and from Wave 2 to Wave 3 (\( M = 0.374, 95\% CI [0.199, 0.549], p < 0.001 \)). However, no significant difference in mean score was discovered from Wave 1 to Wave 2 (\( M = 0.042, 95\% CI [-0.152, 0.236], p = 1.000 \)). These findings suggest that this sample of student respondents experienced a statistically significant decrease in the parental expectation that they invest monthly for long-term financial goals as they grew older.
Respondents were asked to reflect upon their own perception of the influence of their parent(s) on their own behaviors. Specifically, they were asked to respond to the question “When it comes to money matters, to what degree do you think your own behaviors are influenced by your parents [Wave 1] / by your mother [Wave 2, Wave 3] / by your father [Wave 2, Wave 3]?” with a scale of 1 (not influenced at all) to 5 (strongly influenced) whereas a higher score indicated their parents having a higher influence on their financial actions.

An analysis was conducted between Wave 1, Wave 2, and Wave 3 of data collection. A total of 906 study participants recorded answers for all three waves of data and are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The assumption of sphericity was violated, as assessed by Mauchly's test of sphericity, $\chi^2(2) = 30.211, p < 0.001$, although Weinfurt (2000) suggests that such a violation is difficult to avoid given the sensitivity of the test in large samples (Kesselman et al., 1980). Therefore, a Greenhouse-Geisser correction (Greenhouse & Geisser, 1959) was applied ($\varepsilon = 0.968$) to control for the potential bias of too
easily returning a statistically significant result from the repeated measures one-way ANOVA by adjusting the degrees of freedom utilized in the results (Maxwell & Delaney, 2004). The different time points elicited statistically significant changes in how the respondents answered the question over time, \( F(1.936, 1752.404) = 26.573, p < 0.001, \) partial \( \eta^2 = 0.029, \) with scores increasing from Wave 1 (respondent ages 18-21) \( (M = 3.702, SD = 1.10) \) to Wave 2 (respondent ages 21-24) \( (M = 3.969, SD = 1.01) \) before decreasing slightly in Wave 3 (respondent ages 23-26) \( (M = 3.924, SD = 1.08) \) (figure 24). Post hoc analysis with a Bonferroni adjustment for multiple comparisons revealed that study participants level of agreement with the statement statistically significantly increased from Wave 1 to Wave 3 \( (M = 0.222, 95\% CI [0.120, 0.234], p < .001) \) and from Wave 1 to Wave 2 \( (M = -0.267, 95\% CI [-0.357, -0.176], p < 0.001) \) but not from Wave 2 to Wave 3 \( (M = 0.045, 95\% CI [-0.044, 0.134], p = 0.686) \). These findings suggest that this sample of student respondents experienced a statistically significant increase in their perception that their own behaviors are influenced by their parents as they increase in age.

![Figure 24](image)

Figure 24. When It Comes to Money Matters, To What Degree Do You Think Your Own Behaviors Are Influenced by Your Parents?
**Perceived Behavioral Control**

Perceived behavioral control was measured by a single item asking students to indicate on a seven-point scale 1 (difficult) to 7 (easy) how difficult or easy it was for them to stick to their plans when they were trying to manage their money whereas a higher value reflects a higher degree of perceived control the respondent has to adhere to their financial plan. Data was collected from respondents from all four wave of the APLUS survey.

An analysis was conducted between Wave 1, Wave 2, Wave 3, and Wave 4 of data collection to examine the one-item measure of perceived behavioral control consisting of the question “When it comes to managing your money, how easy or difficult is it to stick to your plans?” A total of 665 study participants recorded answers for all four waves of data and are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The assumption of sphericity was violated, as assessed by Mauchly's test of sphericity, $\chi^2(5) = 22.501, p < 0.001$, although Weinfurt (2000) suggests that such a violation is difficult to avoid given the sensitivity of the test in large samples (Kesselman et al., 1980). Therefore, a Greenhouse-Geisser correction (Greenhouse & Geisser, 1959) was applied ($\varepsilon = 0.978$) to control for the potential bias of too easily returning a statistically significant result from the repeated measures one-way ANOVA by adjusting the degrees of freedom utilized in the results (Maxwell & Delaney, 2004). The different time points resulted in only marginally statistically significant changes in how the respondents answered the question over time, $F(2.934, 1947.936) = 2.261, p = 0.081$, partial $\eta^2 = 0.03$, with scores increasing from Wave 1 (respondent ages 18-21) ($M = 4.666, SD = 1.49$) to Wave 2 (respondent ages 21-24) ($M = 4.829, SD = 1.43$), but then slightly decreasing to Wave 3 (respondent ages 23-26) ($M = 4.797, SD = 1.41$), and decreasing again to Wave 4 (respondent ages 26-29) ($M = 4.753, SD = 1.51$) (figure 25). Post hoc analysis
with a Bonferroni adjustment for multiple comparisons revealed that although study participants percent of correct answers only marginally statistically significantly manner from Wave 1 to Wave 2 ($M = -0.162, 95\% \text{ CI } [-0.516, -0.337], p < 0.001$) and not statistically significantly overall from Wave 1 to Wave 4 ($M = 0.075, 95\% \text{ CI } [-0.103, 0.277], p = 1.00$) nor from Wave 2 to Wave 4 ($M = -0.123, 95\% \text{ CI } [-0.1.05, 0.256], p = 1.00$). These results suggest that this sample of young adults experienced somewhat consistent levels of perceived financial behavioral control as they increased in age as measured by this question.

![Graph showing changes in financial behavioral control over time](image)

**Figure 25. When It Comes to Managing Your Money, How Easy or Difficult Is It to Stick to Your Plans?**

**Financial Attitude**

To measure the respondent’s financial attitude, students were asked to indicate on a five-point scale 1 (very unfavorable) to 5 (very favorable) their feelings about performing five foundational, positive financial behaviors whereas a higher reported value reflects a more positive attitude towards that action.
First, concerning the statement “How favorably or unfavorably do you feel toward: tracking monthly expenses.”, an analysis was conducted between Wave 1, Wave 2, and Wave 3 of data collection. A total of 937 study participants recorded answers for all three waves of data and are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The assumption of sphericity was not violated, as assessed by Mauchly’s test of sphericity, $\chi^2(2) = 5.573, p = 0.062$. The different time points elicited statistically significant changes in how the respondents answered the question over time, $F(2, 1872.00) = 45.073, p < .001$, partial $\eta^2 = 0.046$, with scores slightly decreasing from Wave 1 (respondent ages 18-21) ($M = 4.018, SD = 1.01$) to Wave 2 (respondent ages 21-24) ($M = 3.606, SD = 1.16$) but then increasing slightly in Wave 3 (respondent ages 23-26) ($M = 3.716, SD = 1.16$) although not to the same mean level as seen in Wave 1 (figure 26). Post hoc analysis with a Bonferroni adjustment for multiple comparisons revealed that study participants level of favorability with the statement statistically significantly decreased from Wave 1 to Wave 3 ($M = -0.302, 95\% CI [-0.414, -0.190], p < .001$). Additionally, a statistically significant difference was registered from Wave 1 to Wave 2 ($M = -0.412, 95\% CI [0.307, 0.517], p < 0.001$) and from Wave 2 to Wave 3 ($M = -0.010, 95\% CI [-0.216, -0.003], p < 0.05$). These results suggest that the respondents across all three waves of the data had a less positive attitude towards tracking their expenses as they were generally exiting their undergraduate study compared with when they were part of the freshman cohort, but then experienced a return to a more positive attitude towards the action as they continued to grow older.
Second, in examining the statement “How favorably or unfavorably do you feel toward: spending with a budget.”: an analysis was conducted between Wave 1, Wave 2, and Wave 3 of data collection. A total of 932 study participants recorded answers for all three waves of data and are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The assumption of sphericity was not violated, as assessed by Mauchly’s test of sphericity, $\chi^2(2) = 1.153$, $p = 0.562$. The different time points elicited statistically significant changes in how the respondents answered the question over time, $F(2, 1859.696) = 48.921$, $p < .001$, partial $\eta^2 = 0.050$, with scores decreasing from Wave 1 (respondent ages 18-21) ($M = 4.275$, $SD = 0.93$) to Wave 2 (respondent ages 21-24) ($M = 3.941$, $SD = 1.00$) and then decreasing again slightly in Wave 3 (respondent ages 23-26) ($M = 3.938$, $SD = 1.05$) (figure 27). Post hoc analysis with a Bonferroni adjustment for multiple comparisons revealed that study participants level of favorability with the statement statistically significantly decreased from Wave 1 to Wave 3 ($M =
-0.337, 95% CI [-0.432, -0.241], \( p < .001 \)). Additionally, a statistically significant difference was registered from Wave 1 to Wave 2 (\( M = 0.334, 95\% \) CI [0.241, 0.426], \( p < 0.001 \)). However, there was no statistically significant mean score change from Wave 2 to Wave 3 (\( M = 0.003, 95\% \) CI [-0.090, 0.097], \( p = 1.00 \)). These results suggest that the respondents across all three waves of the data had experienced a significant decrease in their attitude towards the action of spending within a budget as they grew older.

![Figure 27](image)

**Figure 27.** How Favorably or Unfavorably Do You Feel Toward: Spending with a Budget.

Third, concerning the statement “How favorably or unfavorably do you feel toward: paying credit card balances in full each month.”: an analysis was conducted between Wave 1, Wave 2, and Wave 3 of data collection. A total of 929 study participants recorded answers for all three waves of data and are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The assumption of sphericity was not violated, as assessed by Mauchly's test of sphericity, \( \chi^2(2) = 3.460, p = 0.177 \). The different time points elicited statistically significant
changes in how the respondents answered the question over time, $F(2, 1849.111) = 8.486, p < 0.001$, partial $\eta^2 = 0.009$, with scores decreasing from Wave 1 (respondent ages 18-21) ($M = 4.360, SD = 0.96$) to Wave 2 (respondent ages 21-24) ($M = 4.188, SD = 1.16$) but then increasing again in Wave 3 (respondent ages 23-26) ($M = 4.259, SD = 1.12$) (figure 28). Post hoc analysis with a Bonferroni adjustment for multiple comparisons revealed that study participants level of favorability with the statement statistically significantly decreased overall from Wave 1 to Wave 3 ($M = -0.100, 95\% CI [-0.028, -0.002], p < 0.05$) along with the decrease from Wave 1 to Wave 2 ($M = -0.171, 95\% CI [-0.274, -0.068], p < 0.001$). However, there was no statistically significant change from Wave 2 to Wave 3 ($M = -0.071, 95\% CI [-0.170, 0.028], p = 0.254$).

These findings suggest that this sample of student respondents experienced a statistically significant decrease in their favorability towards the action of paying their credit card balances in full each month as they grow older.

![Figure 28. How Favorably or Unfavorably Do You Feel Toward: Paying Credit Card Balances in Full Each Month.](image)
Fourth, in examining the statement “How favorably or unfavorably do you feel toward: saving money each month for the future.”: an analysis was conducted between Wave 1, Wave 2, and Wave 3 of data collection. A total of 933 study participants recorded answers for all three waves of data and are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The assumption of sphericity was violated, as assessed by Mauchly’s test of sphericity, χ²(2) = 8.749, p = 0.013, although Weinfurt (2000) suggests that such a violation is difficult to avoid given the sensitivity of the test in large samples (Kesselman et al., 1980). Therefore, a Greenhouse-Geisser correction (Greenhouse & Geisser, 1959) was applied (ε = 0.991) to control for the potential bias of too easily returning a statistically significant result from the repeated measures one-way ANOVA by adjusting the degrees of freedom utilized in the results (Maxwell & Delaney, 2004). The different time points elicited statistically significant changes in how the respondents answered the question over time, \( F(1.981, 1846.727) = 48.996, p < .001 \), partial \( \eta^2 = 0.050 \), with scores decreasing from Wave 1 (respondent ages 18-21) (\( M = 4.259, SD = 0.89 \)) to Wave 2 (respondent ages 21-24) (\( M = 3.827, SD = 1.16 \)) but then increasing slightly in Wave 3 (respondent ages 23-26) (\( M = 4.01, SD = 1.14 \)) (figure 29). Post hoc analysis with a Bonferroni adjustment for multiple comparisons revealed that study participants level of favorability with the statement statistically significantly decreased from Wave 1 to Wave 3 (\( M = -0.254, 95\% \text{ CI } [-0.357, -0.152], p < .001 \)). Additionally, a statistically significant difference was registered from Wave 1 to Wave 2 (\( M = 0.432, 95\% \text{ CI } [0.329, 0.535], p < 0.001 \)) along with a statistically significant mean score change from Wave 2 to Wave 3 (\( M = -0.178, 95\% \text{ CI } [-0.288, -0.068], p < 0.001 \)). These results suggest that the respondents
across all three waves of the data had experienced a significant decrease in their attitude towards the action of saving money each month for the future as they increased in age.

Figure 29. How Favorably or Unfavorably Do You Feel Toward: Saving Money Each Month for the Future.

Fifth, in examining the statement “How favorably or unfavorably do you feel toward: investing for long-term financial goals.”: an analysis was conducted between Wave 1, Wave 2, and Wave 3 of data collection. A total of 930 study participants recorded answers for all three waves of data and are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The assumption of sphericity was not violated, as assessed by Mauchly's test of sphericity, $\chi^2(2) = 0.246, p = 0.884$. The different time points elicited statistically significant changes in how the respondents answered the question over time, $F(2, 1857.507) = 57.478, p < .001$, partial $\eta^2 = 0.058$, with scores decreasing from Wave 1 (respondent ages 18-21) ($M = 4.018, SD = 1.02$) to Wave 2 (respondent ages 21-24) ($M = 3.529, SD = 1.20$) but then increasing slightly in Wave 3 (respondent ages 23-26) ($M = 3.686, SD = 1.23$) (figure 30). Post hoc analysis
with a Bonferroni adjustment for multiple comparisons revealed that study participants level of favorability with the statement statistically significantly decreased from Wave 1 to Wave 3 ($M = -0.332, 95\% \text{ CI } [-0.443, -0.221], p < .001$). Additionally, a statistically significant difference was registered from Wave 1 to Wave 2 ($M = 0.489, 95\% \text{ CI } [0.377, 0.601], p < 0.001$) along with a statistically significant mean score change from Wave 2 to Wave 3 ($M = -0.157, 95\% \text{ CI } [-0.269, -0.044], p < 0.01$). These results suggest that the respondents across all three waves of the data had experienced a significant decrease in their attitude towards the action of investing for long-term financial goals as they grew older.

![Figure 30](image)

**Figure 30. How Favorably or Unfavorably Do You Feel Toward: Investing for Long-Term Financial Goals.**

Lastly, to gain a deeper understanding about the respondents’ financial attitudes towards financial actions overall, a mean score for all five relevant questions was calculated and examined from wave-to-wave as available. A total of 940 study participants recorded answers for the financial attitude scale questions and are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q
Plots of each Waves scores. The assumption of sphericity was not violated, as assessed by Mauchly's test of sphericity, \( \chi^2(2) = 2.696, p = 0.260 \). The different time points elicited statistically significant changes in the respondents mean scores over time, \( F(2, 1872.626) = 76.394, p < .001 \), partial \( \eta^2 = 0.075 \), with computed mean scores decreasing from Wave 1 (respondent ages 18-21) (\( M = 4.187, SD = 0.75 \)) to Wave 2 (respondent ages 21-24) (\( M = 3.817, SD = 0.86 \)) but then increasing slightly in Wave 3 (respondent ages 23-26) (\( M = 3.920, SD = 0.84 \)) (figure 31). Post hoc analysis with a Bonferroni adjustment for multiple comparisons revealed that study participants mean level of favorability across the scale items statistically significantly decreased from Wave 1 to Wave 3 (\( M = -0.267, 95\% \ CI [-0.341, -0.194], p < .001 \)). Additionally, a statistically significant difference was registered from Wave 1 to Wave 2 (\( M = 0.370, 95\% \ CI [0.294, 0.446], p < 0.001 \)) along with a statistically significant mean score change from Wave 2 to Wave 3 (\( M = -0.103, 95\% \ CI [-0.176, -0.030], p < 0.01 \)). These results suggest that the respondents across all three waves of the data experienced an overall decrease financial attitude towards positive financial actions as they increased in age.

![Figure 31. Mean Score of Five Financial Attitude Questions](image-url)
Financial Relationship with Parents

Students were asked to indicate on a five-point scale 1 (strongly disagree) to 5 (strongly agree) the degree to which they agreed or disagreed with three items adapted from Allen et al. (2007) to reflect the type of financial relationship the respondent experiences with their parents over time. To ease the interpretation of the results given the negative wording of the questions, the original APLUS responses were recoded such that a higher value indicates a more positive financial relationship with their parents. (1 = strongly agree to 5 = strongly disagree).

First, concerning the statement “To what extent do you agree: since coming to college my relationship with my parents is not good because of money issues.”, an analysis was conducted between Wave 1, Wave 2, and Wave 3 of data collection. A total of 917 study participants recorded answers for all three waves of data and are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The assumption of sphericity was violated, as assessed by Mauchly's test of sphericity, $\chi^2(2) = 28.433, p < 0.001$, although Weinfurt (2000) suggests that such a violation is difficult to avoid given the sensitivity of the test in large samples (Kesselman et al., 1980). Therefore, a Greenhouse-Geisser correction (Greenhouse & Geisser, 1959) was applied ($\xi = 0.970$) to control for the potential bias of too easily returning a statistically significant result from the repeated measures one-way ANOVA by adjusting the degrees of freedom utilized in the results (Maxwell & Delaney, 2004). The different time points elicited statistically significant changes in how the respondents answered the question over time, $F(1.941, 1777.610) = 3.231, p < .05$, partial $\eta^2 = 0.004$, with scores slightly increasing from Wave 1 (respondent ages 18-21) ($M = 4.558, SD = 0.85$) to Wave 2 (respondent ages 21-24) ($M = 4.635, SD = 0.82$) and then decreasing slightly again in Wave 3 (respondent ages 23-26).
Post hoc analysis with a Bonferroni adjustment for multiple comparisons revealed that study participants level of agreement with the statement was not statistically significantly different overall from Wave 1 to Wave 3 ($M = 0.067$, 95% CI [-0.014, -0.147], $p = 0.141$). Similarly, only a marginally statistically significant difference was registered from Wave 1 to Wave 2 ($M = -0.076$, 95% CI [-0.159, 0.007], $p = 0.083$) and again no statistically significance was reported and from Wave 2 to Wave 3 ($M = 0.010$, 95% CI [-0.062, -0.081], $p = 1.00$). These results suggest that the respondents across all three waves of the data did not experience a significant change in their relationship with the parents because of money issues as they aged across the data collection period.

Second, concerning the statement “To what extent do you agree: since coming to college, my parents do not approve of my spending patterns in general.”, an analysis was conducted between Wave 1, Wave 2, and Wave 3 of data collection. A total of 917 study participants recorded answers for all three waves of data and are included in this analysis. There were no
outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The assumption of sphericity was not violated, as assessed by Mauchly's test of sphericity, $\chi^2(2) = 1.00, p < 0.842$. The different time points illustrated no statistically significant changes in how the respondents answered the question over time, $F(2, 1831.309) = 1.057, p = 0.348$, partial $\eta^2 = 0.001$. Between the waves, scores slightly increasing from Wave 1 (respondent ages 18-21) ($M = 4.053, SD = 1.02$) to Wave 2 (respondent ages 21-24) ($M = 4.085, SD = 1.05$) and then increasing again slightly in Wave 3 (respondent ages 23-26) ($M = 4.109, SD = 1.02$) (figure 33). Post hoc analysis with a Bonferroni adjustment for multiple comparisons revealed that study participants level of agreement with the statement was not statistically significantly different overall from Wave 1 to Wave 3 ($M = 0.056, 95\% CI [-0.037, 0.148], p = 0.450$). Similarly, no statistically significant difference was registered from Wave 1 to Wave 2 ($M = -0.032, 95\% CI [-0.124, 0.061], p = 1.00$) and again no statistically significance was reported and from Wave 2 to Wave 3 ($M = -0.024, 95\% CI [-0.115, 0.067], p = 1.00$). These results suggest that the respondents across all three waves of the data did not experience a significant change in their perception that their parents did not approve of their spending patterns in general as they grew older.
Third, concerning the statement “To what extent do you agree: since coming to college, I argue a lot with my parent(s) about money matters.”: an analysis was conducted between Wave 1, Wave 2, and Wave 3 of data collection. A total of 916 study participants recorded answers for all three waves of data and are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The assumption of sphericity was not violated, as assessed by Mauchly's test of sphericity, $\chi^2(2) = 5.922, p = 0.052$ The different time points illustrated statistically significant changes in how the respondents answered the question over time, $F(2, 1818.257) = 3.339, p = 0.036$, partial $\eta^2 = 0.004$. Between the waves, scores slightly increasing from Wave 1 (respondent ages 18-21) ($M = 4.377, SD = 0.98$) to Wave 2 (respondent ages 21-24) ($M = 4.383, SD = 1.03$) and then increasing again in Wave 3 (respondent ages 23-26) ($M = 4.465, SD = 0.91$) (figure 34). Post hoc analysis with a Bonferroni adjustment for multiple comparisons revealed that study participants level of agreement with the statement was only
marginally statistically significantly different overall from Wave 1 to Wave 3 ($M = 0.088$, 95% CI $[-0.004, 0.181], p = 0.065$). Similarly, only marginal statistically significant difference was registered from Wave 2 to Wave 3 ($M = -0.082$, 95% CI $[-0.170, 0.006], p = 0.077$). No statistically significance was reported and from Wave 1 to Wave 2 ($M = -0.007$, 95% CI $[-0.101, 0.088], p = 1.00$). These results suggest that the respondents across all three waves of the data only experienced a marginally statistically significant decrease in their agreement that they argue a lot with their parents about money matters.

![Figure 34](image)

Figure 34. To What Extent Do You Agree: Since Coming to College, I Argue a Lot with My Parent(s) About Money Matters.

For a broader view of the student respondents’ perceptions of their parental financial relationship, a mean score variable was created which encompassed these three questions and is utilized as a single measure of the respondent’s financial relationship with their parent(s). This measure was created for each data collection effort from Wave 1 – Wave 3. A total of 921 study participants are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves
scores. The assumption of sphericity was violated, as assessed by Mauchly's test of sphericity, $\chi^2(2) = 9.089, p = 0.011$, although Weinfurt (2000) suggests that such a violation is difficult to avoid given the sensitivity of the test in large samples (Kesselman et al., 1980). Therefore, a Greenhouse-Geisser correction (Greenhouse & Geisser, 1959) was applied ($\varepsilon = 0.990$) to control for the potential bias of too easily returning a statistically significant result from the repeated measures one-way ANOVA by adjusting the degrees of freedom utilized in the results (Maxwell & Delaney, 2004). The different time points illustrated statistically significant changes in how the respondents answered the question over time, $F(1.981, 1822.068) = 3.083, p = 0.047$, partial $\eta^2 = 0.003$. Between the waves, scores slightly increasing from Wave 1 (respondent ages 18-21) ($M = 4.329, SD = 0.79$) to Wave 2 (respondent ages 21-24) ($M = 4.368, SD = 0.77$) and then increasing again in Wave 3 (respondent ages 23-26) ($M = 4.400, SD = 0.74$) (figure 35). Post hoc analysis with a Bonferroni adjustment for multiple comparisons revealed that study participants level of agreement with the statement was statistically significantly different overall from Wave 1 to Wave 3 ($M = 0.071, 95\% CI [0.001, 0.141], p < 0.05$). However, no statistically significant difference was registered from Wave 2 to Wave 3 ($M = -0.032, 95\% CI [-0.098, 0.033], p = 0.708$) or from Wave 1 to Wave 2 ($M = -0.039, 95\% CI [-0.110, 0.032], p = 0.569$). These results suggest that the respondents across all three waves of the data do experienced a statistically significant increase in the positive parental financial communicated as they grow older as measured by their lessened agreement with statements insinuating conflict with their parents about money matters.
Financial Satisfaction

Financial satisfaction was measured using three items, adopted from Shim et al. (2009), and asked student respondents to indicate on a five-point scale 1 (strongly disagree) to 5 (strongly agree) the extent to which they agreed or disagreed with each statement whereas a higher value indicates a higher level of satisfaction with their financial status over time. Two of these scale items are negatively worded which necessitated a recoding to remain consistent in their interpretability that a higher value indicates a higher level of satisfaction.

First, concerning the statement “I am satisfied with my current financial status.”: an analysis was conducted between Wave 1, Wave 2, Wave 3, and Wave 4 of data collection. A total of 673 study participants recorded answers for all four waves of data and are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The assumption of sphericity was violated, as assessed by Mauchly's test of sphericity, $\chi^2(5) = 84.158$, $p < 0.001$,.
although Weinfurt (2000) suggests that such a violation is difficult to avoid given the sensitivity of the test in large samples (Kesselman et al., 1980). Therefore, a Greenhouse-Geisser correction (Greenhouse & Geisser, 1959) was applied ($\varepsilon = 0.920$) to control for the potential bias of too easily returning a statistically significant result from the repeated measures one-way ANOVA by adjusting the degrees of freedom utilized in the results (Maxwell & Delaney, 2004). The different time points resulted in statistically significant changes in how the respondents answered the question over time, $F(2.761, 1855.227) = 7.624, p < .001$, partial $\eta^2 = 0.011$, with scores decreasing from Wave 1 (respondent ages 18-21) ($M = 3.254, SD = 1.16$) to Wave 2 (respondent ages 21-24) ($M = 3.129, SD = 1.17$), to Wave 3 (respondent ages 23-26) ($M = 2.997, SD = 1.22$), before increasing slightly to Wave 4 (respondent ages 26-29) ($M = 3.117, SD = 1.23$) (figure 36). Post hoc analysis with a Bonferroni adjustment for multiple comparisons revealed that study participants responses did not change in a statistically significantly manner from Wave 1 to Wave 4 ($M = -0.137, 95\% CI [-0.297, 0.024], p = 0.146$). There was only a marginally statistically significant decrease from Wave 2 to Wave 3 ($M = 0.132, 95\% CI [-0.003, 0.268], p = 0.061$). However, there was a statistically significant decrease from Wave 1 to Wave 2 ($M = 0.125, 95\% CI [0.002, 0.248], p < 0.05$). These results illustrate that this sample of young adults experienced a significant decrease in their reported level of satisfaction with their current financial status from the beginning of their undergraduate careers to roughly the end of their undergraduate careers, but then report a slight increase as they grow older although this increase does not rise to the level of statistical significance.
Second, concerning the statement “I have difficulty paying for things (reversed).” an analysis was conducted between Wave 1, Wave 2, Wave 3, and Wave 4 of data collection. A total of 674 study participants recorded answers for all four waves of data and are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The assumption of sphericity was violated, as assessed by Mauchly's test of sphericity, $\chi^2(5) = 52.390, p < 0.001$, although Weinfurt (2000) suggests that such a violation is difficult to avoid given the sensitivity of the test in large samples (Kesselman et al., 1980). Therefore, a Greenhouse-Geisser correction (Greenhouse & Geisser, 1959) was applied ($\varepsilon = 0.949$) to control for the potential bias of too easily returning a statistically significant result from the repeated measures one-way ANOVA by adjusting the degrees of freedom utilized in the results (Maxwell & Delaney, 2004). The different time points resulted in statistically significant changes in how the respondents answered the question over time, $F(2.847, 1916.046) = 27.446, p < .001$, partial $\eta^2 = 0.039$, with scores
decreasing from Wave 1 (respondent ages 18-21) (\(M = 3.386, \text{SD} = 1.16\)) to Wave 2 (respondent ages 21-24) (\(M = 3.260, \text{SD} = 1.15\)) before increasing to Wave 3 (respondent ages 23-26) (\(M = 3.552, \text{SD} = 1.17\)) and increasing again to Wave 4 (respondent ages 26-29) (\(M = 3.705, \text{SD} = 1.16\)) (figure 37). Post hoc analysis with a Bonferroni adjustment for multiple comparisons revealed that study participants level of agreement with the statement increased in a statistically significantly manner from Wave 1 to Wave 4 (\(M = 0.319, 95\% \text{ CI} [0.168, 0.470], p < 0.001\)). There was also a statistically significant increase from Wave 2 to Wave 3 (\(M = 0.292, 95\% \text{ CI} [-0.161, 0.424], p < 0.001\)). Lastly, the data signals there was a statistically significant decrease from Wave 1 to Wave 2 (\(M = -0.126, 95\% \text{ CI} [-0.251, -.001], p < 0.05\)). These results illustrate that this sample of young adults experienced a significant increase in their reported level of difficulty paying for things until around their mid-20s before they experience a significant increase in their financial satisfaction given their reduced agreement with the specific statement.

Figure 37. I Have Difficulty Paying for Things (Reversed).
Third, concerning the statement “I am constantly worried about money (reversed).” an analysis was conducted between Wave 1, Wave 2, Wave 3, and Wave 4 of data collection. A total of 670 study participants recorded answers for all four waves of data and are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The assumption of sphericity was violated, as assessed by Mauchly's test of sphericity, $\chi^2 (5) = 100.847, p < 0.001$, although Weinfurt (2000) suggests that such a violation is difficult to avoid given the sensitivity of the test in large samples (Kesselman et al., 1980). Therefore, a Greenhouse-Geisser correction (Greenhouse & Geisser, 1959) was applied ($\varepsilon = 0.908$) to control for the potential bias of too easily returning a statistically significant result from the repeated measures one-way ANOVA by adjusting the degrees of freedom utilized in the results (Maxwell & Delaney, 2004). The different time points resulted in statistically significant changes in how the respondents answered the question over time, $F(2.723, 1821.404) = 9.237, p < .001$, partial $\eta^2 = 0.014$, with scores decreasing from Wave 1 (respondent ages 18-21) ($M = 3.169, SD = 1.25$) to Wave 2 (respondent ages 21-24) ($M = 2.967, SD = 1.18$) before increasing to Wave 3 (respondent ages 23-26) ($M = 3.142, SD = 1.19$) and increasing again to Wave 4 (respondent ages 26-29) ($M = 3.246, SD = 1.28$) (figure 38). Post hoc analysis with a Bonferroni adjustment for multiple comparisons revealed that study participants level of agreement with the statement did not change in a statistically significantly manner overall from Wave 1 to Wave 4 ($M = 0.078, 95\% CI [-0.092, 0.247], p = 1.00$). However, there was a statistically significant increase from Wave 2 to Wave 3 ($M = 0.175, 95\% CI [0.051, 0.299], p < 0.01$). Similarly, the data signals there was a statistically significant decrease from Wave 1 to Wave 2 ($M = -0.201, 95\% CI [-0.333, -0.070], p < 0.001$). These results illustrate that this sample of young adults experienced a significant increase in their
reported level of worry about money until around their mid-20s before they experience a significant increase in their financial satisfaction and less worry about money given their reduced agreement with the specific statement.

Figure 38. I Am Constantly Worried About Money (reversed).

For a more complete glimpse into the respondent’s behavior related to financial satisfaction, a mean score variable was created which encompassed these three questions and is utilized as a single measure. This measure was created for each data collection effort from Wave 1 – Wave 4. A total of 675 study participants are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The assumption of sphericity was violated, as assessed by Mauchly's test of sphericity, $\chi^2(5) = 128.214$, $p < 0.001$, although Weinfurt (2000) suggests that such a violation is difficult to avoid given the sensitivity of the test in large samples (Kesselman et al., 1980). Therefore, a Greenhouse-Geisser correction (Greenhouse & Geisser, 1959) was applied ($\varepsilon = 0.884$) to control for the potential bias of too easily returning a statistically significant result from the repeated measures one-way ANOVA by adjusting the degrees of
freedom utilized in the results (Maxwell & Delaney, 2004). The different time points illustrated statistically significant changes in how the respondents answered the question over time, $F(2.653, 1787.860) = 9.676, p < 0.001$, partial $\eta^2 = 0.014$. Between the waves, scores were decreasing from Wave 1 (respondent ages 18-21) ($M = 3.269, SD = 1.05$) to Wave 2 (respondent ages 21-24) ($M = 3.119, SD = 0.99$) before increasing to Wave 3 (respondent ages 23-26) ($M = 3.231, SD = 1.03$) and increasing again to Wave 4 (respondent ages 26-29) ($M = 3.355, SD = 1.05$) (figure 39). Post hoc analysis with a Bonferroni adjustment for multiple comparisons revealed that study participants level of agreement with the statement did not change in a statistically significantly manner overall from Wave 1 to Wave 4 ($M = 0.086, 95\% \text{ CI} [-0.051, 0.224], p = 0.586$). However, there was a statistically significant increase from Wave 2 to Wave 3 ($M = 0.112, 95\% \text{ CI} [0.006, 0.218], p < 0.05$). Similarly, the data signals there was a statistically significant decrease from Wave 1 to Wave 2 ($M = -0.150, 95\% \text{ CI} [-0.250, -0.050], p < 0.001$). These results illustrate that this sample of young adults experienced a significant decrease in their reported level financial satisfaction behavior until around their mid-20s before they experience a significant increase in their financial satisfaction behavior as they continue to age.
Figure 39. Mean Score of Three Financial Satisfaction Behavior Questions

**Healthy Financial Behavior**

A four-item scale intends to measure the respondents self-reported frequency of performing positive, healthy foundational financial behaviors revolving around spending, tracking expenses, and saving. Students were asked to indicate how often 1 (never) to 5 (very often) they performed each of the four healthy financial behaviors whereas a higher score reflects a higher frequency of the respondent performing those actions within the last six months.

First, concerning the statement “Within the past six months, how often have you: tracked monthly expenses.”: an analysis was conducted between Wave 1, Wave 2, Wave 3, and Wave 4 of data collection. A total of 664 study participants recorded answers for all four waves of data and are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The assumption of sphericity was violated, as assessed by Mauchly's test of sphericity, $\chi^2(5) = 36.659, p < 0.001$, although Weinfurt (2000) suggests that such a violation is difficult to avoid.
given the sensitivity of the test in large samples (Kesselman et al., 1980). Therefore, a
Greenhouse-Geisser correction (Greenhouse & Geisser, 1959) was applied ($\varepsilon = 0.967$) to control
for the potential bias of too easily returning a statistically significant result from the repeated
measures one-way ANOVA by adjusting the degrees of freedom utilized in the results (Maxwell
& Delaney, 2004). The different time points resulted in statistically significant changes in how
the respondents answered the question over time, $F(2.887, 1913.942) = 10.855, p < .001$, partial
$\eta^2 = 0.016$, with scores decreasing from Wave 1 (respondent ages 18-21) ($M = 3.690, SD = 1.10$)
to Wave 2 (respondent ages 21-24) ($M = 3.486, SD = 1.22$). Mean responses then begin to
increase to Wave 3 (respondent ages 23-26) ($M = 3.587, SD = 1.26$) and increasing again to
Wave 4 (respondent ages 26-29) ($M = 3.800, SD = 1.23$) (figure 40). Post hoc analysis with a
Bonferroni adjustment for multiple comparisons revealed that study participants responses did
not change in a statistically significantly manner from Wave 1 to Wave 4 ($M = 0.105, 95\% \text{ CI \ [-0.054, 0.265]}, p = 0.489$). Similarly, there was no statistically significant decrease from Wave 2
to Wave 3 ($M = 0.101, 95\% \text{ CI \ [-0.048, 0.250]}, p = 0.444$). However, there was a statistically
significant decrease from Wave 1 to Wave 2 ($M = 0.203, 95\% \text{ CI \ [0.063, 0.343]}, p < 0.01$) and
increase from Wave 3 to Wave 4 ($M = 0.208, 95\% \text{ CI \ [0.065, 0.350]}, p < 0.01$). These results
illustrate that this sample of young adults experienced a significant decrease in their reported
instance of tracking their expenses at the beginning of their undergraduate careers to roughly the
end of their undergraduate careers, but then report a significant increase as they grow older.
Figure 40. Within the Past Six Months, How Often Have You: Tracked Monthly Expenses.

Second, concerning the statement “Within the past six months, how often have you: spent with the budget”: an analysis was conducted between Wave 1, Wave 2, Wave 3, and Wave 4 of data collection. A total of 659 study participants recorded answers for all four waves of data and are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The assumption of sphericity was not violated, as assessed by Mauchly's test of sphericity, $\chi^2(5) = 10.877, p = 0.054$. The different time points resulted in statistically significant changes in how the respondents answered the question over time, $F(3, 1974.00) = 20.254, p < .001$, partial $\eta^2 = 0.030$, with scores decreasing from Wave 1 (respondent ages 18-21) ($M = 4.041, SD = 0.92$) to Wave 2 (respondent ages 21-24) ($M = 3.804, SD = 1.02$) to Wave 3 (respondent ages 23-26) ($M = 3.718, SD = 1.06$) and finally decreasing slightly again to Wave 4 (respondent ages 26-29) ($M = 3.709, SD = 1.15$) (figure 41). Post hoc analysis with a Bonferroni adjustment for multiple comparisons revealed that study participants responses decreased in a statistically significantly
manner from Wave 1 to Wave 4 ($M = -0.332$, 95% CI [-0.467, -0.198], $p < 0.001$). Similarly, there was a statistically significant decrease from Wave 1 to Wave 3 ($M = -0.323$, 95% CI [-0.452, -0.194], $p < 0.001$) and Wave 1 to Wave 2 ($M = -0.237$, 95% CI [-0.360, -0.114], $p < 0.001$). However, there was no statistically significant change from Wave 2 to Wave 3 ($M = -0.086$, 95% CI [-0.211, 0.038], $p = 0.394$) and from Wave 3 to Wave 4 ($M = -0.009$, 95% CI [-0.137, 0.119], $p = 1.00$). These results illustrate that this sample of young adults experienced a significant decrease in their reported instance of spending with a budget as they grow older.

![Figure 41. Within the Past Six Months, How Often Have You: Spent with the Budget](image)

Third, concerning the statement “Within the past six months, how often have you: saved money each month for the future.”: an analysis was conducted between Wave 1, Wave 2, Wave 3, and Wave 4 of data collection. A total of 663 study participants recorded answers for all four waves of data and are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The assumption of sphericity was violated, as assessed by Mauchly's test of sphericity, $\chi^2(5) = 21.625$, $p < 0.01$, although Weinfurt (2000) suggests that such a violation is
difficult to avoid given the sensitivity of the test in large samples (Kesselman et al., 1980). Therefore, a Greenhouse-Geisser correction (Greenhouse & Geisser, 1959) was applied ($\varepsilon = 0.979$) to control for the potential bias of too easily returning a statistically significant result from the repeated measures one-way ANOVA by adjusting the degrees of freedom utilized in the results (Maxwell & Delaney, 2004). The different time points resulted in statistically significant changes in how the respondents answered the question over time, $F(2.938, 1945.026) = 45.150, p < .001$, partial $\eta^2 = 0.064$, with scores decreasing from Wave 1 (respondent ages 18-21) ($M = 3.278, SD = 1.24$) to Wave 2 (respondent ages 21-24) ($M = 2.907, SD = 1.27$) before increasing to Wave 3 (respondent ages 23-26) ($M = 3.192, SD = 1.42$) and finally increasing again to Wave 4 (respondent ages 26-29) ($M = 3.635, SD = 1.38$) (figure 42). Post hoc analysis with a Bonferroni adjustment for multiple comparisons revealed that study participants responses decreased in a statistically significantly manner from Wave 1 to Wave 4 ($M = 0.357, 95\% \text{ CI } [0.185, 0.530], p < 0.001$). Similarly, there was a statistically significant decrease from Wave 1 to Wave 3 ($M = -0.086, 95\% \text{ CI } [-0.259, 0.087], p < 0.001$) and Wave 1 to Wave 2 ($M = -0.371, 95\% \text{ CI } [-0.523, -0.219], p < 0.001$). However, there was no statistically significant change from Wave 1 to Wave 3 ($M = -0.086, 95\% \text{ CI } [-0.259, 0.087], p = 1.00$). These results reflect that the student respondents initially experienced a significant reduction in their reported levels of saving money each month for the future in the previous six months, this behavior significantly increased in their mid-20s.
Fourth, concerning the statement “Within the past six months, how often have you: invested for long-term financial goals.”: an analysis was conducted between Wave 1, Wave 2, Wave 3, and Wave 4 of data collection. A total of 660 study participants recorded answers for all four waves of data and are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The assumption of sphericity was violated, as assessed by Mauchly's test of sphericity, $\chi^2(5) = 31.568$, $p < 0.001$, although Weinfurt (2000) suggests that such a violation is difficult to avoid given the sensitivity of the test in large samples (Kesselman et al., 1980). Therefore, a Greenhouse-Geisser correction (Greenhouse & Geisser, 1959) was applied ($\varepsilon = 0.968$) to control for the potential bias of too easily returning a statistically significant result from the repeated measures one-way ANOVA by adjusting the degrees of freedom utilized in the results (Maxwell & Delaney, 2004). The different time points resulted in statistically significant changes in how the respondents answered the question over time, $F(2.903, 1913.315) =$
61.896, \( p < .001 \), partial \( \eta^2 = 0.086 \), with scores decreasing from Wave 1 (respondent ages 18-21) (\( M = 2.471, SD = 1.38 \)) to Wave 2 (respondent ages 21-24) (\( M = 2.082, SD = 1.31 \)) before increasing to Wave 3 (respondent ages 23-26) (\( M = 2.379, SD = 1.52 \)) and finally increasing again to Wave 4 (respondent ages 26-29) (\( M = 3.023, SD = 1.61 \)) (figure 43). Post hoc analysis with a Bonferroni adjustment for multiple comparisons revealed that study participants responses increased in a statistically significantly manner from Wave 1 to Wave 4 (\( M = 0.552, 95\% CI [0.349, 0.754], p < 0.001 \)). Similarly, there was a statistically significant increase from Wave 2 to Wave 4 (\( M = 0.941, 95\% CI [0.750, 1.131], p < 0.001 \)) while a significant decrease occurred from Wave 1 to Wave 2 (\( M = 0.389, 95\% CI [0.215, 0.563], p < 0.001 \)). However, there was no statistically significant change from Wave 1 to Wave 3 (\( M = -.092, 95\% CI [-0.287, 0.102], p = 1.000 \)). These results reflect that the student respondents initially experienced a significant reduction in their reported levels of invested money for long-term financial goals in the previous six months, this behavior significantly increased in their mid-20s.

![Graph](figure43.png)

**Figure 43.** Within the Past Six Months, How Often Have You: Invested for Long-Term Financial Goals.
For a more complete glimpse into the respondent’s healthy financial behaviors in the previous six months, a mean score variable was created which encompassed these four questions and is utilized as a single measure. This measure was created for each data collection effort from Wave 1 – Wave 4. A total of 667 study participants are included in this analysis. There were no outliers and the data were normally distributed, as assessed by an examination of boxplots and Normal Q-Q Plots of each Waves scores. The assumption of sphericity was violated, as assessed by Mauchly's test of sphericity, $\chi^2(5) = 40.379, p < 0.001$, although Weinfurt (2000) suggests that such a violation is difficult to avoid given the sensitivity of the test in large samples (Kesselman et al., 1980). Therefore, a Greenhouse-Geisser correction (Greenhouse & Geisser, 1959) was applied ($\varepsilon = 0.959$) to control for the potential bias of too easily returning a statistically significant result from the repeated measures one-way ANOVA by adjusting the degrees of freedom utilized in the results (Maxwell & Delaney, 2004). The different time points illustrated statistically significant changes in how the respondents answered the question over time, $F (2.891, 1916.021) = 50.668, p < 0.001$, partial $\eta^2 = 0.071$. Between the waves, mean scores decreased from Wave 1 (respondent ages 18-21) ($M = 3.368, SD = 0.80$) to Wave 2 (respondent ages 21-24) ($M = 3.070, SD = 0.87$) before increasing to Wave 3 (respondent ages 23-26) ($M = 3.217, SD = 0.93$) and increasing again to Wave 4 (respondent ages 26-29) ($M = 3.539, SD = 0.94$) (figure 44). Post hoc analysis with a Bonferroni adjustment for multiple comparisons revealed that study participants responses increased in a statistically significantly manner from Wave 1 to Wave 4 ($M = 0.170, 95\% \text{ CI} [0.059, 0.281], p < 0.001$). Similarly, there was a statistically significant increase from Wave 2 to Wave 4 ($M = 0.469, 95\% \text{ CI} [0.358, 0.580], p < 0.001$) while a significant decrease occurred from Wave 1 to Wave 2 ($M = 0.299, 95\% \text{ CI} [0.201, 0.397], p < 0.001$). These results reflect that the student respondents initially
experienced a significant reduction in mean scores of the three questions related to healthy financial behaviors in the previous six months, this behavior significantly increased in their mid-20s.

**Figure 44. Mean Scores from Four Healthy Financial Behavior Questions**

**Summary of the One-Way Repeated Measures ANOVAs**

Conducting a one-way repeated measures ANOVA analysis on singular variables provides insight into how variables related to parent financial socialization, financial attitudes, and financial behaviors change over time. The results additionally provide support as to where the variability is happening within specific constructs and what may be the particular drivers of a significant predictive relationship or why we may observe the relationship between constructs decrease over time and as the individual ages. Many interesting results were found pertaining to not only those which changed over time, but also those measures which displayed stability through multiple waves of data collection. Student respondents were significantly more likely to report their parents displaying positive financial behaviors in Wave 2 than in Wave 1 ($p < 0.01$).
This result is interesting as it may reflect an increased awareness of financial matters from when they began undergraduate study versus when they are at the end of their undergraduate program. Conversations related to funding the child’s education and/or the need to share household financial data for federal financial aid application purposes may have made the student respondent more attune to the actions of their parents when they have more spending autonomy on a day-to-day basis. A significant decrease was observed when asking respondents if they make financial decisions based on what their parents have done in similar situations from Wave 2 to Wave 3. The large reduction occurring between Wave 2 and Wave 3 which suggest that when the student respondent has completed undergraduate study and is presumably making independent financial decisions, they are developing their own financial paths and more likely to behave in a way that is not consistent with their parents. This may also indicate the increasing importance and impact of romantic relationships and peers on the financial decision-making as a person grows through early adulthood. Similarly, respondents were less likely to report their parents being financial role models or that their parents have a positive influence on them as they grew older ($p < 0.001$). These are thought-provoking results as it may lend evidence to the individual become more aware of the shortcomings of their parent’s financial decision-making and/or making a clearer determination that they hold differing financial goals and values that their parents – a type of independent thought which may be difficult to formulate in their youth.

Respondents were found to steadily and significantly increase in their objective knowledge over time ($p < 0.001$) while their self-reported subjective financial knowledge increase during their traditional undergraduate years but then decreased thereafter ($p < 0.01$). The change in subjective financial knowledge warrants further discussion as it may suggest a declining personal confidence in a young adult’s ability to navigate an increasingly complex financial marketplace.
The expectations placed on young adults by their parents can be difficult to navigate as they are also working to develop their own skills and financial identity. This path towards independence is seen with the general peaked trajectory of parental subjective norms whereas the expectations to perform positive financial behaviors and the level of adherence to perform in a manner their parents want them to peaks at Wave 3 and then is greatly reduced. These results may be indicative of young adults striving for financial independence from their parents at the age previous cohorts were gaining that independence through traditional rites of financial passage such as purchasing a home or starting a family. However, the increased financial strain for young adults in the U.S. and the documented extended journey to true financial independence due to larger systemic and macro conditions may create conflict and anguish within the young adult. Surprisingly, the reported level of perceived behavioral control remained consistent throughout all four waves. It would be reasonable to expect that given these challenging economic environments for many young adults (i.e. stagnant wages, increased housing costs) would result in a feel of loss of control, yet that was not identified in this data. Survey respondents displayed a statistically significantly less positive attitude towards performing healthy financial behaviors s they grew older ($p < 0.001$) while they did experience slightly more positive financial communications with their parents during the same time frame ($p < 0.05$). Surprisingly, participants reported a significant reduction in financial satisfaction behaviors during their traditional undergraduate study years following by significant increases in Waves 3 and 4. Similar to the expected findings for perceived behavioral control, it would be understandable to observe a decrease in financial satisfaction given the increased likelihood of financial strain for young adults in the U.S. but that is not the data reports. Perhaps this sample of young adults are not experiencing the same amount of financial distress as others or they have made adjustments
to their own way of life and financial values which measure financial satisfaction in ways different than previous cohorts and not accurately captured by these specific questions. Concerning the self-reporting of recent healthy financial behaviors, each of the behaviors experience a downward peak whose valley occurs at Wave 2 and peak at Wave 4 ($p < 0.001$) except for the question regarding spending within a budget, which displays a steady trend downward through all waves of data. These are noteworthy findings as they indicate respondents in the samples performed more positive financial behaviors as they grow older past their traditional undergraduate years. These are positive results for the financial well-being for these individuals and suggests that young adults may be correctly identifying and displaying the behaviors which are likely to lead to long-term financial success.

**Structural Equation Modeling (SEM)**

**Wave 1**

In following the lead of Shim et al. (2010) to fit a Structural Equation Model (SEM) to test a hierarchal financial socialization model with the Wave 1 data, this work was reasonably able to produce similar results which suggest a socialization model with anticipatory socialization, and financial learning predicting attitudinal and behavioral indicators of the emerging adults. The intercorrelations between all of the included measures in the Wave 1 model is available in table 4.

To fit the proposed SEM of the predictive relationship between the latent constructs, all of the anticipatory socialization variables (parent SES, parent financial behavior, parent direct teaching, high school work experience, and high school financial education) were allowed to predict financial behavioral variables (financial relationship with parents, financial satisfaction behavior, and healthy financial behavior) through the hypothesized mediators of the financial
learning variables (adopting parental financial role modeling and financial knowledge) and
teaching (β = 0.44, p < 0.001) predicted higher values on adopting parental financial role
modeling. When looking at variable relationships with levels of financial knowledge, a higher
prevalence of parent direct teaching (β = 0.45, p < 0.001), presence of high school work
experience (β = 0.16, p < 0.001) and exposure to high school financial education each predicted
higher values of financial knowledge (β = 0.11, p < 0.05). Interestingly, a higher level of parent
SES did predict higher scores of financial satisfaction behavior (β = 0.74, p < 0.001) in Wave 1.
Increased scores of parental financial role modeling had a significant relationship with multiple
other variables such that it predicted higher values of parent subjective norms (β = 0.78, p <
0.001) along with higher values of both perceived behavioral control (β = 0.24, p < 0.001) and
financial attitudes (β = 0.26, p < 0.001). Increased scores of financial knowledge had an impact
across multiple variables in that it predicted higher scores of perceived behavioral controls (β =
0.24, \( p < 0.001 \)), financial attitudes (\( \beta = 0.32, \ p < 0.001 \)), and healthy financial behaviors (\( \beta = 0.38, \ p < 0.001 \)). How respondents’ parents expected them to behave seemed to impact the respondent’s financial behaviors in that higher values of parent subjective norms predicted a higher prevalence of healthy financial behaviors (\( \beta = 0.14, \ p < 0.001 \)). Higher degrees of perceived behavioral control predicted increasingly positive financial relationship with parents (\( \beta = 0.45, \ p < 0.001 \)) along with a higher prevalence of financial satisfaction behavior (\( \beta = 0.27, \ p < 0.001 \)) and more instances of healthy financial behavior (\( \beta = 0.24, \ p < 0.001 \)). Understandably, more positive financial attitudes predicted a more positive financial relationship with parents (\( \beta = 0.28, \ p < 0.001 \)) and a higher value of healthy financial behaviors (\( \beta = 0.37, \ p < 0.001 \)).

Figure 45. SEM Model Results Wave 1

**Wave 2**

To fit the proposed SEM of the predictive relationship between the latent constructs in Wave 2 and consistent with Shim et al. (2010), all of the anticipatory socialization variables
(parent SES, parent financial behavior, parent direct teaching, high school work experience, and high school financial education) were allowed to predict financial behavioral variables (financial relationship with parents, financial satisfaction behavior, and healthy financial behavior) through the hypothesized mediators of the financial learning variables (adopting parental financial role modeling and financial knowledge) and financial attitude variables (parent subjective norms, perceived behavioral control, and financial attitudes). Due to availability of data across waves, Wave 1 parent SES will be utilized along with parent direct teaching, high school work experience, and high school financial education. All other variables will come from the Wave 2 dataset. As illustrated in Shim et al. (2010), Wave 1 parent SES was additionally allowed to directly predict financial satisfaction behaviors and financial knowledge was allowed to directly predict healthy financial behavior. As also done in the Wave 1 analysis, each of the anticipatory socialization variables were allowed to correlate with one another as were the financial learning variables, financial attitudinal variables, and financial behavioral variables. The intercorrelations between all of the included measures in the Wave 2 model is available in table 5.

The model closely fit the data $\chi^2(786, N = 1,566) = 4740.995$, CFI = 0.937, RMSEA = 0.049 as measured by the fit indices (Hooper, Coughlan, & Mullen, 2008). All Wave 2 SEM paths are positive and statistically significant at the $p < 0.05$ level. Full results are shown in table 3 and figure 46. When exploring which variables had an association with the likelihood of adopting parental financial role modeling, it was found that higher perceived parent SES ($\beta = 0.09, p < 0.01$), higher level of parent financial behavior ($\beta = 0.65, p < 0.001$) and a higher prevalence of parent direct teaching ($\beta = 0.22, p < 0.001$) each predicted higher values on adopting parental financial role modeling. Increased levels of financial education were found to be associated with multiple sources of education including parents, school and work in that higher prevalence of
parent direct teaching ($\beta = 0.13, p < 0.001$), presence of high school work experience ($\beta = 0.12, p < 0.05$) and exposure to high school financial education predicted higher values of financial knowledge ($\beta = 0.17, p < 0.01$). Similar to what was observed in Wave 1, a higher level of parent SES did predict higher scores of financial satisfaction behavior ($\beta = 0.51, p < 0.001$). Higher scores of parental financial role modeling predicted higher values of parent subjective norms ($\beta = 0.78, p < 0.001$) along with higher values of both perceived behavioral control ($\beta = 0.23, p < 0.001$) and financial attitudes ($\beta = 0.19, p < 0.001$). In examining the association and impact that increased financial knowledge may have on an individual, Wave 2 data found that higher scores of financial knowledge predicted higher scores of perceived behavioral control ($\beta = 0.37, p < 0.001$), financial attitudes ($\beta = 0.32, p < 0.001$), and healthy financial behaviors ($\beta = 0.30, p < 0.001$). Higher values of parent subjective norms predicted a higher prevalence of healthy financial behaviors ($\beta = 0.11, p < 0.001$). When an individual has a higher measure of financial self-efficacy and feelings that they are in control of their ability to complete a financial plan, Wave 2 data suggests it has multiple positive relationships such that higher degrees of perceived behavioral control predicted increasingly positive financial relationship with parents ($\beta = 0.38, p < 0.001$) along with a higher prevalence of financial satisfaction behavior ($\beta = 0.40, p < 0.001$) and more instances of healthy financial behavior ($\beta = 0.18, p < 0.001$). In lending an example of how attitudes matter in behaviors, results found that more positive financial attitudes predicted a more positive financial relationship with parents ($\beta = 0.19, p < 0.001$) and a higher value of healthy financial behaviors ($\beta = 0.41, p < 0.001$) in Wave 2.
Wave 3

To fit the proposed SEM of the predictive relationship between the latent constructs in Wave 3, all of the anticipatory socialization variables (parent SES, parent financial behavior, parent direct teaching, high school work experience, and high school financial education) were allowed to predict all financial behavioral variables (financial relationship with parents, financial satisfaction behavior, and healthy financial behavior) through the hypothesized mediators of the financial learning variables (adopting parental financial role modeling and financial knowledge) and financial attitude variables (parent subjective norms, perceived behavioral control, and financial attitudes). Due to availability of data across Waves 1, 2 and now 3, Wave 1 parent SES will continue to be utilized along with parent direct teaching, high school work experience, and high school financial education. Parental financial behavior is only present in Waves 1 and 2 therefore Wave 2 values as the most recent measurement will be utilized for this analysis. All
other variables will come from the Wave 3 dataset. The intercorrelations between all of the included measures in the Wave 3 model is available in table 6.

As illustrated in Shim et al. (2010), Wave 1 parent SES was additionally allowed to directly predict financial satisfaction behaviors and financial knowledge was allowed to directly predict healthy financial behavior. For consistency between analyses, each of the anticipatory socialization variables were allowed to correlate with one another as were the financial learning variables, financial attitudinal variables, and financial behavioral variables. The model closely fit the data $X^2(786, N=977) = 2994.721$, CFI = 0.957, RMSEA = 0.037 as measured by the fit indices (Hooper, Coughlan, & Mullen, 2008). All Wave 3 SEM paths are positive and statistically significant at the $p < 0.05$ level except for two paths. These are the relationships of high school employment on financial knowledge and high school financial education on financial knowledge. These nonsignificant paths and are illustrated by a dotted line instead of a solid line on the appropriate Wave 3 SEM path diagram (figure 47). Full results are shown in table 3 and figure 47. The level to which a student respondent reported that they looked to their parents as financial role models and were likely to behave in a similar way when it comes to financial matters is suggested to be connected to the behaviors they have seen their parents exhibit and direct interactions about finances in that higher perceived parent SES ($\beta = 0.15$, $p < 0.001$), higher level of parent financial behavior ($\beta = 0.56$, $p < 0.001$) and a higher prevalence of parent direct teaching ($\beta = 0.17$, $p < 0.001$) predicted higher values on adopting parental financial role modeling. Similar to previous results suggesting a sustained relationship with the ability of parents to positively impact the financial knowledge of their children, higher prevalence of parent direct teaching predicted higher values of financial knowledge ($\beta = 0.18$, $p < 0.001$) in Wave 3. A higher level of parent SES did predict higher scores of financial satisfaction behavior.
(\( \beta = 0.26, p < 0.001 \)). Higher scores of parental financial role modeling predicted higher values of parent subjective norms (\( \beta = 0.72, p < 0.001 \)) along with higher values of both perceived behavioral control (\( \beta = 0.25, p < 0.001 \)) and financial attitudes (\( \beta = 0.15, p < 0.001 \)). Higher levels of financial knowledge continues to have an association with positive aspects of financial well-being in Wave 3 such that higher scores of financial knowledge predicted higher scores of perceived behavioral control (\( \beta = 0.53, p < 0.001 \)), financial attitudes (\( \beta = 0.38, p < 0.001 \)), and healthy financial behaviors (\( \beta = 0.30, p < 0.001 \)). Higher values of parent subjective norms predicted a higher prevalence of healthy financial behaviors (\( \beta = 0.13, p < 0.01 \)). Much like what was reported with the relationship between higher level of financial education and more positive financial well-being outcomes, Wave 3 data finds that higher degrees of perceived behavioral control also predicted increasingly positive financial relationship with parents (\( \beta = 0.44, p < 0.001 \)) along with a higher prevalence of financial satisfaction behavior (\( \beta = 0.44, p < 0.001 \)) and more instances of healthy financial behavior (\( \beta = 0.20, p < 0.001 \)). More positive financial attitudes predicted a more positive financial relationship with parents (\( \beta = 0.12, p < 0.01 \)) and a higher value of healthy financial behaviors (\( \beta = 0.37, p < 0.001 \)).
To fit the proposed SEM of the predictive relationship between the latent constructs in Wave 4, all of the anticipatory socialization variables (parent SES, parent financial behavior, parent direct teaching, high school work experience, and high school financial education) were allowed to predict all financial behavioral variables (financial relationship with parents, financial satisfaction behavior, and healthy financial behavior) through the hypothesized mediators of the financial learning variables (adopting parental financial role modeling and financial knowledge) and financial attitude variables (parent subjective norms, perceived behavioral control, and financial attitudes). Due to availability of data across Waves 1 - 4, Wave 1 parent SES will be utilized along with parent direct teaching, high school work experience, and high school financial education. Parental financial behavior is only present in Waves 1 and 2 therefore Wave 2 values will be utilized for this analysis as the most recent measure of the variable. Wave 4
variables are also not available for adopting parental role modeling, parental subjective norms, and financial attitude meaning Wave 3 variables of these constructs will be used for this analysis again as the most recent measures. All other variables will come from the Wave 4 dataset. The intercorrelations between all of the included measures in the Wave 4 model is available in table 7.

To be consistent with the previous Wave 1 – Wave 3 analyses and as illustrated in Shim et al. (2010), Wave 1 parent SES was additionally allowed to directly predict financial satisfaction behaviors and financial knowledge was allowed to directly predict healthy financial behavior. Each of the anticipatory socialization variables were allowed to correlate with one another as were the financial learning variables, financial attitudinal variables, and financial behavioral variables.

The model closely fit the data $\chi^2(786, N = 855) = 2530.788$, CFI = 0.966, RMSEA = 0.033 as measured by the fit indices (Hooper, Coughlan, & Mullen, 2008). All Wave 4 SEM paths are positive and statistically significant at the $p < 0.05$ level except for four paths which have some overlap with the nonsignificant paths found in the Wave 3 analysis. These are the relationships of high school employment on financial knowledge, high school financial education on financial knowledge, the relationship between parent SES and financial satisfaction behaviors, and the relationship between parent subjective norms and healthy financial behavior. These nonsignificant paths are signified by a dotted line instead of a solid line on the appropriate Wave 4 SEM path diagram (figure 48). Full results are shown in table 3 and figure 48. Higher perceived parent SES ($\beta = 0.15$, $p < 0.001$), higher level of parent financial behavior ($\beta = 0.56$, $p < 0.001$) and a higher prevalence of parent direct teaching ($\beta = 0.17$, $p < 0.001$) predicted higher values on adopting parental financial role modeling. In reiterating a sustained finding across waves, higher
prevalence of parent direct teaching predicted higher values of financial knowledge ($\beta = 0.09, p < 0.05$). Additional evidence of where an individual may gain their attitudes about money and financial self-efficacy is presented in Wave 4 such that higher scores of parental financial role modeling predicted higher values of parent subjective norms ($\beta = 0.71, p < 0.001$) along with higher values of both perceived behavioral control ($\beta = 0.23, p < 0.001$) and financial attitudes ($\beta = 0.17, p < 0.001$). Similar to results found in previous waves, higher scores of financial knowledge continued to predicted higher scores of perceived behavioral controls ($\beta = 0.46, p < 0.001$), financial attitudes ($\beta = 0.32, p < 0.001$), and healthy financial behaviors ($\beta = 0.38, p < 0.001$). The amount of control an individual feels they have in their lives concerning financial matters continues to have a significant relationship with multiple indicators of young adult financial well-being in that higher degrees of perceived behavioral control predicted increasingly positive financial relationship with parents ($\beta = 0.46, p < 0.001$) along with a higher prevalence of financial satisfaction behavior ($\beta = 0.30, p < 0.001$) and more instances of healthy financial behavior ($\beta = 0.29, p < 0.001$). Lastly, attitudinal indicators are consistently related to how an individual experiences financial relationships and the likelihood of recently performing positive financial behaviors in their own lives such that more positive financial attitudes predicted a more positive financial relationship with parents ($\beta = 0.22, p < 0.001$) and a higher value of healthy financial behaviors ($\beta = 0.14, p < 0.01$).
As the above results indicate, there are changes in the predictive relationships between anticipatory socialization, financial learning, and behavioral indicators over time. As illustrated in table 3, the result that some constructs move from being significant predictors of financial well-being indicators in earlier waves are no longer being significant predictors at later waves (i.e. high school employment) along with observing that the magnitude of the many relationships vary across the waves provides additional evidence towards the dynamic nature of how individuals develop financial behaviors and attitudes.

The impact of financial socialization variables such as parental financial behaviors and parent direct teaching on the financial learning variables of parental financial role modeling and financial knowledge shows variability on precisely which measures remain significant predictors across all four waves of data. Parent SES predicting the level adopting parental financial role
modeling remains positive and statistically significant for all four waves at least the $p < 0.01$ level meaning that a higher value of parent SES predicts a higher value of adopting parental financial role modeling across all Waves. However, the magnitude of the coefficient does change over time from a high of 0.311 in Wave 1 to a low of 0.093 in Wave 2 before increasing again in Wave 3 ($\beta = 0.153$) and Wave 4 ($\beta = 0.146$). The relationship of parental financial behaviors predicting the level of the respondent having adopted parental financial role modeling stays positive and statistically significant at the $p < 0.001$ level throughout meaning that a higher value of parental financial behaviors predicts a higher value of adopting parental financial role modeling across all four waves. However, the magnitude of the coefficient does change over time in that its lowest value is observed in Wave 1 ($\beta = 0.328$) and then increases in Wave 2 ($\beta = 0.652$) with similarly higher values reported in Wave 3 ($\beta = 0.562$) and Wave 4 ($\beta = 0.564$) illustrating that the respondent may not be expressing such similar financial behaviors as their parents until they are roughly complete with their undergraduate studies and are faced with a more complex financial life with more decision-making opportunities. The association the association between parent direct teaching and the student adopting parental role modeling remains positive and statistically significant at the $p < 0.001$ level at all waves meaning that a higher value of parent SES predicts an increase in the reported level of the respondent adopting parental financial role modeling across all four waves. However, the magnitude of the coefficient does change over time from a high of 0.436 in Wave 1 to a low of 0.166 in Wave 3 and remaining similarly low again in Wave 4 ($\beta = 0.167$) such that the association of parental SES (a combination of parent income and parent education level) may lesson over time. Contributing to the evidence that parents are a primary socialization agent and have a unique ability to impact the financial well-being of their child, the relationship of parent direct teaching as a child predicting
the value of financial knowledge remains positive and statistically significant at least the $p < 0.05$ level. This indicates that a higher value of parental direct teaching as a child predicted a higher value of financial knowledge across all Waves. However, the magnitude of the coefficient and level of significance is reduced over time from a high of 0.452 ($p < 0.001$) in Wave 1 to a low of 0.094 in Wave 4 ($p < 0.05$) which suggests that the relationship is decreasing over time and having less of an impact as the child gains additional opportunities to gain financial knowledge such as through full-time employment or interpersonal relationships outside of the family as they move closer to thirty years of age. Interestingly, the relationship of high school employment predicting the level of financial knowledge does not stay consistent across the Waves. While the coefficient is positive and statistically significant ($\beta = 0.161, p < 0.001$) in Wave 1 and Wave 2 ($\beta = 0.118, p < 0.05$), meaning a higher value of high school employment predicts a higher level of financial knowledge, this predictive relationship does not hold in Wave 3 or Wave 4 which indicates there is no connection between if the respondent was employed during high school or not and their level of financial knowledge beginning around their mid-20s.

Similarly, the relationship of high school financial education predicting the value of financial knowledge does not stay consistent across the four waves. While the coefficient is positive and statistically significant ($\beta = 0.109, p < 0.05$) in Wave 1 and Wave 2 ($\beta = 0.169, p < 0.01$), meaning a higher instance of high school financial education predicts a higher level of financial knowledge, this predictive relationship does not hold in Wave 3 or Wave 4 again suggesting that the level of exposure to formal financial education opportunities in high school only remained significant in predicting higher levels of financial knowledge through the traditional age of undergraduate study but then does not appear to have any association thereafter.
As shown in table 3, the association of individual financial learning measures predicting financial attitudinal variables (i.e. perceived behavioral control and financial attitude) was quite consistent and reasonably steady throughout the four waves of analysis adding evidence to their hypothesized role as mediators within the relationship of financial socialization indicators and financial behaviors. Adopting parental financial role modeling predicting both the value of parental subjective norms, perceived behavioral control, and financial attitude remains positive and statistically significant at the \( p < 0.001 \) level meaning that a higher value of adopting parental financial role modeling predicted a higher value of parental subjective norms, perceived financial control, and a more positive financial attitude across all Waves. There is one interesting note here pertaining to the relationship of adopting parental financial role modeling predicting the level of financial attitude. Although the relationship remains positive and statistically significant at the \( p < 0.001 \) level for all four waves, the magnitude of the coefficient is reduced over time from a high of 0.261 \( (p < 0.001) \) in Wave 1 to a low of 0.165 in Wave 4 \( (p < 0.001) \) which suggests that how respondents view their parents as financial role models and if they choose to behave like them in similar financial situations may have a lessoning role in the own attitudes towards performing healthy financial behaviors as they grow older.

The relationship of financial knowledge predicting the level of perceived behavioral control, healthy financial behaviors, and financial attitude remains positive and statistically significant at the \( p < 0.001 \) level meaning that a higher level of financial knowledge predicted a higher level of perceived behavioral control, higher prevalence of the respondent recently performing healthy financial behaviors, and more positive financial attitude across all four waves. One such result which stands out is the association between financial knowledge and perceived behavioral control in that the magnitude of the coefficient generally increases over
time from a low of 0.241 ($p < 0.001$) in Wave 1 to a high of 0.526 in Wave 3 ($p < 0.001$). Although this Wave 3 value is slightly reduced in Wave 4 ($\beta = 0.461, p < 0.001$), the Wave 4 result is still higher than what is observed in both Wave 1 and Wave 2. This variability suggests that as a person grown older and presumably is making more complex financial decisions with greater frequency, the more they know about finances the higher level of control they feel they have over their ability to successfully complete a financial plan.

The predictive relationship between the financial attitudinal indicators and financial behavioral indicators (i.e. displaying healthy financial behaviors and financial satisfaction behaviors) does display some shifting of statistical significance over time and coefficient trends where some variables increases in their relationship and others are reduced signaling a dynamic interchange of factors which may explain how individuals learn and develop their own financial behaviors over time. The relationship of parental subjective norms predicting the value of healthy financial behaviors does not stay consistent across the Waves. While the coefficient is positive and statistically significant ($\beta = 0.140, p < 0.001$) in Wave 1 and Wave 2 ($\beta = 0.106, p < 0.001$), this relationship has a reduced level of significance in Wave 3 ($\beta = 0.127, p < 0.01$) before there is no statistical significance being reflected in Wave 4 ($\beta = 0.065$). A higher instance of parental subjective norms predicts a higher level of healthy financial behaviors at Wave 1, Wave 2, and Wave 3 however this predictive relationship does not hold Wave 4 which suggests that parent expectations and the child’s desire to adhere to those expectations have a declining impact to the likelihood of the young adult performing healthy financial behaviors as they grow older and perhaps acquire new sources from which to learn financial norms from such as romantic partners or peers.
The relationship of perceived behavioral control predicting the score of financial relationship with parents, indicators of financial satisfaction, and positive financial behaviors remains positive and statistically significant at the $p < 0.001$ level meaning that a higher level of perceived behavioral control predicted a more positive financial relationship with their parents, more positive attitude towards performing positive financial behaviors, and actually performing those healthy financial behaviors recently in their own lives across all waves. Continuing off of the relationship noted between the level of financial knowledge and perceived behavioral control, results further indicate that perceived behavioral control predicting the score of financial satisfaction behavior shows a markedly large increase over time from a low of 0.273 ($p < 0.001$) in Wave 1 to a high of 0.456 observed in Wave 4 ($p < 0.001$) which suggests that as young adults age, the more in control of their financial matters they feel, the more indicators of financial satisfaction they exhibit. As displayed in table 3, the relationship of financial attitude predicting the level of financial relationship with parents and the reporting of performing positive financial behaviors does vary over time. Although the relationships remain positive and statistically significant at least the $p < 0.01$ level meaning that a higher level of financial attitude predicted a higher level of financial relationship with parents and higher amounts of positive financial behaviors across all waves, the magnitude of the coefficient and level of significance does fluctuate over time. The smallest coefficient and lowest level of significance for the predictive relationship of more positive financial attitudes predicting high levels of positive financial behaviors can be found in Wave 4 ($\beta = 0.137$, $p < 0.01$) compared with the highest value of 0.406 observed in Wave 2 ($p < 0.001$) which suggest that the attitude that individuals have about performing positive financial behaviors has a reduced association with them actually performing those healthy financial behaviors as they age through their 20s.
The relationship of parent SES predicting the value of financial satisfaction behavior does not stay consistent across the Waves. While the coefficient is positive and statistically significant in Wave 1 ($\beta = 0.738, p < 0.001$), Wave 2 ($\beta = 0.406, p < 0.001$), and Wave 3 ($\beta = 0.373, p < 0.001$) there is no statistical significance reflected in Wave 4 $\beta = 0.096$). This suggests that a higher instance of parental SES predicts a higher level of financial satisfaction behavior at Wave 1, Wave 2, and Wave 3 however this predictive relationship does not hold Wave 4.

The preceding Chapter 5 outlined the results of the one-way repeated measures ANOVA and structural equation modeling (SEM) procedures utilized to explore the relevant research questions. Results indicate that the individual variable and latent constructs commonly do not take a consistently linear path of either increasing or decreasing over time as student respondents age from Wave 1 to Wave 4 but instead may respond to changes in life stages or increases in the complexity of the respondent’s financial lives and information relevancy. For example, many constructs do not display a statistically significant change from Wave 1 to Wave 2, in which both comprise periods when the respondent is likely an undergraduate student, but do display a statistically significant different between Wave 1 and Wave 3/Wave 4 suggesting that some constructs or variable shift in their impact based on the current financial need and experiences of the respondent. Additionally, results of the SEM show that the importance of the parent’s impact on the future financial well-being through child and adolescent financial socialization continues to be strong. Results also display that while experiential learning experiences such as working during high school may be positive for a boost in financial knowledge, this impact lessons over time whereas formal financial educational opportunities reemerge as impactful on the financial well-being of the young adult. Next, a discussion which places these results within the context of
current knowledge along with outlining the research limitations and identifying fruitful areas for future research are presented.

**Attrition Analysis**

Through a multi-wave analysis of data comparing the results previously reported which utilize the full available sample size for each wave with a parallel analysis using a restricted subsample of respondents who completed the Wave 4 survey, I find that the full-sample results previously discussed are not significantly affected by the attrition of survey participants over time. While there are significant mean differences in how the Wave 4 completers and Wave 4 non-completers answered questions in Wave 1 related to two of the three main outcome variables, additional examination yielded important information. A probit analysis which sought to predict the likelihood of being a Wave 4 respondent given 15 Wave 1 demographic and primary construct independent variables and a multi-wave SEM procedure explored potential changes within the relationships between constructs with the restricted sample. The outcome of these analyses illustrates there is no material impact of non-random attrition on the results previously discussed. The following paragraphs discuss in more detail the attrition analyses performed, the results, and a discussion on the impact of the findings.

It is critical to consider the potential influence that participants who drop out of the study may have on the results. Additional analyses were conducted to examine whether the current results may be a byproduct of the characteristics of the respondents who answered Wave 1 survey questions \((N = 2,093)\) are significantly different from respondents who continued in the study and submitted complete answers to the Wave 4 survey \((N = 855)\). Three separate analyses are included in this section. First, a one-way ANOVA examines potential mean score differences between these two groups in how they answered three Wave 1 outcome variables, performing healthy financial behaviors, financial satisfaction behavioral indicators, and financial relationship
with their parents. Second, a probit analyses explores if Wave 1 demographic characteristics and other model constructs significantly predicted the likelihood that a respondent remained in the study and completed the Wave 4 survey. Third, SEM analyses is conducted for each wave (Wave 1 through Wave 3) using only those respondents who submitted a complete Wave 4 survey. This analysis will help determine what differences, if any, may exist between construct relationships when using this restricted subsample of all four waves of data versus four samples that use data available at each wave.

**Means Test for Outcome Variables**

A one-way ANOVA was conducted to determine if the mean score of performing healthy financial behaviors at Wave 1 was different for those respondents who are included in the Wave 1 data versus respondents who completed a full Wave 4 survey. When assessing the college student’s prevalence for performing healthy financial behaviors, participants were allowed to choose a response within a 1–5 scale where 1 = Never and 5 = Very Often concerning how often they have performed the stated positive financial behavior (i.e. track expenses, save for the future) in the previous 6 months. A higher value indicates a higher amount of healthy financial behaviors are taking place. Questions pertaining to performing healthy financial behaviors were included in Waves 1–4 of the APLUS data set. For the sample as a whole, the Wave 1 mean score was 3.26 ($SD = .82$) and the mean score for Wave 4 was 3.52 ($SD = .96$). Participants were classified into two groups: Wave 4 completers ($N = 855$) and Wave 4 non-completers ($N = 1,235$). There were no outliers, as assessed by a boxplot; and there was homogeneity of variances, as assessed by Levene's test of homogeneity of variances ($p = .972$). The differences between the mean score of performing healthy financial behaviors at Wave 1 for Wave 4 completers and Wave 4 non-completers was statistically significant, $F(1, 10.665) = 16.119$, $p <$
0.001. Mean scores were higher for Wave 4 completers ($M = 3.34, SD = .802$) than for Wave 4 non-completers ($M = 3.20, SD = .821$).

A one-way Welch ANOVA was conducted to determine if the mean score of reporting a positive financial relationship with parents at Wave 1 was different for respondents who are included in the Wave 1 data versus respondents who completed a full Wave 4 survey. When assessing the college student’s perception of continuing a positive financial relationship with their parents, participants were allowed to choose a response within a 1 – 5 scale where 1 = Strongly Disagree and 5 = Strongly Agree concerning how they communicate with their parents about finances. Scale scoring was reversed for the negatively worded questions such that a higher score indicates a more positive financial relationship with their parents (i.e. I argue a lot with my parents about money matters). Questions pertaining to the quality of the financial relationship with their parents were included in Waves 1 – 3 of the APLUS data set. For the sample as a whole, the Wave 1 mean score was 4.22 ($SD = .86$) and the mean score for Wave 3 was 4.39 ($SD = .75$). Participants were classified into two groups: Wave 4 completers ($N = 855$) and Wave 4 non-completers ($N = 1,237$). There were no outliers, as assessed by a boxplot; and there was no homogeneity of variances, as assessed by Levene's test of homogeneity of variances ($p < .001$). The differences between the mean score of reporting a positive financial relationship with parents at Wave 1 for Wave 4 completers and Wave 4 non-completers was statistically significant, $F(1, 15.023) = 20.671, p < 0.001$. Mean scores were higher for Wave 4 completers ($M = 4.32, SD = .789$) than for Wave 4 non-completers ($M = 4.15, SD = .894$).

A one-way ANOVA was conducted to determine if the mean score of financial satisfaction behaviors at Wave 1 was different for those respondents who are included in the Wave 1 data versus those respondents who completed a full Wave 4 survey. When assessing the
college student’s reflection of financial satisfaction behaviors, participants were allowed to choose a response within a 1 – 5 scale where 1 = Strongly Disagree and 5 = Strongly Agree concerning how satisfied they are with their current financial status. Scale scoring was reversed for the two negatively worded questions such that a higher score indicates a higher level of financial satisfaction behaviors (i.e. I have difficulty paying for things). Questions pertaining to the financial satisfaction behaviors were included in Waves 1 – 4 of the APLUS data set. For the sample as a whole, the Wave 1 mean score was 3.20 (SD = 1.03) and the mean score for Wave 4 was 3.32 (SD = 1.05). Participants were classified into two groups: Wave 4 completers (N = 854) and Wave 4 non-completers (N = 1,238). There were no outliers, as assessed by a boxplot; and there was homogeneity of variances, as assessed by Levene's test of homogeneity of variances (p = .450). Mean scores were higher for Wave 4 completers (M = 3.25, SD = 1.05) than for Wave 4 non-completers (M = 3.17, SD = 1.01). The differences between the mean score of financial satisfaction indicators at Wave 1 for Wave 4 completers and Wave 4 non-completers was not statistically significant, $F(1, 3.595) = 3.420, p = 0.065$.

The results of these analyses suggest some differences between Wave 4 completers compared to Wave 4 non-completers. For two out of the three outcome variables, the group of respondents who chose to continue participating in the study and completed a Wave 4 survey had a Wave 1 mean score that was statistically significantly different compared to those Wave 1 respondents who chose not to continue participating in the study through Wave 4. Specifically, Wave 4 completers were more likely to report both a higher instance of performing healthy financial behaviors within the previous 6 months of completing the survey and enjoying a more positive financial relationship with their parents at Wave 1 compared to Wave 4 non-completers. A common difficulty with longitudinal data collection is the risk of bias due to the drop-out of
study participants – or non-random attrition over time. One observation on why these results may be present revolve around the nature and topics of the questions themselves. Survey questions often require that the respondent face a situation or condition in their lives which may make them uncomfortable due to the potential of responding with a non-normative answer or an answer which has a perceived negative stigma attached. For example, if an individual does not feel confident in their own level of objective financial knowledge, completing this 15-item scale to measure the construct may be unappealing due to the likelihood of receiving a poor score and being faced with their own perceived lack of knowledge. While some student participant may react to this by actively changing their attitudes and behaviors to better conform with a social norm through positive actions, it is also possible that many respondents simply choose to avoid the embarrassing situation by choosing to no longer participate in future waves of the study. Similar thoughts may be shared with the self-reports of having a positive financial relationship with their parents. It is reasonable that a respondent may view that reporting a negative relationship where there is arguing or consistent disagreements as being stigmatized or not socially acceptable and therefore choose to remove themselves from being faced with the undesirable reality of their situation.

The implications and risks of these scenarios for researchers who study these constructs are that changes seen over time in the attitudes and behaviors of survey participants may not be a direct reflection of actual behavioral or attitudinal change in their lives, but instead merely the respondent molding their answers to those which may be viewed as more socially acceptable or normative for their peer group. It should also be noted that as the measure of objective financial knowledge remains unchanged throughout the waves of data collection, it is conceivable that the act of continued survey participation familiarizes the student participant with the question(s) over
time and increases the potential of submitting a correct answer for those who remain in the study. Overall, this dissertation utilizes a dataset from a non-randomized, homogenous group of college-educated students from one post-secondary educational institution in the southwest U.S. Consequently, the results are not reported as generalizable to other populations other than those that closely resemble the original dataset in its characteristics.

**Probit Analysis**

Additional analyses were conducted to examine whether a respondent’s answer to certain Wave 1 questions significantly predicted the likelihood of that respondent remaining in the study and submitting a complete Wave 4 survey. A probit analysis is a type of regression which may be used when the dependent variable is dichotomous. It is further an appropriate method to use when seeking to determine the probability of an event occurring or not occurring caused by a level of influence of some independent variables, such as in this attrition analysis (Postelnicu, 2011). The binary dependent variable in this case is defined with values of 0 and 1 where 0 = Not a Wave 4 survey completer and 1 = Wave 4 survey completer. Wave 1 independent variables included in the probit analyses included three demographic variables from Wave 1, parental SES, gender, and ethnicity, and Wave 1 model constructs including high school employment, high school financial education courses, objective financial knowledge, subjective financial knowledge, financial behavioral control, parent direct teaching, adopting parental financial role modeling, parent subjective norms, financial attitude, financial satisfaction behavior, performing healthy financial behaviors, and parent financial behaviors.

The final model estimates the parameters of the model controlling for the Wave 1 variables versus the intercept only model. The difference between the intercept only model and the final model is that the intercept only model does not control for any predictor variables and
merely fits an intercept variable to predict the binary outcome variable whereas the final model includes the predictor variables and improves upon the intercept only model by a process which seeks to increase the log likelihood of the outcome (UCLA, 2019). The final model chi square statistic \((72.840, 32) \ (-2LL = 2707.877)\) was statistically significant at the \(p < 0.001\) level and predicted the dependent variable of being a complete Wave 4 respondent (“a completer”), over and above the intercept-only model \(-2LL = 2780.127\). The Pearson goodness-of-fit test indicated that the model was a good fit to the observed data, \(x^2 (2018) = 2051.650, p = 0.296\), with a Nagelkerke Pseudo R-Square of 0.047. Therefore, the null hypothesis is rejected and it is concluded that the model intercept is statistically significantly different from zero, given all other variables are included in the model.

Examining the parameter estimates, several coefficients predicted the probability of being a ‘completer.’ The coefficient for the respondent’s financial attitude at Wave 1 is 0.117. This means that an increase in the mean score of the respondent’s financial attitude at Wave 1 increases the predicted probability of being a complete Wave 4 participant. The Wald test statistic for financial attitude is 8.373 with an associated \(p\)-value of \(p < 0.01\). Based on this test, the null hypothesis is rejected, and it can be concluded that the regression coefficient for financial attitude at Wave 1 is statistically different from zero and predictive of the respondent’s likelihood of submitting a complete Wave 4 survey, given all other variables are included in the model.

The coefficients for the respondent’s objective financial knowledge at Wave 1 (measured as earning a percentage correct score in objective financial knowledge) for scores between 20.1% - 40% is -0.438; for 40.1% - 60% is -0.355; and for 60.1% - 80% is -0.211. This means that an increase in the percentage of correct answers for objective financial knowledge at Wave 1
decreases the predicted probability of being a complete Wave 4 participant. The Wald test statistics for percentage correct score in objective financial knowledge at Wave 1 between 20.1% - 40% is 10.288; between 40.1% - 60% is 11.871; and between 60.1% - 80% is 4.670, all tests have an associated p-value of \( p < 0.05 \). Based on the Wald test statistics, the null hypothesis is rejected and it is concluded that the regression coefficients for these ranges of scores for Wave 1 objective knowledge is statistically different from zero, given all other variables are in the model. The reference group for these coefficients was the group with the highest objective financial knowledge score (80.1% - 100% correct).

Only the respondent’s financial attitude and objective financial knowledge predicted the probability of respondent completion. No other Wave 1 variables included in the model had a statistically significant coefficient at the \( p < 0.05 \). This means that none of the other model variables estimated coefficients were statistically significantly different than zero in its predicted probability of being a complete Wave 4 respondent, given all variables are included in the model.

Only two Wave 1 variables, out of the fifteen included in the probit model, resulted in a statistically significant difference in the likelihood of the respondent being included in the Wave 4 dataset. It is important to examine why we may see significant differences between the two groups for mean values of financial attitudes and quintile of objective financial knowledge and what implications may arise from those in terms of bettering understanding the outcomes. The financial attitude variable is operationalized in the APLUS data sets as the respondents stated views about performing the healthy financial behaviors such as tracking expenses or spending within a budget. Similar to the previous discussion about the likelihood of respondents who do not desire to be faced with their own financial shortcomings or be reminded of their potentially
less-than-positive financial behaviors, it is possible that student participants simply choose to avoid the situation and choose not to participate in future waves of the data collection while students who are more satisfied with their financial situations are more likely to participate given the increased probability of a rewarding outcome and feedback versus an embarrassing outcome. The implications for this dissertation and future research on these constructs is the ability for the data to capture reliable responses over time from a wide-array of participants across the financial behavior, attitude, and belief spectrum – not just high achieving or perpetually “financially fit” participants - as to ensure the results be adequately generalizable to the target population. Overall, the results of this probit analyses lend additional confidence that the model results presented earlier were due to an actual relationship between the model constructs rather than a simple byproduct of a difference in respondents who chose to remain in the study through Wave 4 versus those who did not.

**SEM Analysis**

Using a restricted subsample (N = 855) of respondents who submitted full data in Wave 4, an SEM analysis was conducted to determine if there are changes in the relationships between the constructs compared to previous SEM analysis using the larger sample that included all available data for respondents at each wave. The results of a restricted sample analyses will indicate whether previously reported results are, in part, a result of the larger sample characteristics that includes respondents who chose to continue as a study participant over the four waves. These SEM models estimate the same model constructs that were estimated and results presented earlier, as seen in figures 45 – 47. First, Wave 1, then Wave 2, and finally Wave 3 are compared with the two different samples.
Based on the SEM of Wave 1, only one relationship loses statistical significance, between high school employment and financial knowledge (the computed mean value of both objective and subjective financial knowledge). Higher rates of high school employment no longer significantly predict higher rates of financial knowledge in the restricted subsample \((N = 855, p > 0.05)\) whereas this relationship was significant when estimated using the original Wave 1 sample \((N = 2,093, p < 0.001)\). It should be noted that the relationship between high school employment and financial knowledge also loses significance in Wave 3, when restricted to the full Wave 3 sample \((N = 977)\). This indicates that that statistical significance was lost one wave sooner when the sample is restricted compared to the full sample model. As shown in table 9, all other Wave 1 variable relationships remain significant at the \(p < 0.05\) level.

In Wave 2, the relationships between constructs remain robust, with no changes in significant or insignificant relationships. All model variable relationships remain significant at the \(p < 0.05\) level when comparing the initial sample \((N = 1,566)\) to the restricted subsample of only Wave 4 completers \((N = 855)\). Full results are available in table 10.

In Wave 3, there are only two relationships between constructs which drops out of statistical significance and non-significant relationships also remain robust. Higher rates of parental subjective norms no longer significantly predict higher rates of performing healthy financial behaviors in the restricted subsample \((N = 855, p > 0.05)\) whereas that relationship was significant with the original Wave 3 sample \((N = 977, p < 0.01)\). Also, higher levels of positive financial attitudes no longer significantly predict higher rates of performing healthy financial behaviors in the restricted subsample \((N = 855, p > 0.05)\) whereas that relationship was significant with the original Wave 3 sample \((N = 977, p < 0.001)\). It may be important to note that the relationship between parental subjective norms and performing healthy financial
behaviors is also no longer statistically significant in Wave 4 when utilizing the full Wave 4 sample ($N = 855$) meaning that statistical significance was lost one wave sooner with the restricted sample of respondents than with the full sample. As shown in table 11, all other Wave 3 variable relationships remain significant at the $p < 0.05$ level with both samples. It is also important to note that the relationship between high school employment and high school financial education courses on level of financial knowledge remain insignificant ($p > 0.05$) in both the full sample and restricted sample.

Given that there are only three singular relationships over three full waves of analyses and 57 total hypothesized construct relationships which experienced a significant change in their statistical significance, these results increase the confidence in the findings with the full sample such that the relationships found between constructs is not significantly affected by the differences in the groups of respondents who chose to drop out of the study over time and those who chose to remain in the study over time.
Table 3. SEM path coefficients and significance across waves

<table>
<thead>
<tr>
<th>Variable</th>
<th>Wave 1*</th>
<th>Wave 2**</th>
<th>Wave 3***</th>
<th>Wave 4****</th>
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<tr>
<td>Anticipatory Socialization</td>
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<tr>
<td>Financial Learning</td>
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<td></td>
</tr>
<tr>
<td>1. W1 SES -&gt; PSO</td>
<td>0.311***</td>
<td>0.093**</td>
<td>0.153***</td>
<td>0.146***</td>
</tr>
<tr>
<td>2. PFB -&gt; PSO</td>
<td>0.328***</td>
<td>0.652***</td>
<td>0.562***</td>
<td>0.564***</td>
</tr>
<tr>
<td>3. W1 PFED -&gt; PSO</td>
<td>0.436***</td>
<td>0.223***</td>
<td>0.166***</td>
<td>0.167***</td>
</tr>
<tr>
<td>4. W1 PFED -&gt; KNOW</td>
<td>0.452***</td>
<td>0.134***</td>
<td>0.176***</td>
<td>0.094*</td>
</tr>
<tr>
<td>5. W1 PEMP -&gt; KNOW</td>
<td>0.161***</td>
<td>0.118*</td>
<td>0.086</td>
<td>0.078</td>
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<tr>
<td>6. W1 HSC -&gt; KNOW</td>
<td>0.109*</td>
<td>0.169**</td>
<td>0.021</td>
<td>0.038</td>
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<tr>
<td>Financial Learning</td>
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<tr>
<td>Attitudinal</td>
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<tr>
<td>7. PSO -&gt; PSN</td>
<td>0.778***</td>
<td>0.780***</td>
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<tr>
<td>8. PSO -&gt; FCONR</td>
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<td>9. PSO -&gt; FATT</td>
<td>0.261***</td>
<td>0.194***</td>
<td>0.150***</td>
<td>0.165***</td>
</tr>
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<td>10. KNOW -&gt; FCONR</td>
<td>0.241***</td>
<td>0.372***</td>
<td>0.526***</td>
<td>0.461***</td>
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<tr>
<td>11. KNOW -&gt; FBE</td>
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<td>0.297***</td>
<td>0.297***</td>
<td>0.378***</td>
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<td>12. KNOW -&gt; FATT</td>
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<td>0.322***</td>
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<td>Behavioral Indicators</td>
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<td>13. PSN -&gt; FBE</td>
<td>0.140***</td>
<td>0.106***</td>
<td>0.127**</td>
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<td>14. FCONR -&gt; PREL</td>
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<td>0.442***</td>
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<td>15. FCONR -&gt; FSAT</td>
<td>0.273***</td>
<td>0.399***</td>
<td>0.442***</td>
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<td>16. FCONR -&gt; FBE</td>
<td>0.243***</td>
<td>0.181***</td>
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<td>17. FATT -&gt; PREL</td>
<td>0.281***</td>
<td>0.190***</td>
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<td>18. FATT -&gt; FBE</td>
<td>0.373***</td>
<td>0.406***</td>
<td>0.373***</td>
<td>0.137**</td>
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<td>19. SES -&gt; FSAT</td>
<td>0.738***</td>
<td>0.507***</td>
<td>0.263***</td>
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</table>

Note: *p < 0.05 **p < 0.01 ***p < 0.001

$\chi^2$(786, $N = 2,093$) = 7005.051, CFI = 0.914, RMSEA = 0.061
$\chi^2$(786, $N = 1,566$) = 4740.995, CFI = 0.937, RMSEA = 0.049
$\chi^2$(786, $N = 977$) = 2994.721, CFI = 0.957, RMSEA = 0.037
$\chi^2$(786, $N = 855$) = 2530.788, CFI = 0.966, RMSEA = 0.033

SES = Parental SES; PSO = Adopting Parental Financial Role Modeling; PFB = Parental Financial Behavior; PFED = Direct Parental Teaching; KNOW = Financial Knowledge; PEMP = High School Employment; HSC = High School Financial Education (Courses and Seminars); FCONR = Perceived Behavioral Control; FATT = Financial Attitude; PSN = Parental Subjective Norms; FBE = Healthy Financial Behaviors; PREL = Financial Relationship with Parents; FSAT = Financial Satisfaction Behavior
Table 4. Wave 1 intercorrelations among constructs in model

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<td>3. High School Financial Education (HSC)</td>
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<td>.129</td>
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<tr>
<td>4. Adopting Parental Financial Role Modeling (PSO)</td>
<td>.681</td>
<td>.656</td>
<td>.032</td>
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<tr>
<td>5. Financial Knowledge (KNOW)</td>
<td>.252</td>
<td>.465</td>
<td>.174</td>
<td>.204</td>
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<td>6. Parent Subjective Norms (PSN)</td>
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<td>7. Financial Attitudes (FATT)</td>
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<td>11. W1 High School Employment (PEMP)</td>
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*Note.* All correlations significant at $p < 0.05$ unless italicized
Table 5. Wave 2 intercorrelations among constructs in model

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<td>10. Financial Relationship with Parents (PREL)</td>
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*Note.* All correlations significant at $p < 0.05$ unless italicized.
Table 6. Wave 3 intercorrelations among constructs in model

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Note. All correlations significant at p < 0.05 unless italicized.
Table 7. Wave 4 intercorrelations among constructs in model

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<td>-.053</td>
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*Note. All correlations significant at p < 0.05 unless italicized.*
Table 8. Results of probit analysis – likelihood of being a participant in wave 4

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<th>Wald</th>
<th>Sig.</th>
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<td>0.036</td>
<td>0.744</td>
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<td>Gender (ref. = female)</td>
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<td>Male</td>
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<td>0.061</td>
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<td>Ethnicity (ref. = White)</td>
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<td>Native American / Other</td>
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<td>High School Employment (ref. = all year long)</td>
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<td>0.626</td>
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<td>0.068</td>
<td>0.010</td>
<td>0.919</td>
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<td>Objective Financial Knowledge (ref. = 80.1 - 100%)</td>
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<td>20.1% - 40% Correct</td>
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<td>40.1% - 60% Correct</td>
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<td>60.1% - 80% Correct</td>
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<td>-0.003</td>
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Model Fitting Information

- Log Likelihood (-2LL) 2707.287
- Chi-Square 72.840***
| df | Goodness-of-Fit Pearson $x^2$ | df | 32 | 2051.650 | 2018 |

*Note.* S.E. stands for Standard Error. df = degrees of freedom. *$p<0.05$***$p<0.01$***$p<0.001$. 
Table 9. Wave 1 SEM path coefficients comparisons of initial sample versus complete sample from all waves

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<th>Wave 1⁺⁺⁺⁺</th>
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<td>N=855</td>
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<td>Anticipatory Socialization</td>
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<td>1. SES -&gt; PSO</td>
<td>0.311***</td>
<td>0.338***</td>
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<tr>
<td>2. PFB -&gt; PSO</td>
<td>0.328***</td>
<td>0.318***</td>
</tr>
<tr>
<td>3. PFED -&gt; PSO</td>
<td>0.436***</td>
<td>0.463***</td>
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<td>4. PFED -&gt; KNOW</td>
<td>0.452***</td>
<td>0.379***</td>
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<tr>
<td>5. PEMP -&gt; KNOW</td>
<td>0.161***</td>
<td>0.053</td>
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<tr>
<td>6. HSC -&gt; KNOW</td>
<td>0.109*</td>
<td>0.146*</td>
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<td>Financial Learning</td>
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<td>7. PSO -&gt; PSN</td>
<td>0.778***</td>
<td>0.795***</td>
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<td>8. PSO -&gt; FCONR</td>
<td>0.236***</td>
<td>0.206***</td>
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<td>9. PSO -&gt; FATT</td>
<td>0.261***</td>
<td>0.318***</td>
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<td>10. KNOW -&gt; FCONR</td>
<td>0.241***</td>
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<td>11. KNOW -&gt; FBE</td>
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<td>12. KNOW -&gt; FATT</td>
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<td>13. PSN -&gt; FBE</td>
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<td>0.128**</td>
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<td>15. FCONR -&gt; FSAT</td>
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<td>0.255***</td>
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<td>16. FCONR -&gt; FBE</td>
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<td>17. FATT -&gt; PREL</td>
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<td>18. FATT -&gt; FBE</td>
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<td>19. SES -&gt; FSAT</td>
<td>0.738***</td>
<td>0.691***</td>
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Note. *p < 0.05 **p < 0.01 ***p < 0.001
⁺⁺⁺χ² (786, N = 2,093) = 7005.051, CFI = 0.914, RMSEA = 0.061
⁺⁺⁺⁺χ² (786, N = 855) = 3017.617, CFI = 0.921, RMSEA = 0.058
SES = Parental SES; PSO = Adopting Parental Financial Role Modeling; PFB = Parental Financial Behavior; PFED = Direct Parental Teaching; KNOW = Financial Knowledge; PEMP = High School Employment; HSC = High School Financial Education (Courses and Seminars); FCONR = Perceived Behavioral Control; FATT = Financial Attitude; PSN = Parental Subjective Norms; FBE = Healthy Financial Behaviors; PREL = Financial Relationship with Parents; FSAT = Financial Satisfaction Behavior.
Table 10. Wave 2 SEM path coefficients comparisons of initial sample versus complete sample from all waves

<table>
<thead>
<tr>
<th>Variable</th>
<th>Wave 2$^+$ N=1566</th>
<th>Wave 2$^{++}$ N=855</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anticipatory Socialization</td>
<td>Financial Learning</td>
<td></td>
</tr>
<tr>
<td>1. W1 SES -&gt; PSO</td>
<td>0.093**</td>
<td>0.104*</td>
</tr>
<tr>
<td>2. PFB -&gt; PSO</td>
<td>0.652***</td>
<td>0.648***</td>
</tr>
<tr>
<td>3. W1 PFED -&gt; PSO</td>
<td>0.223***</td>
<td>0.247***</td>
</tr>
<tr>
<td>4. W1 PFED -&gt; KNOW</td>
<td>0.134***</td>
<td>0.105*</td>
</tr>
<tr>
<td>5. W1 PEMP -&gt; KNOW</td>
<td>0.118*</td>
<td>0.110*</td>
</tr>
<tr>
<td>6. W1 HSC -&gt; KNOW</td>
<td>0.169**</td>
<td>0.117*</td>
</tr>
<tr>
<td>Financial Learning</td>
<td>Attitudinal</td>
<td></td>
</tr>
<tr>
<td>7. PSO -&gt; PSN</td>
<td>0.780***</td>
<td>0.786***</td>
</tr>
<tr>
<td>8. PSO -&gt; FCONR</td>
<td>0.233***</td>
<td>0.258***</td>
</tr>
<tr>
<td>9. PSO -&gt; FATT</td>
<td>0.194***</td>
<td>0.207***</td>
</tr>
<tr>
<td>10. KNOW -&gt; FCONR</td>
<td>0.372***</td>
<td>0.215***</td>
</tr>
<tr>
<td>11. KNOW -&gt; FBE</td>
<td>0.297***</td>
<td>0.193*</td>
</tr>
<tr>
<td>12. KNOW -&gt; FATT</td>
<td>0.322***</td>
<td>0.208**</td>
</tr>
<tr>
<td>Attitudinal</td>
<td>Behavioral Indicators</td>
<td></td>
</tr>
<tr>
<td>13. PSN -&gt; FBE</td>
<td>0.106***</td>
<td>0.099**</td>
</tr>
<tr>
<td>14. FCONR -&gt; PREL</td>
<td>0.377***</td>
<td>0.360***</td>
</tr>
<tr>
<td>15. FCONR -&gt; FSAT</td>
<td>0.399***</td>
<td>0.379***</td>
</tr>
<tr>
<td>16. FCONR -&gt; FBE</td>
<td>0.181***</td>
<td>0.223***</td>
</tr>
<tr>
<td>17. FATT -&gt; PREL</td>
<td>0.190***</td>
<td>0.199***</td>
</tr>
<tr>
<td>18. FATT -&gt; FBE</td>
<td>0.406***</td>
<td>0.436***</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. SES -&gt; FSAT</td>
<td>0.507***</td>
<td>0.566***</td>
</tr>
</tbody>
</table>

Note. *p < 0.05 **p < 0.01 ***p < 0.001
$^+$ $X^2 (786, N=1,566) = 4740.995$, CFI = 0.937, RMSEA = 0.049
$^{++}$ $X^2 (786, N=855) = 2557.415$, CFI = 0.942, RMSEA = 0.051

SES = Parental SES; PSO = Adopting Parental Financial Role Modeling; PFB = Parental Financial Behavior; PFED = Direct Parental Teaching; KNOW = Financial Knowledge; PEMP = High School Employment; HSC = High School Financial Education (Courses and Seminars); FCONR = Perceived Behavioral Control; FATT = Financial Attitude; PSN = Parental Subjective Norms; FBE = Healthy Financial Behaviors; PREL = Financial Relationship with Parents; FSAT = Financial Satisfaction Behavior.
Table 11. Wave 3 SEM path coefficients comparisons of initial sample versus complete sample from all waves

<table>
<thead>
<tr>
<th>Variable</th>
<th>Wave 3*</th>
<th>Wave 3**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N=977</td>
<td>N=855</td>
</tr>
<tr>
<td><strong>Anticipatory Socialization</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. W1 SES -\rightarrow PSO</td>
<td>0.153***</td>
<td>0.144**</td>
</tr>
<tr>
<td>2. PFB -\rightarrow PSO</td>
<td>0.562***</td>
<td>0.524***</td>
</tr>
<tr>
<td>3. W1 PFED -\rightarrow PSO</td>
<td>0.166***</td>
<td>0.207***</td>
</tr>
<tr>
<td>4. W1 PFED -\rightarrow KNOW</td>
<td>0.176***</td>
<td>0.130*</td>
</tr>
<tr>
<td>5. W1 PEMP -\rightarrow KNOW</td>
<td>0.086</td>
<td>0.090</td>
</tr>
<tr>
<td>6. W1 HSC -\rightarrow KNOW</td>
<td>0.021</td>
<td>-0.028</td>
</tr>
<tr>
<td><strong>Financial Learning</strong> -\rightarrow Attitudinal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. PSO -\rightarrow PSN</td>
<td>0.723***</td>
<td>0.665***</td>
</tr>
<tr>
<td>8. PSO -\rightarrow FCONR</td>
<td>0.253***</td>
<td>0.286***</td>
</tr>
<tr>
<td>9. PSO -\rightarrow FATT</td>
<td>0.150***</td>
<td>0.190***</td>
</tr>
<tr>
<td>10. KNOW -\rightarrow FCONR</td>
<td>0.526***</td>
<td>0.594***</td>
</tr>
<tr>
<td>11. KNOW -\rightarrow FBE</td>
<td>0.297***</td>
<td>0.258**</td>
</tr>
<tr>
<td>12. KNOW -\rightarrow FATT</td>
<td>0.375***</td>
<td>0.400***</td>
</tr>
<tr>
<td><strong>Attitudinal</strong> -\rightarrow Behavioral Indicators</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. PSN -\rightarrow FBE</td>
<td>0.127**</td>
<td>0.069</td>
</tr>
<tr>
<td>14. FCONR -\rightarrow PREL</td>
<td>0.442***</td>
<td>0.365***</td>
</tr>
<tr>
<td>15. FCONR -\rightarrow FSAT</td>
<td>0.442***</td>
<td>0.425***</td>
</tr>
<tr>
<td>16. FCONR -\rightarrow FBE</td>
<td>0.198***</td>
<td>0.143*</td>
</tr>
<tr>
<td>17. FATT -\rightarrow PREL</td>
<td>0.119**</td>
<td>0.111*</td>
</tr>
<tr>
<td>18. FATT -\rightarrow FBE</td>
<td>0.373***</td>
<td>0.453</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. SES -\rightarrow FSAT</td>
<td>0.263***</td>
<td>0.280***</td>
</tr>
</tbody>
</table>

Note. *p < 0.05 **p < 0.01 ***p< 0.001

\( +x^2 (786, N = 977) = 2994.721, CFI = 0.957, RMSEA = 0.037 \)

\( ++x^2 (786, N = 855) = 2087.252, CFI = 0.956, RMSEA = 0.044 \)

SES = Parental SES; PSO = Adopting Parental Financial Role Modeling; PFB = Parental Financial Behavior; PFED = Direct Parental Teaching; KNOW = Financial Knowledge; PEMP = High School Employment; HSC = High School Financial Education (Courses and Seminars); FCONR = Perceived Behavioral Control; FATT = Financial Attitude; PSN = Parental Subjective Norms; FBE = Healthy Financial Behaviors; PREL = Financial Relationship with Parents; FSAT = Financial Satisfaction Behavior.
CHAPTER 6. DISCUSSION AND CONCLUSION

The following chapter contains four sections. The first section provides a discussion of the results to place the findings of this dissertation within the context of previous literature and to better illustrate its contribution to the current body of knowledge. The second section is the implications section and will provide guidance for what the results mean for the parents, children, educators, and financial service providers who are interested and concerned about financial socialization. Third, a limitations and future directions section will outline the principle limitations of this research in terms of the data used, statistical analysis performed, and sample characteristics. This section will also include suggestions for future research as well as suggestions of ways to mitigate the previously stated limitations. Lastly, a conclusion section will summarize the research process and key findings of this dissertation.

Discussion

The purpose of this research was twofold. First, to better understand how anticipatory socialization variables (i.e. parental financial behavior), financial learning variables (i.e. adopting parental financial role modeling, financial knowledge), attitudinal indicators (i.e. parent subjective norms, perceived behavioral control, financial attitudes), and behavioral indicators (i.e. financial relationship with parents, financial satisfaction behavior, healthy financial behaviors) change over time in this sample of college educated young adults. Second, to examine how the relationship among anticipatory socialization (parent, school, work), financial learning processes (adopting parental role modeling and financial knowledge), financial attitude, and financial behavioral indicators change over time.
This research repeatedly tested a four-level and hierarchical conceptual model of family financial socialization introduced by Shim et al. (2010). The model included a concentration on the role of parents, previous financial education, and high school employment on the financial behaviors, attitudes, and satisfaction of young college educated adults as they progress from their first year of undergraduate study to their late 20s. In short, the primary focus was to gain a better understanding about how the impact of these childhood and adolescent experiences may shape the future financial lives of these college students and how those relationships change over time. The results agree with the findings of Shim et al. (2010) and endorse the model as a device for understanding the associations between these variables and how young adults develop healthy financial behaviors and attitudes related to spending, saving, investing, and borrowing. However, it should also be noted that not all of these relationships held steady over time. Certain actions or experiences, such as direct parent financial teachings, became more or less significant at predicting the outcome variables, such as healthy financial behaviors, financial satisfaction behaviors, and experiencing a positive financial relationship with their parents, as the participant aged from wave to wave, and over a span of 8 – 11 years.

Pointedly, the importance of parental influence on the financial behaviors and outcomes of their children continues to be strong over time. This result matches previous findings of Serido et al. (2010) who found the quality of the communication between the parent and student was a significant predictor of the students’ financial well-being. The consistent results reflected in this sample, and those found in Serido et al. (2010), of college educated young adults lends credence to the value of having parents, or other role models, with whom a young person or adolescent can spend time with and benefit from their displays of positive financial behaviors and actions. As stated in previous literature, parents are the lens from which information is
transmitted to and interpreted to their children (Danes, 1994; Gudmunson & Danes, 2011).

Parents can provide the opportunities and context, and ideally model acceptable behavior in the complex marketplace. What it means to be a consumer in society is ever-changing, and the most significant relationship consistently reportedly is one’s parent or guardian (Mimura et al., 2015; Watson & Barber, 2016).

This dissertation found parents to have a continued role in their young adult child’s financial life. Parents or other role models in a child’s life should be keenly aware that their actions and behaviors around money, and their own financial decision-making, will likely leave a lasting impression. While explicit direct financial teachings may be more controlled and purposely facilitated, it is also the implicit teachings through everyday interactions and responses from socialization agents which imprint upon a child. Previous studies have reported similar results which outline a positive relationship between the financial actions and behaviors of parents and its predictive relationship with the child’s financial well-being (Jorgensen et al., 2017; Garrison & Gutter, 2010). The current sample of college students was not provided an opportunity to identify another primary caregiver other than a “parent.” However, it is likely that some proportion of those college students sampled had a primary caregiver other than a parent, such as a grandparent or older sibling. It is possible that students with a caregiver who was not a parent may have a unique experience. The role of non-parent caregivers has not been significantly addressed in the current literature, and it is possible that different observations and experiences are learned from caregivers based on age. For example, caregivers who are a generation older than that of their peer’s main socialization agent(s), or younger, in the case of a child who spends considerable time with an older sibling behaving in the marketplace, may produce varying results. A limitation of this dissertation is that the data did not allow for an
analysis comparing different types of primary caregivers or their age(s) and therefore I am not able to directly comment on how those students with such unique circumstances may differ from their peers.

This dissertation tested an earlier model of student financial well-being developed by Shim et al. (2009) and expanded in Shim et al. (2010). Whereas the analysis in Shim et al. (2010) was cross-sectional using only Wave 1 data (as the only available data at the time), this current study utilizes four waves of data collection spanning 8 – 11 years of the college student’s life, growth, and development. In Wave 1, the results of the structural equation models were similar to those found in the initial test of the conceptual model of financial socialization processes (Shim et al., 2010), however, Shim et al. (2010) tested the model using cross-sectional data. The model posits that the variables related to anticipatory socialization, including parent financial behavior and parent direct financial teaching, are related to measures of financial learning, such as adopting parental financial role modeling, and financial knowledge. Financial learning then leads to financial attitudinal indicators, as measured by constructs such as parents’ financial subjective norms. Finally, financial attitudes are predicted to result in increased behavioral outcome indicators like healthy financial behaviors and financial satisfaction behaviors. The model relationships outline financial socialization as an influential and predictive factor in the financial health and well-being of young adults and agree with Shim et al. (2010) as well as previous literature by both Jorgensen and Savla (2010) and Lyons (2004). Specifically, these findings support the similar results of Jorgensen and Savla (2010) in that parents were seen to impact the financial attitudes and behaviors of young adults. However, whereas Jorgensen and Savla (2010) reported no significant relationship was found between parental influence and the youth’s level of financial knowledge, these current results show a significant predictive
relationship between direct parent teaching and student financial knowledge across all four waves of data. It should be noted though that the measure of parental influence utilized in Jorgensen and Savla (2010) was not identical to the measure of direct parental teachings used in this dissertation but they do share common characteristics such as asking the respondent about how often they had direct discussions about finances with their parents.

With a continued goal of testing the conceptual model of student financial well-being over time to better determine if and where the relationships between constructs change, the relationship between the financial behaviors of the parents and financial attitudes and behaviors of the child were explored. Interestingly, the importance of the parent’s behaviors, actions, and expectations on the financial behaviors and attitudes of their children did vary when compared between waves. In Wave 1, how the students perceive their parents displaying positive financial behaviors, such as tracking their spending and regularly saving for the future, significantly predicted the level in which students reported modeling their own financial behavior after their parent’s financial behaviors. If the students believed that their parents were performing positive financial behaviors, the young adult was more likely to view them as a role model and emulate those same behaviors in their own lives. Understandably, respondents who viewed their parents as financial role models reported that they did in fact follow their parent’s expectation to perform those positive financial actions, which resulted in a significant increase in the occurrence of the student actually performing those healthy financial behaviors recently in their own lives.

A significant contribution of this dissertation is an examination about how the relationship between constructs may change over time as the college student develops and moves into different life stages. One such relationship is the connection between parental SES and self-reported financial satisfaction behaviors. While these current results successfully reproduce the
direct predictive paths of parent SES on more positive financial satisfaction behavior and financial knowledge on healthy financial behavior which agree with the results reported in Shim et al. (2010), not all relationships remain consistent over time. Although the relationship between a higher parent SES and higher level of financial satisfaction behavior was significant at Wave 1, Wave 2, and Wave 3, there is no statistically significant relationship reported in Wave 4. The presence of a direct predictive path of parent SES on financial satisfaction is understandable given this sample of college students are likely to be financially dependent on their parents, and this might be reflected in the financial satisfaction measure.

A higher parent SES parent may also be indicative of a greater ability to financially support their child, should they choose. A college student who is working on their undergraduate degree full-time may have a comparatively fewer number of financial responsibilities than an equally aged individual who chose to enter the workforce directly after high school. Reduced financial responsibility and fewer traditional bills to pay on a regular basis (i.e. utilities), when coupled with elongated financial dependence on parents to cover the costs of financial emergencies during this transition to adulthood, make it understandable that a direct predictive path would exist between parent SES and the college student’s level of financial satisfaction. As discussed in previous literature by Settersten and Ray (2010), while more parents are providing financial support to their adult children than was observed in previous generations, this delayed adulthood should not be viewed exclusively as a negative situation. The ability to receive support while earning the necessary credentials, such as a college degree, for success in many professions can be seen as a privilege for some young adults while others are not as fortunate. As this non-random sample is comprised entirely of young adults who made the initial decision to enroll in college and therefore presumably had the economic ability to do so (even in the case of
a student having low or no cost of attendance, there is a cost to foregoing the wages which would be earned in place of attending college), a limitation of this dissertation is that I am not able to comment on how the relationship between these two constructs may change for a population with different characteristics.

The role of educational funding may also play a part in the relationship between parental SES and young adult’s financial satisfaction. An increasing number of college students rely on educational loans to fund their postsecondary education (U.S. Department of Education, 2018), which may provide a temporary “relief valve” for any funding shortages experienced by students. For example, students who need to pay for necessary living expenses not covered by a potential alternate income source, such as part-time employment while enrolled, can rely on loans as a source of support. The unique postsecondary education experience for lower income families was outlined in research by Dancy and Barrett (2018) which utilized the National Postsecondary Student Aid Study and found that college students from low-income households were more likely to take out a loan amount which was in excess of their cost of tuition and fees. These results suggest that students from different socioeconomic backgrounds may be utilizing educational loans for different reasons such as to make up for a reduced level of family financial resources to help with necessary living expenses while in college. For example, recent research by Blagg, Whitmore Schanzenbach, & Ziliak (2017) reported that 11% of students who were enrolled at a four-year college were facing challenges to pay for food.

Previous findings by Jorgensen and Savla (2010) outlined how children view the behaviors of people around them, along with their environments, to form their own financial attitudes, values, and beliefs. Specifically, they report that college students who reported learning financial topics from their parents in an explicit, direct way were significantly more likely to
display increased levels of financial attitudes and positive financial behaviors when compared to college students who perceived their parents financial teaching to be primarily through implicit actions and behaviors. These results from Jorgenson and Salva (2010) are consistent with the findings in this study such that in both samples of college educated young adults, parents’ financial actions were emulated and parents served as the primary socialization agents.

The manner in which parents teach their children about money has a significant relationship with financial well-being later in life. The current study found that as respondents reported experiencing higher levels of direct financial teaching, it predicted higher values of financial knowledge, which then led to a direct path predicting more healthy financial behaviors of the young adult across all four waves of data. Besides the direct predictive path from financial knowledge to healthy financial behaviors, higher perceived instances of parent direct financial teachings impacted increased levels of recent healthy financial behaviors in the respondent, through increased positive student attitudes towards performing healthy financial behaviors. These findings are consistent with and build upon those of Shim et al. (2015) which utilized only Wave 1 and Wave 2 of the APLUS data set and found a positive relationship between the level of financial socialization received during childhood and positive financial behaviors through the mediators of financial attitude, control, and self-efficacy.

The method in which parents may engage in direct financial teachings may vary, but the common theme is that the act is deliberate and focused on teaching the child or adolescent a money-related topic or behavior. The dataset used in this dissertation provided participants several common examples of direct parent teaching such as discussing financial matters with a parent, speaking to a parent about the importance of saving, and being taught how to be a good shopper among others.
Not only do parent financial behaviors and parent direct teaching impact healthy financial behaviors (i.e. saving money for the future, spending within the budget), they were also shown to be significant predictors of increased behavioral control by the student, which in turn predicts a more positive financial relationship with their parents. As previously stated, a positive financial relationship with parents was measured by three conflict-oriented statements the respondent was tasked with choosing a level of agreement with. These statements include “My relationship with my parents is not good because of money issues.”; “My parents do not approve of my spending patterns in general.”; and “I argue a lot with my parent(s) about money matters.” The more the respondent disagreed with the statement, the more positive their financial relationship with their parent was measured to be. The findings of this dissertation are in line with discussions present in previous research by Allen et al. (2007) where the imagined conversations about money between college students and their parents can be significantly different based on the family’s style of communication and level of intra-family money arguments. The result of these feelings towards the communication and interaction with their parents are related to how the student then forms their own attitudes and beliefs about money. Positive conversations are more likely for students who feel they have enough financial resources to purchase what they need and desire to save their money and borrow less while a lower sense of control and financial adequacy may be related to less positive parent financial relationships and an enhanced level of conflict (Allen et al., 2007).

As it has been illustrated, increased levels of financial knowledge have been linked to several positive financial well-being and satisfaction indicators. Therefore, it is important to better understand which variables or constructs are positively or negatively associated with the college students’ level of financial education. In Wave 2, there is a notable downward trend of
some relationships involving financial knowledge. As student respondents are typically in their last year of undergraduate study, age 21-24, and are preparing for life after graduation. Some associations remain significant between Wave 1 and Wave 2, yet the power, or magnitude, of some of the relationships change. Parental financial behavior and parent direct teaching continue to be significant predictors of a student adopting parental role modeling in Wave 2. However, the magnitude of the relationship between parental financial behaviors and adopting parental financial role modeling nearly doubles, whereas the magnitude of the relationship between parent direct financial teaching and adopting parent financial role modeling is cut almost in half. These results suggest that this sample of college students is basing their decision if their parents are a positive financial role model for them in which they should emulate on the financial behaviors (implicit teaching) they have observed their parents performing and lessor on the direct financial teachings by the parent during the respondents youth or adolescents. In short, participants may be responding to the parents more recent and timely financial actions and behaviors than retrospective variables.

Interestingly, while high school employment and increased exposure to high school financial education were significant predictors of increased financial knowledge in Wave 1, the level of significance between the two is transposed in that high school employment is reported to be at the reduced $p < 0.05$ level in Wave 2 from the $p < 0.001$ level in Wave 1 and high school financial education’s predictive relationship on financial knowledge increases from the lower $p < 0.05$ level in Wave 1 to the greater $p < 0.001$ level in Wave 1. This suggests movement towards high school employment losing its predictive power on increased financial knowledge as the respondent ages. Yet, more formal high school financial education exposure may have an increasingly positive effect on the objective and subjective financial knowledge of these 21 – 24-
year-old young adults. This result related to the relationship between high school employment and financial knowledge may be in contrast with previous literature which examined the impact of high school employment and a financial well-being indicator – wealth accumulation. Utilizing the National Longitudinal Survey of Youth, Painter (2010) found that those students who reported more extensive work experiences while enrolled in high school were associated with a higher degree of wealth in adulthood. However, Painter (2010) also points out that coefficients did vary across time points which suggests that this relationship may change over time and the consideration for selection effects for students who are employed in high school must be considered (Bacolod & Hotz, 2006).

It also must be noted that the predictive relationships which remain consistent between Wave 1 and Wave 2 may illustrate the lasting impact of certain life experiences have on the financial behaviors of young adults. These include the Wave 2 results which indicate that adopting parental financial role modeling and financial knowledge continue to have a significant predictive relationship with the students perceived behavioral control which in turn displays a significant predictive association with a more positive financial relationship with their parents, increased financial satisfaction behaviors, and reporting more healthy financial behaviors. These findings concur with previous work by Grohman et al. (2015) who also reported that indicators of financial socialization had a positive and significant impact on the level of financial knowledge which, in turn, increased the respondents’ level of perceived financial control. Similar to the findings of Montford and Goldsmith (2016), this dissertation found that increased levels of financial knowledge continue to be a significant predictor of perceived behavioral control, frequency of healthy financial behaviors, and a more positive attitude towards positive
financial behaviors. This finding lends evidence to the suggestion that increasing the financial knowledge of adolescents may have lasting benefits past the immediate time after the exposure.

Wave 3 was collected when students were approximately 23 – 26 years old and were commonly several years out of undergraduate study which suggests an increased likelihood of them being exposed to a greater number of critical financial decisions such as managing credit and loan repayment, evaluating job offers and employee benefits, contributing to long-term savings goals such as retirement, and establishing financial independence from their parents. Similar to the relationship between Wave 1 and Wave 2 data, some associations remain consistent and some associations change or even disappear altogether. The predictive positive relationship of high school employment and high school financial education on the level of financial knowledge continues its downward trend such that there is no longer a significant relationship between them. This signals a potential decay in the positive predictive relationship that high school employment and high school financial education exhibited on the respondents measured level of financial knowledge as they increased from ages 18 – 21 in Wave 1 to ages 23 – 26 in Wave 3. These are interesting findings in that previous literature does show a link between rates of exposure to financial socialization and financial knowledge (Grohman et al., 2015; Serido et al., 2013), the question then becomes how long does that link exist. These results may be interpreted as indicating that high school financial education does not having lasting positive effects on the student’s financial well-being and therefore may have reduced value. I would caution against that view as the data utilized in this dissertation does not provide detailed information about the quality, relevancy, and robustness of the high school financial education experience reported by the respondent – all of which play a critical role in the ability for any intervention to meet its learning objectives. These results may better signal that while
experiential learning opportunities such as high school employment do provide a student a “head start” in their level of financial knowledge and self-efficacy, other students may be able to “catch up” later in life through their own experiences and interactions with socialization agents.

Increased positive parent financial behaviors continue to be a significant predictor of a higher frequency of adopting parental financial norms in Waves 1, 2, and 3 as seen by an increase of over 70% from the Wave 1 coefficient to the Wave 3 coefficient. The opposite trend appears when exploring the predictive relationship from direct parental financial teaching to both adopting parental role modeling and increased financial knowledge. While all relationships remain consistent at least the $p < 0.05$ level, the results indicate an over 60% reduction in the coefficients magnitude between parental direct financial teaching, adopting parental role modeling, and level of financial knowledge from Wave 1 to Wave 3. This trend suggests movement towards a reduced impact of childhood parent direct teaching on the respondents later life financial knowledge and, conversely, movement away from the young adults viewing their parents as financial role models and emulating financial behavior similar to that of their parents as they grow older. The predictive association between high school employment and high school financial education disappears and displays no significant association on Wave 3 levels of financial knowledge which continue the downward trend identified in Wave 1 and Wave 2 further suggesting a decay in the positive predictive relationship of high school employment and formal high school financial education on the financial knowledge of young adults. Parent financial behaviors continue to have a significant predictive relationship with adopting parental subjective norms, which in turn continue to display a significant predictive relationship with parent subjective norms, perceived financial control, and increased positive financial attitudes of the respondent to perform positive financial behaviors. Higher levels of positive financial
attitudes also continue to result in a significant predictive relationship with having a more positive financial relationship with their parents and the respondent performing more positive financial behaviors at Wave 3. These are similar results as seen in Wave 1 and Wave 2 indicating consistency in the positive relationship of childhood exposure to positive parental financial behaviors and positive financial role modeling and healthy financial outcomes for young adults. However, Wave 3 outcomes do illustrate changes in construct relationships also. Although the predictive association between increased parental subjective norms and the respondent reporting higher instances of performing positive financial behaviors remains statistically significant, the level of significance is reduced from $p < 0.001$ to $p < 0.01$ and signal a potential reduction in the impact of parental financial expectations and the likelihood for young adults to adhere to those parental expectations to perform healthy financial behaviors on the reporting that they actually perform those positive financial behaviors in their lives as they grow older. Similarly, other variables related to the impact of their parents and the environment from which they grew up on the current financial lives of young adults display variation. Specifically, the relationship between a higher parent SES and higher level of financial satisfaction behavior at Wave 1, Wave 2, and Wave 3 remains statistically significant yet the magnitude of that relationship is reduced by over 60% over the same time frame. This reduction, although still statistically significant, may indicate a declining impact of the socioeconomic environment in which the child enjoyed prior to college on their level of financial satisfaction with their lives as they age and experiencing increased financial independence from their parents. There may also be other potential interpretations of this result. As Wave 3 data allows for the first glimpse of post-undergraduate life for the respondents, there may also be considerations for the expectations they may have held about what their financial lives should look like compared with where it actually
stands. As similarly discussed in previous work by Allen (2010), parents set norms on how to act in the marketplace and how they are to behave. Therefore, a respondent growing up in a higher SES household may have become familiar with the goods and services which a higher SES household is more likely to afford.

An examination of Wave 4 data provides an opportunity for more data points in which to observe trends in the predictive relationship between parental financial behaviors, parent direct financial teaching, formal financial education, and financial knowledge on the financial behaviors and financial satisfaction of young adults. Wave 4 respondents ranged in age from 26 – 29 and continue to move into different life stages as signaled by increased levels of marriage and children being present in the household. The predictive relationship between high school employment and high school financial education continue to have no significant association with Wave 4 levels of financial knowledge. This finding is similar to the observed results in Wave 3 further suggesting a decay in the positive predictive association of high school employment and formal high school financial education on the financial knowledge of young adults. Similarly, although a higher prevalence of parent direct financial teachings in adolescence still significantly predicts increased levels of financial knowledge, the significance level is reduced down to the $p < 0.05$ level with the magnitude of the coefficient being reduced nearly eighty percent from Wave 1 to Wave 4. This suggests a general reduction in the impact, although still significant, of parent direct financial teaching early in life on the measured financial knowledge of young adults. With a better understanding of what may impact the level of respondent financial knowledge, the predictive relationship between an increased level of financial knowledge and other constructs may be more effectively explored. Specifically, higher financial knowledge remains a significant predict of increased levels of perceived financial control, more healthy
financial behaviors performed by the respondent, and more positive financial attitudes. It is also of note that the magnitude of these relationships remains consistent between Wave 1 and Wave 4 whereas the coefficient between increased financial knowledge and higher levels of perceived financial control actually increases over 90% from Wave 1 to Wave 4. Continuing the downward trend observed in Wave 1 to Wave 3, the predictive association between increased parental subjective norms and the respondent reporting higher instances of performing positive financial behaviors is no longer statistically significant in Wave 4. This lends additional evidence on the lessoning impact of parental expectations and the likelihood for young adults to adhere to those parental expectations to perform healthy financial behaviors on the young adult reporting they actually perform those positive financial behaviors in their lives as they grow older. While previous research by Cho et al. (2012) and Webly and Nyhus (2006) characterized a predictive relationship between the money behaviors of parents and adult children, these present results suggest a reduced adherence to those parental norms for this college educated sample of young adults from a single university cohort. It first must be pointed out that these results were found utilizing a demographically-limited sample of college students which is not generalizable to a larger population. However, these findings may also signal an increase in the prevalence of other socialization agents – such as peers, media, and educators – taking a larger role in modeling financial behaviors these students may emulate. As this sample is of college-educated young adults, it is understandable to view the “college experience” as unique in its ability to expose the individual to a plethora of different people, personalities, viewpoints, and ways of thinking or acting that may not be experienced by other populations.

To specifically answer the applicable research question, an examination of four Waves of data allowed us to report on observations and trends concerning the financial behaviors,
satisfaction an and attitudes of young adults as they aged from 18 – 21 to 26 – 29. Increased parental direct financial teaching was a significant predictor of increased levels of financial knowledge in all Waves of data while high school financial employment and high school education was a significant predictor of increased levels of financial knowledge only in Wave 1 and Wave 2. An increase in parental SES, parental financial behavior, and parental direct teaching was a significant predictor of an increase in parental subjective norms through the mediator of adopting parental financial role modeling. An increase in parental SES, parental financial behavior, and parental direct teaching was a significant predictor of an increase in perceived behavioral control through the mediator of higher levels of adopting parental financial role modeling. Increases in high school employment, high school financial education, and parental direct financial teaching were significant predictors of an increase in perceived behavioral control through the mediator of increased financial knowledge in all Waves. These findings are in partial agreement with previous research by Heckman and Grable (2011) which found study participants who experiences higher levels of household income reported higher levels of financial self-efficacy (a direct relationship between parent SES and financial knowledge was not tested in this dissertation). An increase in parental SES, parental financial behavior, and parental direct teaching was a significant predictor of an a more positive financial attitude through the mediator of higher levels of adopting parental financial role modeling while an increase in parental direct financial teaching was a significant predictor of an increase in perceived behavioral control through the mediator of increased financial knowledge in Waves 1 – 4. Hilgert et al. (2003) similarly reported a significant and positive relationship between the level of financial knowledge and individual reflects and their financial attitude and adding scholarly evidence to the existence of this path. This dissertation also finds that the significant
positive relationship displayed between parent financial behaviors and increased financial knowledge is consistent with previous literature which found that college-aged students learned financial topics through watching their parent’s actions (Solheim et al., 2011). An increase in parental SES, parental financial behavior, and parental direct teaching was a significant predictor of a more positive financial attitude through the mediators of higher levels of adopting parental financial role modeling and increased levels of perceived behavioral control in all Waves while increases in parental direct financial teaching were significant predictors of an increase in more positive financial relationships with parents through the mediator of increased financial knowledge in Waves 1 – 4. This consistent and positive relationship between direct parent financial teaching and increased perceived behavioral control was also noted in Lee and Mortimer (2009) which stated that children whose parents talked to them about their employment displayed an increased level of financial self-efficacy. Similarly, a significant positive relationship between increased occurrences of direct financial communication with the child by the parents and financial self-efficacy was noted in Shim et al. (2015). This dissertation found that an increase in parental SES, parental financial behavior, and parental direct teaching was a significant predictor of a heightened occurrence of financial satisfaction behavior through the mediators of higher levels of adopting parental financial role modeling and increased levels of perceived behavioral control in all Waves. Similarly, increases in parental direct financial teaching were significant predictors of an increase in higher levels of financial satisfaction behavior through the mediator of increased financial knowledge in Waves 1 – 4. An increase in parent SES remained a significant direct predictor of a higher level of financial satisfaction behavior in Waves 1, 2, and 3 but not in Wave 4. An increase in parental SES, parental financial behavior, and parental direct teaching was a significant predictor of a higher level of healthy
financial behaviors through the mediators of higher levels of adopting parental financial role modeling, more positive financial attitudes, and increased levels of perceived behavioral control in all Waves. These findings of a significantly positive association between parent direct teachings and more positive financial behaviors such as better money management and budgeting behavior (characteristics of more positive money management behaviors) are consistent with previous findings by Jorgensen et al. (2017) and Webley and Nyhus (2006) and add to the evidence towards the importance of parents as primary socialization agents of youth and adolescents. An increase in parent subjective norms was only a significant predictor or more healthy financial behaviors in only Wave 1, Wave 2, and Wave 3 but not in Wave 4. Increases in parental direct financial teaching were significant predictors of an increase in healthy financial behaviors behavior both through the mediator of increased financial knowledge and more positive financial attitudes in Waves 1 – 4.

After examining the results of the multiple waves of data analysis under the framework of the fours-step model of financial socialization introduced in Shim et al. (2010), these results contribute to the evidence that the role of parental financial socialization during the young adults adolescent years continues to have a significantly positive impact on the young adults development of healthy financial behaviors and positive financial attitudes well into the child’s mid – to late-20s and agree with previous literature which highlight the importance of parents in the financial socialization process (Allen, 2008). The results of this dissertation indicate that the importance of actions such as direct parent financial teachings during childhood and adolescence and perceived healthy financial behaviors by the parent(s) cannot be discounted as having a significant and lasting impact on the financial well-being of young adults. Similarly related to the importance of parental influence, the significant relationship between higher instances of
parental financial role modeling continued to have a positive impact on later life financial outcomes by consistently being a predictor of the young adult reporting more positive financial attitudes and higher levels of perceived behavioral control over their financial plans. This suggests that the behaviors, actions, and attitudes displayed by the parents and observed by the child may have a lasting impact on important financial indicators well past the child’s undergraduate college years and the role of parents being positive financial role models should not be overlooked as a valuable contributor to a young adults financial success.

It may also be concluded that the role of the parental expectations that their child displays healthy financial behaviors and a child’s level of adherence to those expectations may decline over time and eventually may not have any material effect on the individual’s financial behaviors later in life. Lastly, the significant impact of higher financial knowledge on higher levels of healthy financial behaviors and positive financial attitudes does hold over time and lends evidence to the importance of financial education interventions and experiences which aim at increasing children and young adults’ level of financial education on the child’s financial well-being into adulthood.

**Implications**

The findings of this dissertation have direct implications on the actions and work of parents, financial educators, financial counselors and planners, and researchers as stakeholders in the financial well-being of youth and young adults. First, these results reinforce the previous findings that parents are a primary financial socialization agent for children and adolescents. Therefore, as direct parental teaching was found to have a significant and positive relationship with several financial well-being indicators through the hypothesized mediators, parents would be well served to increase the amount of direct financial communication between them and their
child. This may incorporate including the child in the family financial matters along with discussing situations and appropriate alternatives with them. This may also take the form of verbally discussing their decision-making process when making a purchase with the child. Parents should not only be aware of their direct teachings, but also how their own behaviors impact the child’s development of financial skills as the child observing more positive parent financial behaviors was associated with higher values of financial well-being indicators for young adults. Parents are significant financial role models for children and how the parent approaches their own financial behaviors can have a lasting impact on the financial behaviors of their child. While it may be advisable that parents display healthy financial behaviors for their own positive development, these findings lend evidence to those behaviors having a separate impact on the next generation of consumers as well. Parents may also be advised to seek out and encourage children and adolescents to partake in formal financial education opportunities as this dissertation has suggested a structured financial education course taken in high school may have a stronger association with higher financial well-being as the child ages.

These results also create implications for financial educators. Increased level of financial knowledge – both objective and subjective – were found to be significantly associated with an increased level of perceived behavioral control, positive financial attitudes, and higher instances of the young adult performing healthy financial behaviors. Research-informed financial education interventions for children should be rigorously planned, designed, implemented, and evaluated to ensure they are able to provide the most positive impact possible on the participants level of financial knowledge. Although financial education interventions may most directly serve to increase the financial knowledge of the participant, there may also be an opportunity for youth financial educators to have a positive impact on the participants financial well-being as a
young adult by designing interventions which also work to increase their perceived financial control, or financial self-efficacy, as this was noted to have a significantly positive relationship with the young adults indicators of financial well-being.

Financial service professionals such as financial counselors and planners may also be interested in the findings of this dissertation. Increased levels of perceived behavioral control were found to have a significant and positive association with young adult financial well-being indicators such as higher levels of financial satisfaction behaviors, more positive financial relationship with their parents, and an increase prevalence of the young adult performing healthy financial behaviors such as tracking their expenses or saving money on a regular basis. These results suggest that should a financial counselor or planner be able to work with a young client and assist them to remedy their current financial stressors and challenges, create a long-term plan to address shortcomings and accomplish financial goals, and build up their financial capability for long-term financial success this may also serve to increase the young adults level of perceived control over their ability to successful complete a financial plan. This increased financial self-efficacy, in turn, may further contribute to an increased likelihood of financial well-being later in life. Financial counselors and planners may serve as mediators and facilitators of difficult financial conversations between parties. As increased direct financial teachings were found in this dissertation to have a significant positive association with young adult financial well-being indicators through the mediator of increased financial knowledge, a financial professional may additionally be able to have a positive impact on the financial life of that individual by facilitating opportunities for open communication between parents and adolescents about money behaviors and attitudes insofar that more positive communication takes place, more
positive parental financial behaviors are occurring, and parental financial role modeling bears a positive impact on the child’s future financial well-being.

The research fields of financial education, financial capability, and financial behavior have long suffered from a lack of longitudinal studies which would enable a comparison of how the relationships between variables or constructs may change, shift, disappear, or appear over time. Previous research has identified this shortcoming and identified it as a specific area of emphasis for future research (Walstad et al., 2017). As it applies to both the youth (about 11 to 18 years old) and young adult (ages 19 - 29) populations, Walstad et al. (2017) correctly points out that a majority of the available scholarship that examines the effectiveness of financial education has only looked at outcomes that can be best classified as short-term. They go on to state that “it is critically important to understand if those knowledge gains persist and how actual financial behaviors change in the long run” (p. 98). When considering youth, and specifically, the connection between the receipt of financial education and the actual financial behavior of college students, Walsted et al. (2017) opines that “linking financial education to increased financial knowledge is a first step, but it is equally important to determine if the education changes behavior over time” (p. 100).

**Limitations & Future Directions**

As with any research, this work is not without limitations. First, the demographic statistics of the multiple Waves of data collection show that the sample was predominantly White and narrowly focused to the age of traditional undergraduate students. The ratio between male and female respondents was also disproportionate as females made up a healthy majority in all waves and since the sample was recruited from the first-year cohort of one single U.S. university, these results should only be applicable to a population of young adults who attended
postsecondary education. However, the U.S. Bureau of Labor Statistics reported that only 69.7% of 2016 high school graduates enrolled in college the following fall (Bureau of Labor Statistics, 2017) indicating that there is a significant proportion of young adults whose development of financial behaviors and attitudes is not being adequately reflected in these findings. Also, given that the university from which the student respondents were recruited is located in the U.S., the results of these analyses should only be applicable to young adults who live within the social norms, values, customs, systems, and technologies experienced in U.S. society. Future studies may be able to address these limitations through the inclusion of more diverse sample in terms of gender, ethnicity, geographic location, age, educational pursuits, and finally respondents who have grown up within cultures different than what is commonly experienced in the U.S. This may allow researchers to apply the findings to a broader range of young adults.

Second, caution must be given when utilizing retrospective self-report data as is done in this data. For example, respondents are often asked a question which beings with “When you were growing up…”. It is understandable that a student respondent may not be perfectly accurate in their recollections which may lead to inaccuracies and inconsistencies within the data being analyzed. The dataset utilized in this research was compiled by collecting information and data from the child’s perspective and does not include any information related to the parent’s own recollection or reports. Therefore, the measures and answers to survey questions are only seen through the lens and viewpoint of the student. It is conceivable that the student respondent is incorrect in how they have perceived a situation or action to be which may have let to inaccuracies in the data being analyzed. An example of this is the respondent being asked to report on their parents combined annual income as part of the calculation towards the construct of parental SES or if their parents tracked their expenses. While it is possible that the student
respondent may accurately know that information, it is also understandable that a child commonly lacks the type of knowledge about their parent’s financial situation to answer such a question accurately. Future directions for research may address this shortcoming by also engaging with the parents of the student respondents in an effort to collect more precise data on variables relating to the household financial situation along with information regarding their own financial behaviors. This would increase confidence in the level of accuracy of the data which makes up the constructs of anticipatory socialization and the corresponding relationship that construct may have on the future financial behaviors and satisfaction of the children over time.

Third, given that the predictive power of some anticipatory socialization variables such as high school financial education and high school employment on future positive financial behaviors or financial satisfaction did not stay consistent over time, a limitation of this study is that many questions may be viewed as restrictive in their available response options. For example, when student respondents were asked to report on the number of financial education courses, they took in high school, the phrasing the question is “…how many courses did you take related to personal financial management, consumer education, economics, or business courses?” This makes it difficult to explore the impact of high school financial education as what financial education looks and feels like lacks a consistent definition. There are wide disparities in the quality of financial education courses and interventions for youth. Future directions for research may seek to reduce this limitation by developing questions which allow researchers to better parcel out more precise information on the format, environment, and applicability of the experience as to better identify which types or methods of financial education may have a differing impact on the later life financial behaviors, attitudes, and satisfaction of young adults.
Fourth, several variables utilized in this analysis are single-item variables. These include a single item question related to their high school employment history and asking the student respondent how easy or hard they find it to stick to a financial plan as a measure of perceived behavioral control and financial self-efficacy. The question that must be asked is if a concept such as perceived behavioral control can be measured so directly or might it be too complex or multidimensional to be accurately measured in a single question. A single-item question opens itself up to concerns about the wording, potential bias, or question order effects whereas multi-question scales for latent constructs allow for testing of internal consistency and are commonly seen as more stable, reliable, and precise measures over time and across different populations. Future directions for research may be able to glean additional details on the validity and reliability of the use of single measures in models and may find it advantageous to examine multidimensional and multiple question approaches to measuring latent constructs with the available data.

Fifth, although the longitudinal nature of the data set produces four waves of data encompassing respondent ages from 18 – 21 to 26 – 29, the relationships between many constructs and variables may need more time to develop a noticeable trend or association which may then increase confidence in the results. Within these age groups available through the four waves of data, the general lack of variability in the construct relationships may be viewed as also reflecting that the respondents over time, although older, may not have garnered enough life experiences and/or have move to another stage of life (both societal and interpersonal) yet to materially impact their lives. An example of this within the sample descriptive statistics in that at Wave 4, nearly 30% of the sample reports being married, nearly 60% still stating they are renting a home either by themselves or with others, and nearly 90% do not have children. Each of these
significant life events such as marriage, purchasing a home, or having a child can be seen as movement to different life stages and also significant financial milestones which may change how the variables and constructs collected in this dataset interact with each other. For reference, the U.S. Census Bureau (2018) reports that the proportion of married persons between the ages of 18 and 34 in the U.S. has dropped from 59% in 1978 to 29% in 2018 suggesting a trend that people are choosing to marry later in life. The U.S. Census Bureau (2019) is also reporting a downward trend in the rates of homeownership in the U.S. such that the second quarter of 2019 homeownership rate of 64.1% which is down from a rate of 69% observed roughly fifteen years previous in 2005. These statistics indicates that young adults are waiting longer to purchase a home compared to previous cohorts – for a wide range of potential reasons. The average age in which U.S. women have their first child has continued to rise in the last several decades. The average age to first childbirth in 1970 was 21.4 years old (Mathews & Hamilton, 2009) while the U.S. Centers for Disease Control and Prevention (2017) now report that average age to a women’s first child birth was 26.6 in 2016 which indicates women are delaying having their first child until later in life. Again, for a multitude of different reasons. Future research may address this limitation by continuing to follow and monitor this sample of young adults to continually examine the role that financial socialization, specifically from parents, plays in their financial behaviors, attitudes, and satisfaction as they progress further into adulthood.

**Conclusion**

Although young adults are expected to make a wide-range of critical financial decisions in an ever-evolving financial marketplace, the level of financial knowledge they possess in which to effectively evaluate their options and choose the correct option may be alarmingly low (Lusardi, Michell, & Curto, 2010). This perceived lack of capability to make effective decisions
regarding their future financial well-being and observed elongated path to financial independence for young adults has wider ramifications from economic, societal, and public policy circumstances should their cohort not be able to effectively drive the economy and markets of the future. To better assist and prepare young adults for the financial decision-making process, we must understand where and by what means young adults obtain their financial knowledge, attitudes, and behaviors and from which sources they are learning from as they develop their own financial skills.

The concept of financial socialization consists of the how, where, and from who individuals pick up their financial behaviors, values, and attitudes (Danes, 1994). While previous research has found that financial socialization has a significant and predictive relationship with the financial well-being of young adults, there is still much that is not known about how those relationships interact, change, and shift across time and as individuals age. This dissertation utilizes the conceptual frameworks of the Family Financial Socialization (FFS) model (Gudmunson & Danes, 2011) and an expansion of the Student Financial Well-being Model (Shim et al., 2010) to explore how the relationships between financial socialization variables, financial learning variables, financial attitudinal, and financial behavioral indicators change over time. This work also seeks to examine how the relationship among socialization agents, financial learning processes, financial attitude, and financial behavioral indicators change over time.

Using the longitudinal APLUS dataset which follows the same students from the approximate ages of 18 – 21 to 26 – 29, one-way repeated measures Welch ANOVAs were performed to explore the single item changes over time and structural equation modeling was conducted to examine the relationship changes between the constructs as the respondent grows older. Results suggest that young adults are less likely to make financial decisions based on what
their parents have done in a similar situation and to report their parents to be financial role models as they grow older. Similarly, young adults are less likely to perform positive financial behaviors in relation to their parent’s expectations they do so as they move into their late-20s although they do actually report performing more positive financial behaviors in Waves 3 and 4. While objective financial knowledge increases with age, subjective financial knowledge significantly decreases after the respondent’s traditional undergraduate years. Contrary to larger economic conditions, young adults displayed increase financial satisfaction behavior as they aged past traditionally-aged undergraduate study.

SEM analyses suggest there are changes in the relationship of the anticipatory socialization constructions of parent SES, parent financial behavior, parent direct teaching, high school work experiences, and high school financial education with the hypothesized mediator’s wave over wave. First, a higher value of parental financial behaviors predicted a higher value of adopting parental financial role modeling across all Waves. Increased levels of financial knowledge were significantly predicted by increased exposure to parent direct teaching, high school employment (Wave 1 and 2 only), and high school financial education (Wave 1 and 2 only). Interestingly, higher values of parental financial role modeling significantly predicted increased rates parent financial norms, perceived behavioral control, and financial attitude. Higher scores of financial knowledge significantly predicted increased perceived behavioral control, healthy financial behaviors, and financial attitude. Lastly, increased prevalence of recently performing healthy financial behaviors were predicted by higher rates of financial knowledge, parent financial norms (Waves 1-3 only), and financial attitude.

These findings provide additional evidence that the Student Financial Well-being Model introduced in Shim et al. (2009) and expanded in Shim et al. (2010) may be an appropriate
method to better understand how young adults develop financial behaviors, attitudes, and skills. Results also outline the continued importance of parents as primary financial socialization agents and that continued research to better understand the procedures, environments, and mechanisms in which children and adolescents engage with financial socialization agents and experiences may be beneficial towards establishing a more firm understanding the role of financial socialization on long-term financial well-being and satisfaction.
REFERENCES


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APPENDIX. IRB EXEMPT STATUS

IRB Exempt Status


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Your responses on the Human Subjects Research Assessment form (Does My Study Require IRB Oversight) indicate that your project does not involve research per the federal regulations (45CFR46.102 and 21CFR56). Accordingly, IRB oversight is not necessary.

Please be aware that this assessment is based on the responses you provided. No individuals from the IRB Office or Committee have reviewed this form or your project plans. The Human Subjects Research Assessment form does not replace an IRB application and this determination was made solely on the information provided within the form. If there is information that was not accounted for when responding to the questions in this form, it could change the determination. We recommend completing a new Human Subjects Research Assessment Form if there are any changes to your project plans.

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