ASSET AND HEALTH: EXAMINING THE ASSET-BUILDING THEORETICAL FRAMEWORK AND PSYCHOLOGICAL DISTRESS

Einav Srulovici

A dissertation submitted to the faculty at the University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the School of Nursing.

Chapel Hill
2014

Approved by:

Barbara Mark

Michal Grinstein-Weiss

George Knafl

Linda Beeber

Shawn Kneipp

ABSTRACT

Einav Srulovici: Assets and Health: Examining the Asset-Building Theoretical Framework and Psychological Distress
(Under the direction of Barbara Mark)

Policy makers who propose developing policies to improve the health of individuals have an enormously complicated task given the complex, multifaceted, and interacting determinants of health. For social determinants of health, research has been conducted to evaluate the relationship between *assets* and numerous health measures. Michael Sherraden's (1991) theoretical framework on asset-based welfare policy is acknowledged as the most complete statement thus far of these relationships. Several randomized trials based on Sherraden's framework have been conducted. However, few asset-building programs have examined the influence of asset building on health outcomes.

The purpose of this study was to test the asset-building theoretical framework using psychological distress as the dependent variable. The study employed longitudinal data from 6,295 families from the 2001 and 2007 Panel Study of Income Dynamics data sets. Structural equation modeling was used to test 7 direct and 7 indirect hypotheses based on the theoretical framework.

In general, the data displayed a good fit to the model in cross-sectional and longitudinal models. Most of the directional hypotheses were supported. Better individual components were associated with higher saving and investment actions and greater intergenerational transfers were associated with greater asset accumulation. However, institutional components and

intergenerational transfers were not associated with saving and investment actions. Unexpectedly, saving and investment actions were also associated with lower asset accumulation. Finally, greater asset accumulation was associated with an increase in psychological distress over time; however, less psychological distress was associated with an increase in asset accumulation over time.

Although the hypothesis of a reciprocal relationship between asset accumulation and psychological distress was only partially supported, it is important to examine this relationship in future studies before reaching a conclusion about it. In conclusion, the asset-building theoretical framework needs modifications so asset-building programs can be tailored to different samples.

To my mentors, family, and friends, I could not have done this without you.

Thank you for all your support along the way.

ACKNOWLEDGEMENTS

This dissertation would not have been possible without the support of many people. First, I would like to thank Barbara Mark, my advisor and chair. She has given me constant support, guidance, and encouragement during my PhD studies and the process of writing this dissertation. The decision to ask her to be my advisor and chair was one of the best I have ever made.

This dissertation was also written under the guidance of Michal Grinstein-Weiss, George Knafl, Linda Beeber, and Shawn Kniepp. All my committee members were generous with their time, knowledge, and advice.

Many thanks to Michal Grinstein-Weiss. She was the first professor to give me a chance as a research assistant and hired me to work with her on the Will Way team. Her enthusiasm for the asset-building field and its potential impact on health outcomes taught me that where there is a will, there is a way. I am deeply grateful to her for making the opportunity available to me and for providing ongoing, unwavering support. I am deeply indebted to George Knafl for his help with methodological and statistical issues at any time of the day. I am grateful to Linda Beeber and Shawn Kneipp, who contributed a wealth of knowledge regarding at-risk populations.

It was an honor to work as a research assistant for Kathleen Knafl and Margarete Sandelowski on the study "Mixed-Methods Synthesis of Research on Childhood Chronic Conditions and Family" funded by the National Institutes of Health. I developed new academic and research skills and gained knowledge of how children's chronic illnesses influence families.

I was also honored to work as a research assistant with Eric Hodges. He did more than open my eyes to the cues infants give during feeding; he was also a good friend.

I would like to thank the School of Nursing at the University of Haifa in Israel for their financial support. I also want to thank Aaron and Irma Spencer for the Cheryl Spencer Scholarship that helped me and four other colleagues from the University of Haifa pursue our PhDs, perform research, and educate the new generation of nurses in Israel. In addition, I would like to thank Anna Zisberg and Efrat Shadmi, from the School of Nursing at the University of Haifa in Israel. Without their help and emotional support, I would have never been here today.

I want to thank the Srulovici and Brock families for their love and support. I owe my parents, Yona and Zvika Brock, for their tremendous educational support since I was very young. Writing this dissertation was not easy, but it was enjoyable and rewarding just like raising my two adorable boys, Shahar and Aviv. Finally, I dedicate this dissertation to Ofir, the love of my life and my husband who moved all the way to the other side of the world to help me fulfill this dream. His support, encouragement, quiet patience, and unwavering love were undeniable strengths that I drew upon to succeed.

TABLE OF CONTENTS

LIST OF TABLES

Table

LIST OF FIGURES

LIST OF ABBREVIATIONS

ADD	American Dream Demonstration
AMND	Average monthly net deposit
BMI	Body mass index
CDA	Child development account
DH	Direct hypothesis
HH	Head of household
H1	Main hypothesis
IDA	Individual development account
IH	Indirect hypothesis
IRA	Individual retirement account
MI	Modification indices
MLE	Maximum likelihood estimator
OK	Oklahoma
PSID	Panel Study of Income Dynamics
PTSD	Post-Traumatic Stress Syndrome
R2S	Refund to Saving
RMSEA	Root mean square error of approximation
SEED	Saving for Education, Entrepreneurship, and Downpayment
SEM	Structural equation modeling
SHDP	Seoul Hope Dream Project
SIPP	Survey of Income and Program Participation
SRC	Survey Research Center

TANF	Temporary Assistance for Needy Families
TLI	Tucker-Lewis index
US, U.S.	United States

CHAPTER 1: BACKGROUND AND SIGNIFICANCE

Introduction

It has long been understood that an individual's health depends, to some degree, on their economic status. Until recently, it was common to measure economic status using a person's or a family's income, and considerable research has been conducted to evaluate the relationship between income and health outcomes (Banks, Muriel, & Smith, 2010; Berrigan, Dodd, Troiano, Krebs-Smith, & Barbash, 2003; Boyas, Shobe, & Hannam, 2009; Frank, Andresen, & Schmid, 2004; Kahn & Fazio, 2005; J. Kim, 2011). However, in the last two decades, a new perspective has arisen that suggests that economic status should be measured using both income (i.e., the flow of resources available on a daily basis) and assets (i.e., the stock of saved resources available for investments in the future), but little research has been conducted to examine the relationship between individuals' financial assets and their health.

Michael Sherraden's (1991) theoretical framework regarding asset-based welfare policy and Lerman and McKernan's (2008) extension of the theory to include a simultaneous relationship between asset accumulation and health and psychological well-being are together acknowledged as the most complete framework thus far for depicting these relationships. The asset-building theory states that three mechanisms can foster individuals' saving and investing of money: institutional mechanisms, individual mechanisms, and an intergenerational transfer of assets (Beverly & Sherraden, 1997; Beverly & Sherraden, 1999; Sherraden, 1991). Savings and investments can affect financial-asset accumulation, which in turn can affect and be affected by health outcomes (Beverly, Sherraden et al., 2008).

Few randomized trials based on asset-based welfare policy have been conducted to examine the relationship between asset building and health outcomes. The results are mixed and not entirely supportive of the asset-building theoretical framework (Grinstein-Weiss, Sherraden, Rohe et al., 2012; Y. Kim, Lee, & Kim, 2011; Ssewamala, Han, Neilands, Ismayilova, & Sperber, 2010). However, these studies did not comprehensively examine the entire theory; rather, they examined only parts of it. Therefore, a more comprehensive empirical examination of Sherraden's (1991) framework is the purpose of this dissertation.

To set the context for understanding Sherraden's (1991) framework, I will discuss the differences between assets and income, asset poverty and income poverty, and the strengths and weaknesses of assets and income measures. Next, I will review evidence from the literature about the relationship between assets and health outcomes and give an introduction to the asset-building theoretical framework and asset-building programs that have examined the relationships between assets accumulated through asset-building programs and health outcomes. Finally, I will describe the purpose and hypotheses of this study.

Economic Status and the Definition of Assets Versus Income

Historically, measures of income have been used to determine an individual's and/or a family's economic status. It is one of the three major components of socioeconomic status, the other two being education and occupation (Liberatos, Link, & Kelsey, 1988; Oakes & Rossi, 2003). *Income* refers to the flow of resources available on a daily basis; it can be a payment for a person's work in the labor force (e.g., wage earning), a public assistance program transfer, investment returns, or business profits (McKernan & Sherraden, 2008; Oliver & Shapiro, 1995; Shapiro, 2006; Sherraden, 1991). Income provides resources that can be spent on current consumption needs (Johnson & Sherraden, 1992; McKernan & Sherraden, 2008; Sherraden,

1991). Income is vital for the maintenance of everyday life, but it is not necessarily permanent (Rothwell & Han, 2010); therefore, a household that relies only on income is at risk for being driven into poverty during economic hardship. Putting aside a portion of income as savings can help fund future expenses (Sherraden, 1991).

Hurd, Juster, and Smith (2003) stated that measures of income (e.g., monthly or annual personal or household income) have several limitations that may cause significant bias. For example, people may find it difficult to estimate a household's or other family members' income levels or their own income if received on an irregular basis. They may also have difficulty when a question about income relates to previous years and not just the recent year.

In the United States (US), poverty is measured based on the annual cash income of a household, which means that a household below a certain threshold is considered poor (Haveman & Wolff, 2004). Low-income households that are considered poor may be eligible for several public assistance programs to help fulfill basic consumption needs essential to the well-being of families and their children (Nam, Huang, & Sherraden, 2008a). However, income support through public assistance programs is not enough to move low-income families out of poverty and break its intergenerational cycle, and increasingly, eligibility for these programs is shifting toward more temporary forms of assistance (Nam, Huang, & Sherraden, 2008b). The eligibility criteria of public assistance programs include asset tests (i.e., a household should have less than a minimum level of assets); thus, public assistance programs may depress savings and asset accumulation instead of encouraging low-income families to accumulate assets to leave poverty (Caskey, 1997; Nam et al., 2008a, 2008b; Sherraden, 1991).

A newer perspective suggests that income should not be the sole indicator for poverty but should be examined in addition to a measure of assets (Johnson & Sherraden, 1992; Shapiro,

2006; Sherraden, 1991). *Assets* refer to the stock of a household's saved resources available for investments for the future (McKernan & Sherraden, 2008; Shapiro, 2006; Sherraden, 1991), but they can also be converted into a flow of income during economic hardship (McKernan, Ratcliffe, & Shank, 2011). In asset-building research, "the term 'assets' is restricted to the concept of wealth, including both property and financial holdings" (Page-Adams & Sherraden, 1997, p. 423). Therefore, for the purposes of this dissertation, I will use the original terminology of each reviewed study, thus treating *assets* and *wealth* as equivalents unless defined differently in a particular study, at which point I will point that out.

Assets provide choices to individuals that can improve their long-term goals. They are essential for development (Rothwell & Han, 2010; McKernan & Sherraden, 2008). They can help one get ahead and plan for a better future (McKernan & Sherraden, 2008). They can create both financial security and opportunity (Sherraden, 1991). There are two types of assets: tangible and intangible. *Tangible* assets refer to savings, financial securities, and real estate property (e.g., buildings or land); *intangible* assets refer to human capital, cultural capital, political capital, and so forth (Nam et al., 2008b; Sherraden, 1991). Low-income individuals may have different concepts and definitions of assets than middle- or upper-income individuals (Nam et al., 2008a, 2008b). For example, middle- and upper-income individuals may consider vehicle ownership or stocks as assets that can be converted into cash for immediate use, but low-income individuals may consider household equipment such as a washing machine, a dryer, or a dish washer as a group of assets that in times of economic hardship could be converted into cash for immediate use. These different concepts and definitions of assets represent more than the difference in terminology for *assets*; they represent the difference in the amount of funds that can be secured by converting assets in times of need.

According to Beverly et al. (2008), there are several ways to define *asset accumulation*: liquid savings, retirement savings, net financial worth, home equity, and net worth. *Liquid assets* are relatively easy to convert to cash in a hardship situation and are the sum of checking and savings accounts, stocks and mutual funds, and other savings (Huang, 2011). *Retirement savings* are an important asset for an individual's and/or family's future financial balance, and it is often missing in low-income households (Cramer, Sherraden, & McKernan, 2008; Johnson & Sherraden, 1992). *Net financial worth* is "the total amount of financial resources accumulated as precautionary savings" (Nam et al., 2008b, p. 5). For most American families, *home equity* is the asset with the highest value when calculating net worth (Beverly et al., 2008; Shapiro, 2006). Finally, *net worth* is the difference between everything a person owns and everything a person owes (Carasso & McKernan, 2008; Sherraden, 1991).

Researchers have proposed an alternative approach to measuring household poverty, *asset poverty*, which provides a more complete definition that relies on assets in addition to income (Haveman & Wolff, 2004; Nam et al., 2008b; Sherraden, 1991). The most common definition of asset poverty is the lack of resources needed for a household to meet its basic expenses for three months in the absence of income (Haveman & Wolff, 2004; Nam et al., 2008a; Shapiro, Oliver, & Meschede, 2009). Many households may not be considered income poor but are asset poor (Nam et al., 2008b). An examination of 10 large cities in the US found that on average, 16% of households were income poor, 40% were asset poor, and 26% were extremely asset poor (i.e., households that had zero or negative net worth; Corporation for Enterprise Development, 2011). Shapiro et al. (2009) reported similar results: 42% of households of working age were asset poor. Asset poverty may be more persistent than income poverty, and

asset-poor households are more vulnerable to economic hardship than non-asset-poor households (Nam et al., 2008b).

Relationships Between Assets and Health

Income and assets are significantly correlated measures of economic status (Hajat, Kaufman, Rose, Siddiqi, & Thomas, 2010; Sherraden, 1991; Zagorsky, 2005). However, studies have shown that each contributes to the explained variance of health outcomes. The well-being of an individual, a family, or even a community is based on both income and assets; although income allows the fulfillment of everyday needs, assets can "create opportunities, secure a desired stature and standard of living, or pass class status along to one's children" (Oliver & Shapiro, 1995, p. 2). The most common measures of assets that have been used in developed countries are net worth, wealth, and homeownership.

It is hard to evaluate the influence of assets on health across studies because different studies have measured different components of assets (Carasso & McKernan, 2008; Pollack, Chideya Cubbin, Williams, Dekker, & Braveman, 2007). Among asset measures, there is variation in how a specific measure was calculated or manipulated across different studies. For example, studies that measured homeownership usually dichotomized the participants into homeowners and non-owners (Boyas et al., 2009; de Groot, Auslander, Williams, Sherraden, & Haire-Joshu, 2003; Grinstein-Weiss, Zhan, & Sherraden, 2006; Laaksonen, Sarlio-Lahteenkorva, & Lahelma, 2004), but some studies categorized them into three (e.g., owner occupier, private rental, and local authority or housing association) or four (e.g., owner, buying, renting, and rent free) categories (Shewry, Smith, Woodward, & Tunstall-Pedoe, 1992; Tanaka, Gjonca, & Gulliford, 2011). Different asset measures or different measurements of the same asset may create different results and magnitudes of results among studies. For example, Laaksonen et al.

(2004) found no significant difference in obesity between men who were homeowners and men who were not homeowners, and Shewry et al. (1992) found no difference in obesity between men who were homeowners and men who were private renters but did find that men who were homeowners were significantly less likely to be obese compared with men who were living in local authority or housing associations.

Asset-Building Theoretical Framework

The cornerstone of the asset-building theoretical framework is presented in Sherraden's (1991) asset-based welfare policy. The theory will be described briefly here and in more depth in the next chapter, and it explains what effects assets have on social, psychological, and economic welfare and how and why these effects occur. It states that individuals can accumulate assets through savings accounts or the investment of money into portfolio composition. Within the framework, there are three mechanisms that can help individuals save and invest money: (a) institutions can provide easy access to savings accounts and investments, encourage individuals to save and invest money with incentives, and increase their financial knowledge; (b) an individual's ability to save or invest money, which depends on the individual's resources, social networks, level of financial knowledge, orientation toward the future, motivation for saving, and experiences with successful savings in the past; and (c) an intergenerational transfer of assets, wherein parents with low income are likely to have fewer assets and can provide their children with fewer assets for their expenses than parents with higher levels of income and assets (Beverly et al., 2008).

Asset-building theory implies that assets can improve household stability because they can provide a buffer from economic hardship. They can also shape future opportunities for both children and adults because they are long-term components of wealth and having them can create

hope for the future that in turn increases individuals' self-improvement. They can provide choices to individuals that can improve their long-term goals. They allow multiple investments that can increase returns. They provide more control and security that increase self-efficacy and can increase social status and provide better positioning for negotiations. They increase political awareness; for example, homeowners may be more likely to vote due to automatic registration, and they will try to protect their main asset: their home (Sherraden, 1991).

Lerman and McKernan (2008) expanded the asset-building framework and included a simultaneous relationship between asset accumulation and health and psychological well-being. It is important to remember that even when results have suggested that increased wealth may have a positive influence on health, it is possible that wealth is an endogenous variable (i.e., a variable that is explained or predicted by one or more other variables) and that more limited health conditions may lead to less wealth (Burkhauser & Weathers, 2001; Robert & House, 2000; Yadama & Sherraden, 1996).

Asset Building From the Life-Course Perspective

The influence of a *life-course perspective* should be applied when specifically considering the asset-building approach toward health outcomes (Rank, 2008). The life-course perspective explains an individual's development through events and transitions over a lifetime. Those events and transitions can be both positive and negative. Factors that can influence asset-building across the life course include social class, intergenerational transfers, race, income, family structure, life-cycle stage, and timing of life events (Rank, 2008). For example, the chance to move out of poverty is not high for young, low-income, Black people who come from low-income families that cannot help them financially. However, the same individuals may have high motivation to succeed in life, which may push them to take on student loans, get a higher

education, get good jobs with good incomes, and save money. However, their families may also expect them to help other family members financially, which can make it more difficult to save and accumulate assets (Beverly et al., 2008). In addition, a negative life event may cause a chain of events that can adversely affect their wealth; a medical crisis may cause high expenses and the loss of work days, which in turn may cause job loss and so on (Barr, 2012).

Although the life course influences asset building, it should be noted that socioeconomic circumstances during the life course can also affect health outcomes (Shuey &Wilson, 2008; Wadsworth, 1997). Occupation, education, housing environment and homeownership, and family circumstances have different effects on an individual's health at each stage in life, such as during pregnancy, infancy, childhood, adolescence, and adulthood (Wadsworth, 1997). Pearlin, Schieman, Fazio, and Meersman (2005) found that individuals who suffered from ongoing economic strains during their lives had more health problems compared with individuals who experienced multiple periods of economic hardship but still had periods of economic relief.

Asset Building and Health Outcomes

According to Lerman and McKernan's (2008) extension of the asset-building theoretical framework, *health and psychological well-being* includes physical and mental health, an orientation toward the future, feelings of financial security, stress, happiness, and satisfaction from life. Holding more assets may improve physical and mental health by providing opportunities to look for appropriate care and financial security to deal with unexpected expenses such as illnesses (Lerman & McKernan, 2008; Oliver & Shapiro, 1995). For example, health insurance is usually obtained through an employer, but a person who holds more assets may be able to afford better health insurance even in the case of job or income loss. The utilization of health-care services will usually be greater and less expensive for a person with better health

insurance. Fewer assets, however, may lead to choosing no health insurance or a less expensive health-insurance plan with higher deductibles, which in turn can influence the decision to seek health-care services. In addition, holding more assets can reduce stress levels from unexpected costs (Lerman & McKernan, 2008). A person who holds fewer assets and needs to undergo an expensive medical procedure will probably be more stressed if that expenditure limits his or her ability to buy food or pay rent or the mortgage than a person who holds more assets and is less likely to be in that situation.

Finally, holding more assets makes it easier to plan goals for the future (Lerman & McKernan, 2008; Sherraden, 1991; Shobe & Page-Adams, 2001; Yadama & Sherraden, 1996), and an orientation toward the future may positively affect behaviors, including health behaviors, and attitudes (Grinstein-Weiss, Shanks, & Beverly, 2014; Lerman & McKernan, 2008; Ssewamala et al., 2010). Sherraden (1991) provided an example of the influence of future orientation on learning behavior. Sixth graders in Harlem, mainly poor children, were promised college tuition if they stayed in school. Although the high-school drop-out rate in that area was high, all the participants still living in the New York area at the study's conclusion graduated from high school, and about half enrolled in college. The participants explained that during their early lives, they and their families did not think they could afford college, so it was not an option for them. But the promise of tuition changed their and their families' beliefs and caused them to change their behaviors and stay in school. Ssewamala et al. (2010) stated that child development accounts (CDAs) for orphan youth from Uganda may have provided them hope for their future that in turn reduced their sexual risk-behavior intentions.

Evidence on the Relationship Between Assets and Health

Studies have provided empirical evidence on the positive impact of asset accumulation on health outcomes and health behaviors, particularly on physical-health outcomes. General health increased significantly across increasing wealth quintiles (Banks et al., 2010; J. Kim, 2011), and people in the lowest quartile of wealth had higher odds of reporting fair or poor health than people in the highest quartile (Cubbin et al., 2011; Finnegan, Marion, & Cox, 2005). Also, holding assets such as home ownership or checking accounts was significantly associated with better health statuses (Boyas et al., 2009). However, in the same study, wealth was not significantly associated with the general health of people 65 years or older when income was entered into the regression. That result may be explained by the fact that assets are not necessarily liquid (e.g., home equity) and therefore may not provide a flow of resources for immediate needs during retirement (Kahn & Fazio, 2005).

Asset accumulation was also associated with *psychological distress*. Psychological distress is usually defined as a state of emotional suffering characterized by symptoms of depression and anxiety. Therefore, scales that measure psychological distress typically share several items with scales that assess depression and anxiety levels (Drapeau, Marchand, & Beaulieu-Prévost, 2011). In studies that examined psychological distress, holding more assets was significantly associated with improving psychological distress (Carter, Blakely, Collings, Imlach Gunasekara, & Richardson, 2009; Headey & Wooden, 2004; Myer, Stein, Grimsrud, Seedat, & Williams, 2008; Xu, 2011) and lower depressive symptom severity (de Groot et al., 2003; Dew, 2007), but when only homeownership was evaluated as a measure of wealth, it was not significantly associated with depressive symptom severity (Muntaner, Eaton, Diala, Kessler,

& Sorlie, 1998). It may be that homeownership is not a sensitive-enough variable for evaluating this relationship.

Most studies that focused on obesity and body mass indices (BMIs) have found a significant association for health outcomes with assets. Less wealth was significantly associated with higher odds for obesity (Banks et al., 2010) when adjusted for income and education (Hajat et al., 2010) or for age, sex, and other socioeconomic status variables (Janssen, Boyce, Simpson, & Pickett, 2006). In addition, men and women have shown significantly higher odds of obesity if not homeowners (Laaksonen et al., 2004). In that study, the relationship was an association and not a causal effect; thus, fewer assets may have caused the obesity or obese participants may have accumulated fewer assets.

Inheritances of more than $10,000 have predicted substantial decreases in obesity and severe obesity rates (B. Kim, & Ruhm, 2010). People who reported having less than $10,000 in liquid assets and people who reported having more than $10,000 in liquid assets did not significantly differ in their BMI scores (Robert & Reither, 2004), but that finding may have been due to the cutoff of $10,000, which may not be sensitive enough to detect changes in BMI scores. Zagorsky (2004, 2005) found that over a period of 15 years, regardless of BMI, net worth increased over time. However, shifting from a normal BMI to an overweight BMI to an obese BMI was followed by a decline of net worth. In addition, individuals that had less than the median wealth before retirement had a significant increase in their BMI scores after retirement, but individuals that had more wealth before retirement had no significant change in their BMI scores after retirement (Chung, Domino, & Stearns, 2009).

It appears that general health, psychological distress, and BMI are associated with asset accumulation. However, a potential reverse causality needs to be considered when examining

health outcomes and asset accumulation. People who hold fewer assets may experience a higher level of psychological distress because they feel less secure about their lives and futures or people experiencing greater psychological distress may skip work or need medical attention that limits their asset accumulation.

Evidence on the Relationship Between Assets and Health Behaviors

In addition to health outcomes, some studies in the US have reported significant relationships between assets and health behaviors. A negative association was found between wealth and smoking (Banks et al., 2010; Cubbin et al., 2011; Hajat et al., 2010; Headey, Marks, & Wooden, 2005), and a positive association was found between physical activity and wealth for both youth (11–15 years old; Janssen et al., 2006) and older people (55–80 years old; Banks et al., 2010). The influence of wealth on smoking and physical activity may be related to more knowledge about healthier lifestyles and the financial ability to be a gym member and engage in physical activity. Despite the assumption that greater wealth would be related to less alcohol consumption[1], study results have been mixed. Some studies found that greater wealth was positively associated with higher alcohol consumption (Banks et al., 2010; Headey et al., 2005; B. Kim & Ruhm, 2010), and others found it was negatively associated with higher alcohol consumption (Muntaner et al., 1998). It is difficult to interpret those findings due to the different measurements used in each study.

[1] Different studies had different definitions for alcohol consumption. Banks et al. (2010) defined heavy drinking as drinking six to seven days per week and moderate as one to five days per week. Kim and Ruhm (2010) used a continuous variable that was the product of the number of weekly drinking days times the number of beverages consumed on those days over the last three months. Headey et al. (2005) and Muntaner et al. (1998) both used vaguer definitions of "standard alcoholic drinks consumed per month" and "alcohol abuse or dependence", respectively.

Summary

Asset accumulation is a financial activity that can be achieved through institutional, individual, and intergenerational support and can influence individuals', families', and communities' health outcomes and health behaviors. Studies have found evidence that higher assets are related to better health outcomes and more positive health behaviors. However, there is little evidence from asset-building program interventions about these relationships. Most of that evidence, which will be discussed in depth in the next section, does not indicate statistically significant differences in health outcomes between participants in treatment groups (e.g., participants who received the opportunity to open an individual development account [IDA] or CDA) and participants in comparison groups (e.g., participants who did not receive such opportunities). These results may have various causes including study designs and analytical methods.

Due to the limited evidence about the relationships between assets and health using the asset-building theoretical framework, Lerman and McKernan (2008) suggested that "more empirical evidence is needed to assess the benefits and consequences of assets for low-income, low-educated, and minority households" (p. 201). Although the asset-building theoretical framework implies an association between assets and health, more studies should be done to examine the topic in general and particularly to examine the theory in its entirety. This study will try to fill that gap in the knowledge about the relationships between assets and health, relying on the asset-building theoretical framework.

Asset-Building Programs

Sherraden (1991) proposed IDAs as a way to encourage individuals and families to change their saving behaviors and accumulate assets. Usually, an asset-building program

includes three key mechanisms: matched IDA savings, constraint of matches to specific purchases (i.e., the entire amount that was saved plus matches can be withdrawn only for a preset goal such as higher education, a down payment for a home, or the seed money to start a business) with the opportunity to make unmatched withdrawals, and financial education (Nam, Ratcliffe, & McKernan, 2008; Page-Adams & Sherraden, 1997; Sherraden, 1991). Child development accounts are another form of IDA that provide children and their families with institutional support for accumulating assets through savings. Asset-building programs that provide CDAs usually offer matched CDA savings with matches that are constrained to specific purchases, an initial deposit, and sometimes benchmarks (Grinstein-Weiss et al., 2014; Huang, Sherraden, & Purnell, 2014; Mason, Nam, Clancy, Kim, & Loke, 2009; Loke & Sherraden, 2009).

Asset-building programs can help low-income individuals and families build savings and improve their economic, social, health, and psychological well-being by accumulating assets. They are intended to encourage long-term savings and can have a positive influence on children's and parents' behaviors, aspirations, and goals. This improvement can lead to higher educational performance, better well-being, and better health outcomes (Lerman & McKernan, 2008; Sherraden, 1991). Therefore, both IDAs and CDAs are assumed to assert positive influence in a variety of areas that might also affect each other. For example, opening a CDA may help a child develop an orientation toward the future, improve the child's educational attainment, and reduce his or her risky health behaviors (Grinstein-Weiss et al., 2014; Scanlon & Adams, 2009; Shobe & Page-Adams, 2001; Ssewamala et al., 2010).

Evidence From U.S. Asset-Building Programs on the Relationships Between Assets and Health

Only a few studies of asset-building programs have examined the relationships between assets and health; these studies presented mixed results. The primary large-scale demonstration

project that examined the influence of IDAs on low-income individuals in the US, called the American Dream Demonstration (ADD), was conducted in 14 states from 1997 until 2001. For 13 of the 14 states, non-experimental research and cross-sectional methods were applied. However, at the ADD Tulsa, Oklahoma (OK) site, an experimental study was implemented in which participants were randomly assigned to treatment (i.e., access through the program to a matched IDA and financial education) and control (i.e., no access through the program to a matched IDA or financial education) groups. The Tulsa OK ADD experiment was carried out in three waves: the first at baseline before the random assignment to intervention and control groups, the second at the first follow-up 18 months after the random assignment, and the third at a second follow-up 48 months after the random assignment (Grinstein-Weiss, Sherraden et al., 2013). None of the waves examined the influence of asset accumulation on health outcomes.

Moore et al. (2001) conducted a cross-sectional survey with 318 ADD participants from 13 sites, not including the Tulsa OK ADD experiment site. All participants had received an opportunity to open a matched IDA. The majority reported that they felt more confident about their future because of their IDAs, and 30% reported spending less on cigarettes and alcohol to set aside money for their IDAs. But 17% reported that they postponed visits to the doctor or dentist to set aside money for their IDAs. These findings suggest that IDAs may be associated with a decline in smoking and alcohol consumption. However, it is disturbing that some participants reported postponing visits to the doctor or dentist to set aside money for their IDAs, which is not the intent of asset-building programs. Because the study had a cross-sectional design that included only participants who received an opportunity to open a matched IDA, there was no way to track changes over time in smoking and alcohol consumption. In addition, there

was no comparison group, so differences between participants who had the opportunity to open a matched IDA and participants who did not could not be examined.

A fourth wave was added to the Tulsa OK ADD experiment ten years after the random assignment. It measured health and health-behavior outcomes. There were no statistically significant differences between treatment and control groups regarding BMI, general health, pain interference with work, health limits, medical expenses in the past year, and drinking and smoking behaviors; however, there were also no significant differences between treatment and control groups regarding net worth, homeownership, and total assets (Grinstein-Weiss et al., 2013). The strength of the Tulsa OK ADD is that it was a randomized controlled study, and the strength of the fourth wave is that it had lower attrition rates compared with the third wave participation (Grinstein-Weiss et al., 2012; Grinstein-Weiss et al., 2013). Despite these strengths, no health outcomes or health behaviors were significantly better for participants in the treatment group compared with the control group ten years after random assignment. However, it was not the intent of the original program to evaluate the influence of IDAs on health outcomes. Some health outcomes may have been short-term, such as alcohol consumption or smoking behaviors, with no effect over a longer term after the intervention ended. In addition, there was no baseline for comparing the results for both short- and long-term outcomes; therefore, there was no way to examine the change in health outcomes over time.

Saving for Education, Entrepreneurship, and Downpayment (SEED) was an asset-building program tailored to children. Wheeler-Brooks and Scanlon (2009) described SEED as "a national policy, practice, and research initiative designed to test the efficacy of universal and progressive accounts for children and youth" (Wheeler-Brooks & Scanlon, p. 758). Twelve community-based organizations across the country and in Puerto Rico operated the SEED

children and youth savings account programs . In 2008, 2,704 newborn children in OK, which constituted 37% of the newborns in OK that year, were enrolled in an asset-building program called SEED OK. Those newborn children were randomly assigned to treatment or control groups, and their mothers reported outcomes to the study. The treatment group received a state-owned CDA with $1,000 and an opportunity to open a participant-owned CDA with a program contribution of $100 to open it, and the control group received no intervention. The participant-owned CDA was a matched savings account for low- and moderate-income families.

Controlling for baseline depressive symptoms, mothers in the treatment group reported significantly fewer depressive symptoms at the 3-year follow-up compared with mothers in the control group, though what was measured was participants' self-reported intent to treat symptoms rather than actual treatments received. For low-income and low-education subsamples, that relationship was significantly greater when compared with the entire sample. There were no significant sociodemographic differences between treatment and control groups at baseline, and there was a low attrition rate (16%) between 2008 and 2011 (Huang et al., 2014). It is also significant that only 37% of OK's families with newborns agreed to participate in the SEED OK program (Huang et al., 2014). That low-response rate may imply a selection bias and have limited the generalizability of the findings.

The Michigan SEED program was conducted in 2004. According to enrollment and demographic characteristics, 14 Oakland Livingston Human Service Agency Head Start centers were matched as pairs to administer the program. In each pair, one center was randomly assigned to be the treatment group and the other center was randomly assigned to be the control group; thus, participants were assigned to either treatment or control groups based on which center they utilized. The study participants were parents of the children eligible for the program. A total of

790 participants enrolled in the program. The treatment group received an initial deposit of $800 into a matched CDA for each participant. Both the treatment and control groups had a decrease in their psychological distress levels between baseline and the 4-year follow-up, which was measured as a self-reported intent to treat. However, there was no significant difference between their distress levels at that time (Marks, Rhodes, Engelhardt, Scheffler, & Wallace, 2009). A Limitation of the Michigan SEED study includes significant differences between treatment and comparison groups at baseline in terms of race, the ratio of adults to children living in the household, average housing payments, and possessing savings (Marks et al., 2009).

Evidence From Asset-Building Programs Outside the US on the Relationship Between Assets and Health

Asset-building programs have been conducted in developed and developing countries outside of the US. An IDA and CDA program called the Seoul Hope Dream Project (SHDP) was implemented in 2008 in Seoul, South Korea**.** Participants in the SHDP were considered the treatment group, and the comparison group was selected from the Korea Welfare Panel Study data set. The treatment group received an opportunity to open a matched IDA in 2009 and reported at 1- and 2-year follow-ups that they experienced less stress and anxiety and more positive feelings and changes in psychological well-being. They showed orientation toward the future by reporting that after completing the program, they were setting new plans for the future and had continued to save money by reducing their consumption (Y. Kim, Lee, & Sherraden, 2012).

However, the SHDP had several limitations: (a) The program did not use random assignment to determine treatment and comparison groups as every person who participated in the Seoul Hope Dream Project received the IDA opportunity and the comparison group was selected from the Panel Study of Welfare. Thus, conclusions about causality cannot be drawn;

(b) The program only examined changes over time for participants in the treatment group and provided qualitative evidence of positive changes in stress, anxiety, positive feelings, and psychological well-being for that group. There was no examination of differences between participants in the treatment and comparison groups or changes over time for the comparison group; (c) The high attrition rate (25%) between baseline and 1-year follow-up may have introduced bias into the results; and (d) There were significant differences between participants in the treatment and comparison groups at baseline for factors such as age, education, and working status (Y. Kim et al., 2011), and those differences may have introduced selection bias and may have caused biased results.

An asset-building project called the Suubi project was conducted between 2005 and 2008 in Uganda for orphans with acquired immunodeficiency syndrome (AIDS). *Suubi* translates as *hope* in the local Ugandan language. The participants from 15 schools were randomly assigned to treatment or control groups at the school level. Randomization at the school level is a strength of the study because it reduces the threat to construct validity due to treatment diffusion (Shadish, Cook, & Campbell, 2002), meaning that there is a lower chance that children who study in different schools share information about the program. At the 10-month follow-up, participants in the treatment group had a statistically significant reduction of 64% in self-reported sexual risk-taking intentions (Ssewamala et al., 2010). However, the study examined only intentions and not actual sexual risk behaviors; therefore, there is no way to know if the treatment group indeed reduced their risky sexual behaviors compared with the control group.

Additionally, at the 20-month follow-up, participants in the treatment group reported a significant decrease in their depressive symptoms, and participants in the control group reported no significant change in their depressive symptoms. At baseline, the treatment group had also

reported significantly lower depressive symptoms compared with the control group, but a double robust estimator suggested that even if the depressive symptoms at baseline had been similar between the two groups, the treatment group would still have indicated significantly lower depressive symptoms compared with the control group at both the 10- and 20-month follow-ups (Ssewamala, Neilands, Waldfogel, & Ismayilova, 2012).

The Suubi project's outcomes have construct validity threat because of the participants' potential reactivity to the experimental situation, wherein youth in treatment groups try to provide results that will satisfy the researchers (Shadish et al., 2002). Also, baseline results showed that treatment and control groups were significantly different in household size; ownership of hut, mud, or brick homes; peer pressure to have sexual intercourse; and intentions to have sexual intercourse (Ssewamala et al., 2010). However, Ssewamala et al. (2010) stated that they controlled for those variables in the regression analyses.

Summary

Asset-building programs that provide low-income individuals and families the institutional support to open matched and restricted IDAs and financial education encourage participants to change their saving behaviors and accumulate assets. Several asset-building programs have been conducted in the US and around the world; however, only a few programs have examined the influence of asset-building on health outcomes, and even fewer were originally set up to examine health outcomes. In the future, it will be helpful to research asset building programs that utilize random assignment to be set up in advance to collect health outcomes data that will theoretically change within the study timeframe due to asset accumulation. The information in those programs needs to be collected in a longitudinal manner using several time points, and they need to include both short-term and long-term health

outcomes. Regarding health behaviors that can be changed in the short- and long-term, those outcomes should include both intended and actual behaviors.

Purpose and Hypotheses of the Study

The asset-building theoretical framework suggests that assets may have positive influences on health outcomes and health behaviors and that better health and health behaviors may have positive influences on asset accumulation. Prior studies found that holding more assets was significantly associated with better health outcomes. However, results from the few studies that examined this relationship were mixed. That may be due to the limited nature of those studies; only two asset-building programs in the US, the ADD and SEED, tested the relationship between assets and health, and the ADD collected health variables only 10 years after random assignment. The Korean asset-building program, the SHDP, did not compare the change in health outcomes between treatment and comparison groups and had a high attrition rate. The asset-building program in Africa, the Suubi project, only examined depressive symptoms and health-behavior intentions and not actual behavior. In addition, those studies were limited to specific paths of the asset-building theoretical framework: institutional support, saving and investment actions, asset accumulation, and health outcomes. Asset-building programs have been developed based on the asset-building theoretical framework, but to my knowledge, nobody has examined the entire theory. An examination of the theory as a whole may be useful in developing future asset-building programs that will be health oriented.

Therefore, the purpose of this study is to test Sherraden's (1991) asset-building theoretical framework (Figure 1) as presented by Beverly et al. (2008) and Lerman and McKernan (2008) using a representative sample of the U.S. population over six years drawn from the 2001 and 2007 Panel Study of Income Dynamics (PSID) data sets. The main hypothesis

(H1) of this study was that the observed covariance of the population under study would not be significantly different from the covariance of the parameter estimates of the hypothesized path model (Bowen & Guo, 2012).

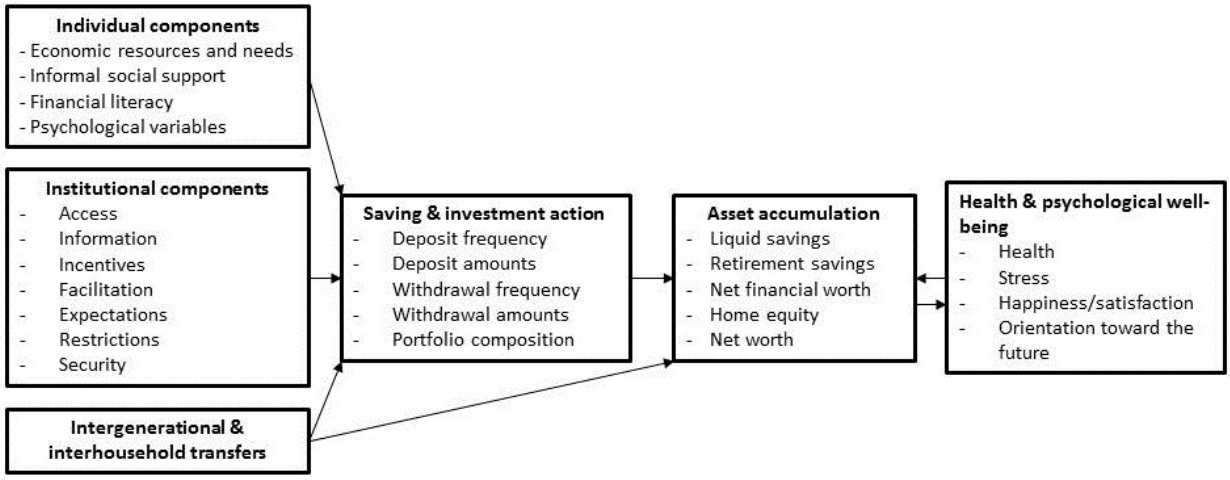

Figure 1. Asset-building theoretical framework. The theoretical framework is based on Beverly et al., 2008, and Lerman & McKernan, 2008.

The following hypotheses about direct effects in the asset-building theoretical framework were examined:

- *Direct Hypothesis 1 (DH1)*: Improvement in individual components (i.e., larger economic resources, fewer economic needs, and less informal financial social support) will increase saving and investment actions (i.e., larger deposits and smaller withdrawals).

- *Direct Hypothesis 2 (DH2)*: Improvement in institutional components (i.e., lower asset limits and greater access, security, and incentives) will increase saving and investment.

- *Direct Hypothesis 3 (DH3)*: Larger intergenerational and interhousehold transfers (i.e., larger inheritances) will increase saving and investment actions.

- *Direct Hypothesis 4 (DH4)*: Larger intergenerational and interhousehold transfers will increase asset accumulation (i.e., greater retirement savings, home equity, net worth, and liquid savings).

- *Direct Hypothesis 5 (DH5)*: Greater saving and investment actions will increase asset accumulation.

- *Direct Hypotheses 6 (DH6)*: Greater asset accumulation will improve psychological well-being (i.e., lower psychological distress).

- *Direct Hypotheses 7 (DH7)*: Better psychological well-being will increase asset accumulation.

The following hypotheses about indirect effects in the asset-building theoretical framework were examined:

- *Indirect Hypothesis 1 (IH1)*: Improvement in individual components will increase asset accumulation through an increase in saving and investment actions.

- *Indirect Hypothesis 2 (IH2)*: Improvement in institutional components will increase asset accumulation through an increase in saving and investment actions.

- *Indirect Hypothesis 3 (IH3)*: Larger intergenerational and interhousehold transfers will increase asset accumulation through an increase in saving and investment actions.

- *Indirect Hypothesis 4 (IH4)*: Improvement in individual components will improve psychological well-being through an increase in saving and investment actions and through an increase in asset accumulation.

- *Indirect Hypothesis 5 (IH5)*: Improvement in institutional components will improve psychological well-being through an increase in saving and investment actions and through an increase in asset accumulation.

- *Indirect Hypothesis 6 (IH6)*: Larger intergenerational and interhousehold transfers will improve psychological well-being through an increase in saving and investment actions and through an increase in asset accumulation.

- *Indirect Hypothesis 7 (IH7)*: Greater saving and investment actions will improve psychological well-being through an increase in asset accumulation.

CHAPTER 2: ASSET-BUILDING THEORETICAL FRAMEWORK AND LITERATURE REVIEW

The asset-building theoretical framework (Figure 1) includes six components, each of which includes a number of dimensions. The six components are institutional components, individual components, intergenerational transfers, saving and investment actions, asset accumulation, and health and psychological well-being. The theoretical framework implies six directional paths between those components: institutional components, individual components, and intergenerational transfers predict saving and investment actions; intergenerational transfers and saving and investment actions predict asset accumulation; and asset accumulation predicts and is predicted by health and psychological well-being. In this chapter, I will describe each component and its dimensions and will also discuss evidence from the literature supporting the hypothesized paths between the components.

The Relationship Between Individual Components and Saving and Investment Actions

Individual components includes four dimensions: economic resources and needs, informal social support, financial literacy, and psychological variables. Each dimension will be explained in this section. It is hypothesized that in the asset-building theoretical framework, each individual components dimension will influence saving and investment actions (Beverly et al., 2008).

Economic Resources and Needs

Economic resources can be defined as financial inflows, and they are an essential dimension of individual components. People who have more economic resources have more surplus money to save after they have paid their bills. People with low incomes have fewer

economic resources and therefore less surplus money to save (Beverly et al., 2008). Barr (2012) described individuals with less surplus money as individuals who have little room for slack in their finances; in other words, low-income individuals need to choose more carefully how to spend or save their money than high-income individuals because they have less financial flexibility.

Financial expenses are an example of economic needs. They can interfere with an individual's saving or investment actions because high expenses increase income consumption and reduce the income amount that can be saved. Financial expenses include medical expenses, vehicle costs, debt payment, and other similar expenses. Medical expenses are usually higher for families without health insurance (Beverly et al., 2008), but families that have health insurance can find it hard to pay medical bills at times of acute or chronic health conditions. Vehicle ownership can cause expected and unexpected costs to a household, such as regular service and inspection or breakdowns. Debt payments include credit-card debt (Beverly et al., 2008) and other regular payments such as the rent or mortgage or loans.

For people considered asset poor, credit may not be available or fairly priced and sometimes can influence their eligibility to borrow against future income (Sherraden, 1991). For example, in an ethnographic study, low-income African Americans from northwest Mississippi and low- and moderate-income Hispanics from San Jose, California (n = 18 and n = 12, respectively), reported they had to cash their paychecks to pay debt and other payments, leaving them with money only for ongoing expenses and none for savings (Caskey, 1997). However, one of the limitations of that study was that participation was limited to people willing to share information about their personal finances, which introduces a potential for selection bias.

Although debt can depress saving and investment actions, it can also be considered a good thing when it is "used to develop productive capacity for future economic growth" (Sherraden, 1991, p. 284). For example, debt for a student loan, which is a burden on daily consumption and reduces the amount and frequency of income savings, contributes to education that can present better job opportunities and potentially higher income in the future.

Informal Social Support

A person's social network can support and encourage saving behavior, but it can also take advantage of that saving for nonrestrictive purposes such as using savings that were restricted to a down payment for a house or higher education for the daily consumption of relatives and/or non-relatives (Sherraden, 1991). A supportive network can provide a positive saving environment that encourages saving actions and reminds a person to perform them. In contrast, a discouraging network expects a person to share that extra income with others. The latter is more common among low-income families, who feel emotional pressure from their friends and family members to help with daily expenses (Beverly et al., 2008). This discouraging network is more common in Black and Hispanic families (Caskey, 1997).

The relationship between informal social support and saving actions has been examined in several qualitative studies. Sherraden et al. (2005) interviewed 84 participants (59 who received the treatment and 25 controls) from the Tulsa OK ADD experiment, previously described in Chapter 1, two years after the random assignment and found that support from relatives and non-relatives was important for their saving actions[2]. The researchers sampled participants from the treatment group using a stratified sample that included low, middle, and high levels of average monthly deposit savers. They randomly selected participants from the control group. Although the interviewers in the study were trained and practiced in a pilot

[2] Sherraden et al. (2005) did not provide information about the type of support participants mentioned.

interview, data collection overlapped with another survey, and some of the participants from the control group knew participants from the treatment group, which may have affected their saving behavior (e.g., by encouraging them to search for other programs that could promote and influence the result of the study).

In a qualitative study that conducted 14 focus groups with 76 participants from seven SEED program sites, the participants stated that they received a great deal of financial support from their family and friends. Frequently, that financial support was used to cover daily needs. Less frequently, but much costlier when it was needed, that support covered emergency expenses. Participants stated that although they had received financial support from their relatives and non-relatives, they could only make smaller deposits than they had intended or no deposits at all to the SEED CDA. However, a few participants who received financial help from their family and friends used some of those funds to make financial contributions to the child's SEED CDA (Wheeler-Brooks, 2009).

Caskey (1997) found in an ethnographic study that low-income African Americans could not save money because they were under pressure to share their money with others and that low- and moderate-income Hispanics could not save money because they had to send it to their relatives in their countries of origin. However, there was no information in the study about how much financial help those families needed from their families and friends. Another cross-sectional study provided information about the relationship between informal social support and saving actions (Moore et al., 2001). The majority of participants in the ADD who received the opportunity to open IDAs reported that their family and friends supported their saving actions; however, a substantial percentage (38%) reported that their family and friends often asked them for money.

Although the response rate was good (79%) for ADD participants at the time of that study (Moore et al., 2001), it was low (29%) for former ADD participants. There were additional limitations to the study. There was no consistency in data-collection methods (i.e., face-to-face interviews, phone interviews, and group settings were used), which may have affected the participants' responses. For example, some participants may have felt more comfortable sharing financial information in a face-to-face interview than in a group setting that involved sharing that information with other participants. Another limitation is that only half of the ADD sites agreed to recruit participants for the study, meaning that the study sample may not be fully representative of the ADD population.

Financial Literacy

Financial literacy is "the ability to understand financial terms and concepts and to translate knowledge into behavior, including such skills as balancing a checkbook and managing cash flows in other accounts, preparing a budget and tracking spending, managing debt and saving and investing" (Schreiner & Sherraden 2007, p. 235). It is assumed that financial education will increase a person's financial literacy, which in turn will cause better financial behaviors such as better investment decisions, which will affect a person's saving actions and eventually increase the household's financial well-being (Beverly et al., 2008; Willis, 2013). However, more financial knowledge does not necessarily prevent a person from making bad financial investment decisions.

Several researchers summarized the mixed evidence about financial literacy. They reported that some studies found a positive and significant relationship between financial knowledge and saving behavior, although others found no relationship, or a small magnitude of that relationship (Gale, Harris, & Levine 2012; Willis, 2013), or negative financial behaviors

after financial education (Willis, 2013). Moreover, in a recent meta-analysis study, Fernandes, Lynch, and Netemeyer (2014) found that the "financial education interventions studied explained only about 0.1% of the variance in the financial behaviors studied, with even weaker average effects of interventions directed at low-income rather than general population samples" (p. 1872).

Willis (2013) provided potential reasons for the lack of a relationship between financial education and financial behaviors. The financial marketplace is a dynamic environment, meaning that something that was true today may not be the best investment decision for tomorrow. Therefore, teaching children financial education in school about specific information that is relevant for the present time may not be effective because it will take years until they finally use that knowledge. However, financial education focused on general information about markets and investments (e.g., interest rates, compound interest, loans and mortgages) may be effective. Financial illiteracy can cause poor financial choices (Beverly et al., 2008; Gale et al., 2012), which in turn can increase a person's economic insecurity (Gale et al., 2012). Although low-income individuals are likely to have lower financial literacy than high-income individuals (Beverly et al., 2008), low financial literacy is a problem for a significant portion of American adults (Gale et al., 2012; Willis, 2013).

In the ADD, participants who had the opportunity to open IDAs were also required to participate in financial education classes that included general information about saving strategies, how to prepare a budget, the benefits from savings, compound interest, and how to manage their credit (Schreiner & Sherraden, 2007). This kind of financial education is more general than education about specific investment actions; therefore it is more likely that the knowledge taught during the ADD will not change over time.

Different subsamples of ADD participants reported that the financial education contributed to their abilities to save and indicated that they had learned specific skills for improving their saving and investment actions. One subsample included participants from 6 out of the 13 ADD sites and was examined in a cross-sectional study (Moore et al., 2001). Another subsample included participants from the Tulsa OK ADD and was examined using a qualitative method (Sherraden et al., 2005). In addition, a longitudinal study of 2,350 ADD participants who were program-selected and self-selected found that more hours of financial education, up to ten, was significantly associated with more asset accumulation through the IDA (Curley, Ssewamala, & Sherraden, 2009; Schreiner & Sherraden, 2007). Specifically for families with children 18 years old or younger, a one-hour increase in financial education increased the average monthly net deposit (AMND) by $0.86 (Grinstein-Weiss, Wagner, & Ssewamala, 2006). That amount may not be considered financially meaningful, and due to the sample selection process, participants may not have represented the general population. Rather, they were "highly educated and had high rates of employment. . . . They were disproportionately females, African American, and never married" (Schreiner & Sherraden, 2007, p. 122).

Marital status was also associated with women's financial literacy; married women had lower financial knowledge than single women, perhaps because married women may trust their spouses to take care of the household's financial issues and single women do not have that option and have to take care of their own financial issues (Sherraden et al., 2005; Zhan, Anderson, & Scott, 2006). One example of this relationship was presented by a qualitative study of 84 randomly selected participants from the Tulsa OK ADD, wherein both married males and females stated that the male was responsible for financial decisions (Sherraden et al., 2005). Another example is provided in a study on a pre- and post-financial training program, the

Financial Links for Low-Income People program in Illinois. The 163 low-income participants, mainly Temporary Assistance for Needy Families (TANF) recipients, had higher financial knowledge if they were unmarried compared with married participants. That result was consistent in both pre- and post-training questionnaires. However, the study sample was mainly females and African Americans, about half of whom had never been married (Zhan et al., 2006).

Psychological Variables

Future orientation, motives for saving, and perceived ability to save are three examples of *psychological variables* that may influence saving and investment actions (Beverly et al., 2008). Beverly et al. (2008) defined *future orientation* as "willingness to invest in one's future, even when one must postpone pleasure" (p. 107). The action of postponing present pleasure for future pleasure can lead to the conclusion that a stronger future orientation will result in more saving and investment actions. However, regardless of income level, people have trouble postponing present consumption (Caskey, 1997). A stronger orientation toward the future was significantly associated with greater savings for participants who completed or dropped out of an IDA program in a large IDA network agency in the U.S. Midwest compared with participants in the control group. However, that survey had a low response rate of 43%, and participants who completed the program were significantly different in several assets-related measures (e.g., household income, mortgage obligations, and household savings) from those who dropped out (Red Bird, Grinstein-Weiss, Loibl, & Zhan, 2010). In a qualitative study with a stratified sample from the Tulsa OK ADD, participants in treatment and control groups reported that savings allowed them to think about their future (Sherraden et al., 2005). People who find it important to save and who have a goal for their saving are assumed to have higher motivation for saving (Beverly et al., 2008; Sherraden, 1991).

According to neoclassical economics, there are three main long-term goals of saving money: retirement, unexpected shocks, and transfers to offspring (Beverly et al., 2008). In a randomized control trial, called Refund to Saving (R2S), that sampled 4,087 TurboTax® users, participants were randomly assigned to specific motivational prompts[3] and suggested saving amounts (i.e. 25%, 50%, and 75% of the refund or specific amounts of $100 or $250; Grinstein-Weiss, Comer et al., 2013). Participants who were randomly assigned to specific motivational prompts significantly increased the percentage of their tax refunds intended for savings compared with participants in the control group. However, in a subsample of low-income individuals, those differences were not statistically significant (Key, Grinstein-Weiss, Tucker, Holub, & Ariely, 2013).

Other important long-term goals for saving money are homeownership (Cramer et al., 2008; Nam et al., 2008b), higher education, and seed money to start a business (Nam et al., 2008b; Sherraden, 1991). However, in a qualitative study of low- and moderate-income African Americans and Hispanics, most of the participants that saved money indicated they saved it for a short-term purpose (Caskey, 1997). Finally, people who believe they can successfully save money will probably do so, but people who do not believe they can save money will probably not experience successful saving. It is expected that past experiences, whether experienced by individuals or members of their social networks, with successful or unsuccessful saving will also shape individuals' future saving and investment behavior (Beverly et al., 2008).

The Relationship Between Institutional Components and Saving and Investment Actions

Institutions such as banks, employers, and federal or state programs provide formal and informal incentives such as matches and restrictions, for a specific purpose for savings accounts,

[3] The prompts encouraged participants "to think about things like their level of debt, the importance of emergency saving, or their goals for retirement" (Key et al., 2013, p. 1).

which can constrain the choice sets of individuals regarding saving and investment actions (Sherraden, 1991). Sherraden (2003) described four dimensions of *institutional components* that can influence saving and investment actions: access, incentives, information, and facilitation. Based on research from asset-building programs, Beverly et al. (2008) added three more dimensions to the institutional components: expectations, restrictions, and security. These dimensions are discussed in more detail in this section.

The dimensions of institutional components influence asset accumulation, mainly indirectly, through saving and investment actions (Beverly et al., 2008). For example, individuals will be more likely to have a pension savings account and more likely to deposit a portion of their income frequently into the pension savings account when (a) they have easier access to the pension savings account, usually through an employer; (b) the interest rates or matches from the employer for the pension savings account are better than those individuals will get from a private pension savings account not offered through the employer; (c) they are automatically enrolled in the pension savings account by the employer; (d) there are restrictions about when they can withdraw the money from the pension savings account; (e) they expect to save a certain amount of money each month; (f) they have good knowledge and financial skills; and (g) they feel more secure about depositing a portion of their income into the pension savings account that the bank is operating than using a portion of their income to put their money essentially under a mattress.

In general, low-income individuals have been excluded from the institutional benefits and incentives that promote savings and asset accumulation through saving and investment actions because they are less likely to be homeowners and are more likely to be employees without retirement benefits (Sherraden, 1991). However, the saving behaviors of low-income individuals

were strongly affected by access and incentives through IDAs in the ADD program (Sherraden, 2003).

Access

Individuals can take advantage of *access* through the tax system, potentially by receiving tax benefits for households, or through their employer, often through retirement savings accounts (Beverly et al., 2008; Johnson & Sherraden; 1992; Sherraden, 1991; Sherraden, Schreiner, & Beverly, 2003). Access benefits mainly wealthy and middle-class people because it is attractive and readily available to them through banks, employers, or federal and state programs. Persons with low incomes are less likely to own a house or work in a place that offers access to retirement benefits (Johnson & Sherraden, 1992; Schreiner & Sherraden, 2007; Sherraden, 1991). For example, in a sample of 1,801 families with children who participated in the ADD, which they qualified for as low-income households, only 16% were homeowners (Grinstein-Weiss, Wagner et al., 2006) compared with almost 70% of the general population (Shapiro, 2006).

In addition, access may also indicate physical access to financial institutions (e.g., banks), meaning that people who do not have easy access to their banks, usually people who live in rural areas or people without accessible and/or affordable transportation, prefer not to go to the bank to deposit or invest their money (Beverly et al., 2008). Curley et al. (2009) found no significant influence from the number of deposit locations available to participants on saving performance in the ADD sample. In the last decade, this physical-access limitation has declined due to a transition toward technology use; one way to encourage people, especially low-income individuals, to use banking services, is through advocating for mobile banking. High percentages of low-income individuals have mobile phones, and mobile banking allows them to make

deposits and pay bills through their mobile phones (Gross, Hogarth, & Schmeiser, 2012). In an online survey sent from KnowledgePanel®—a proprietary, probability-based web panel of more than 50,000 individuals—to more than 3,000 participants with a response rate of 67.7%, the majority of respondents had a mobile phone (87.1%) and about a fifth used mobile banking. The underbanked[4] group reported the highest use of mobile banking (28.4%) compared with fully banked[5] or unbanked[6] groups (20.8% and 9.7%, respectively; Gross et al., 2012). However, an online survey is prone to bias; for example, the sample that uses the Internet may not be representative of the total population. Regardless, people who benefit from access are more likely to have higher saving rates than those who do not have available access (Sherraden, Schreiner, & Beverly, 2003).

Information

Information refers to knowledge about financial opportunities, how to gain that knowledge and skills (Beverly et al., 2008), and an understanding of the process and rewards of saving. Whenever people have more knowledge and better understanding of financial opportunities, their functioning in the financial marketplace is better (Willis, 2013) and the more likely they are to save (Sherraden, 2003; Sherraden et al., 2003) and increase their economic security (Gale et al., 2012). Lusardi and Mitchell (2010) stated that people who were exposed in school to economics classes had higher financial literacy compared with people who were not exposed in school to economics classes and that people who reported greater financial

[4] An underbanked consumer was defined as someone who had a checking, savings, or money market account but who also used at least one alternative financial service in the past 12 months such as an auto title loan, payday loan, check-cashing service, or payroll card.

[5] A fully banked consumer was defined as someone who had a bank account and did not use alternative financial services.

[6] An unbanked consumer was defined as someone who did not have a checking, savings, or money market account; also, the consumer's spouse or partner did not have such an account.

knowledge thought more about retirement planning. Although their study used sampling weights to make the sample a representative sample of the US, it was an Internet-based survey (i.e., the Rand American Life Panel), which may have caused a biased sample. In addition, information from peers in the ADD was also significantly associated with saving performance (Curley et al., 2009).

General information, such as knowledge of the different types of savings accounts that have different interest rates and restrictions, or information specific to a program, such as eligibility for financial opportunities of saving and investment actions, can be gathered independently through employers or through governmental support (Beverly et al., 2008). However, in the US, there is a general problem of economic illiteracy, especially for some disadvantaged groups such as those with low incomes (Gale et al., 2012; Sherraden, 1991), women, minorities, the less well educated, the young (i.e., around the age of 20), and the old (i.e., retired; Gale et al., 2012; Lusardi & Mitchell, 2010).

Incentives

People are more likely to save when the saving goal is feasible and if they receive *incentives* such as matching deposits and higher earnings on savings (Sherraden, 2003). In other words, people are more likely to save when they are enticed to do so (Sherraden et al., 2003). For example, most employers' private pensions provide incentives for a person not to retire until a certain age, but they also provide incentives to retire when a person reaches a certain age (Sherraden, 1991). However, different studies that evaluated the ADD using different samples found inconclusive results regarding the influence of matched rates on different saving behaviors. Some studies reported that a higher match rate was significantly associated with any contributions to IDAs (Grinstein-Weiss et al., 2012; Schreiner & Sherraden, 2007) and with

lower likelihoods of unmatched withdrawals (Schreiner et al., 2001). But other studies did not find a significant influence of match rate on AMNDs (Curley et al., 2009; Schreiner et al., 2001; Sherraden et al., 2003), and other studies found that higher match rates were significantly associated with lower AMNDs (Grinstein-Weiss, Wagner et al., 2006; Han & Sherraden, 2009) and less frequent deposits into IDAs (Han & Sherraden, 2009).

The different results among studies of the same program can be explained by the different subsamples each study used. Some used a sample of 14 programs from the 13 different sites where the ADD was implemented (Curley et al., 2009; Schreiner et al., 2001). Others studied only families with children from those sites (Grinstein-Weiss, Wagner et al., 2006). Still others used only participants from the Tulsa OK ADD, which ran a random assignment experiment (Grinstein-Weiss, Sherraden et al., 2013; Han & Sherraden, 2009; Schreiner & Sherraden, 2007). Some of their findings contradict the asset-building theoretical framework. Sherraden et al. (2003) provided three possible explanations for that result. First, the match-rate levels of the ADD were defined without consideration of saving expectations from participants. Therefore, the amount saved by a person saving for a down payment for a home would be different than the amount saved by a person for higher education. Second, participants may have tried to reach their match caps (i.e., the maximum amount that would be matched through the program) regardless of the match rate, thus trying to reach the maximum AMND eligible for matching regardless of the match rate. Finally, participants who knew their saving goal from the beginning of the program may have chosen to save less and enjoy the same return. For example, a participant who set a saving goal of $3,000 for a down payment for a house at a match rate of 1:1 would have required savings of $1,500, but a match rate of 1:3 would have required savings of only $750 to get to the same total amount of $3,000.

Governmental asset-tests of federal and state assistance programs require a person to have limited assets to get or maintain assistance, which amounts to a governmental disincentive for saving (Beverly et al., 2008; Grinstein-Weiss, Wagner et al., 2006; Johnson & Sherraden, 1992; Schreiner & Sherraden, 2007; Sherraden, 1991). In a qualitative study of low- and moderate-income African Americans and Hispanics, some participants reported not saving money because they did not want to lose their welfare benefits, and a few reported that they did not own a checking account for the same reason (Caskey, 1997). Using four cross-sectional samples of the Survey of Income and Program Participation (SIPP), Carney and Gale (2003) found that participants who received public assistance were significantly less likely to have positive net worth, but they offered no information about whether public assistance discouraged those participants from accumulating assets due to asset-tests or whether they received public assistance because they could not accumulate assets. However, findings from the Tulsa OK ADD suggested that the receipt of food stamps, which is only one type of public assistance, does not significantly influence asset accumulation through IDAs (Schreiner & Sherraden, 2007). That result may be due to the more flexible asset-test used by the food stamps assistance program.

These different results may be attributed to a few causes. First, studies on the ADD examined only one type of public assistance program, and Carney and Gale (2003) examined receipts from multiple public assistance programs. Second, the goal of the ADD was to help low-income people build their assets, and they received assistance in the form of access, information, expectations, and incentives to do so. Therefore, it is not surprising that participants tried to save and accumulate assets within the boundaries that the asset-tests required. In contrast, Carney and Gale (2003) examined people who did not receive that form of assistance and thus were not encouraged to save and accumulate assets. Finally, participants who received the opportunity to

open IDAs were required to participate in financial education classes that included information on balancing their IDAs against the asset-limits of public assistance programs (Schreiner & Sherraden, 2007), meaning that they were taught how to accumulate assets through saving in the IDA and maintaining eligibility for public assistance.

Facilitation

Facilitation can be defined as any form of assistance that encourages a person to save and invest money through an institution. Usually, facilitation includes automatic enrollment into a saving plan or automatic or direct deposits into a saving plan or investment action (Beverly et al., 2008). Sherraden et al. (2003) hypothesized that providing saving facilitation (i.e., making saving more manageable and convenient) would increase people's saving and investment actions. In addition, they hypothesized that institutions that provided a more automatic system, such as opt-out automatic deposits when a person is automatically registered for a financial plan and needs to actively opt out of the plan, would encourage more saving. The positive influence of automatic transfers on asset accumulation through savings was demonstrated through the ADD. Direct deposits and automatic transfers were significantly related to an increase in the likelihood of accumulating assets through an IDA in the Tulsa OK ADD (Schreiner & Sherraden, 2007); specifically, families with children who used direct deposits saved $4.69 more with their AMNDs compared with families with children that did not use direct deposits ($p < .05$; Grinstein-Weiss, Wagner et al., 2006). However, that amount may not be considered financially meaningful.

A comprehensive study of more than 2,000 participants from all 14 ADD programs did not find a significant influence of automatic deposits on saving performance (Curley et al., 2009). In addition, the population under study was low-income individuals who may have had

only small amounts of surplus money to save after daily consumption. Furthermore, the study design provided a low match cap of up to $750 per year (e.g., a person who wanted to receive the maximum matching-incentive would have needed to deposit only $62 per month and would not have received any match for larger saving amounts). In addition, low, moderate, and high savers from the Tulsa OK ADD and SEED reported during in-depth interviews that automatic deposits helped them save because it reduced the temptation to spend the money and the barrier to physically accessing the bank (Sherraden et al., 2005; Wheeler-Brooks & Scanlon, 2009). Wheeler-Brooks and Scanlon (2009) interviewed 30 SEED youth participants from the Juma Ventures of San Francisco site. The youth in that study were dependent on their parents to give them money or allowances and drive them to the bank, therefore the outcome in that study mainly depended on family involvement.

Expectations

Expectations are embodied in the monthly saving target and the social pressure of staff and peers in saving programs. For example, the amount of deposits that can earn matching incentives, the match cap, creates a target for saving (Beverly et al., 2008). Sherraden et al. (2003) reported that many participants who were offered the opportunity to open IDAs tried to save the match cap each month. Those expectations may have caused low-income participants to save more than they would have otherwise (Sherraden et al., 2003). People who have specific savings expectations are more likely to save more money than people who do not (Beverly et al., 2008).

The ADD program provided strong evidence on the relationship between match caps and saving behaviors. Participants who were offered the opportunity to open IDAs with higher match caps succeeded in saving more money than participants who were offered lower match caps

(Grinstein-Weiss et al., 2012; Han & Sherraden, 2009; Schreiner et al., 2001; Schreiner & Sherraden, 2007). An increase of $1 in the match cap was associated with an increase of $0.57 in deposits to savings (Schreiner & Sherraden, 2007), and participants offered a match cap of $2,250 saved $14.63 more per month compared with participants offered a match cap of $1,500 or less (Han & Sherraden, 2009). That may mean that participants used the match cap as a goal expectation they needed to achieve (Schreiner et al., 2001). Similar evidence was presented for SEED youth participants; a $100.00 increase in match cap was associated with a $2.00 increase in average quarterly net savings (Mason et al., 2009). However, SEED was not an experiment and used a convenience sample, meaning the results were observational and do not represent all children in low- and moderate-income families.

Restrictions

Most subsidized savings accounts have *restricted* access to or use of the savings. For example, retirement savings accounts are available only for future usage, after a person has retired from work. A common time restriction is that if a person chooses to withdraw the money before the set time, he or she will have to pay a penalty (Beverly et al., 2008). Although restrictions have negative connotations (Sherraden et al., 2003), they can help people resist the temptation to use the money in the savings account and thus guide people to save and invest money for future use (Beverly et al., 2008). Savings accounts may have specific restrictions that do not allow immediate consumption of the accumulated money; those kinds of restrictions are necessary to encourage saving for a specific goal and to protect savings from becoming a flow of income for daily consumption (Sherraden, 1991).

Participants in the ADD reported, in both quantitative and qualitative studies, that the IDA restrictions kept them from withdrawing money for other purposes and that they were

helpful for turning down family and/or friend requests for financial help (Moore et al., 2001; Sherraden et al., 2005). However, restrictions such as match caps may also interfere with the amount of saving, because as soon as people arrive at the match cap, they may postpone additional deposits to the savings account. That may happen because there is no longer an expectation to save nor an incentive, such as matching amounts, for additional saving (Sherraden et al., 2003).

Security

Security refers to "freedom from unreasonable risk in saving and asset holding" (Beverly et al., 2008, p. 121). There are two levels of security: micro and macro. *Micro security* relates to the security people have regarding their property and investments. For example, homeowner's insurance can increase feelings of security and reduce the risk of property loss from disasters such as theft and catastrophic destruction. Another example can be seen in the security or insecurity a person feels about banking. Almost half of the participants in an online survey reported that they felt insecure using mobile banking (Gross et al., 2012). Although the sample in that survey may have been be biased toward the usage of technology, it is reasonable to believe that people who are less technology oriented would be even less trusting and less likely to use mobile banking. However, in a cross-sectional study of selected ADD participants, Moore et al. (2001) found that the majority reported that their IDAs seemed secure (Moore et al., 2001).

Macro security relates to the protection from risks in the political system and the financial markets such as a depletion of savings and investments through mismanagement or corruption. However, there is only a small financial risk when considering the U.S. economic market and political system, and the main threat to asset accumulation is inflation. In general,

greater feelings of security in both the micro and the macro levels can shape more positive saving behaviors (Beverly et al., 2008).

The Relationships Between Intergenerational and Interhousehold Transfers and Saving and Investment Actions and Asset Accumulation

Intergenerational and interhousehold transfers refer to financial help family members provide to other family members during their lives. *Bequests* refer to the inheritance family members leave for other family members, usually offspring, after their death (Beverly et al., 2008; Gale & Scholz, 1994). Families may support members of the family during hard times, but the main reason for saving in the US is the desire to financially support offspring by providing them inheritances and/or intergenerational transfers for higher education, down payments for a house, seed capital for starting a new business, and so forth (Gale & Potter, 2003; Gale & Scholz, 1994; Ploeg, Campbell, Denton, Joshi, & Davies, 2004; Sherraden, 1991). Intergenerational transfers can promote saving behaviors if the money is not consumed but saved. In addition, providing intergenerational transfers may increase asset accumulation directly or indirectly.

For example, help with the down payment for a house may enable the purchase of a house, which serves as an asset and decreases the total amount of debt people accrue through mortgages. In other words, a person who receives financial help to purchase a house may have a lower mortgage than a person who does not receive any. In addition, financial help may ensure that people can buy a house in a better neighborhood located near a better school system that may provide better opportunities for their offspring (Beverly et al., 2008).

In a convenience sample of 130 Canadians, 55 years old and older, a house was the main purchase by parents for their children (58%) and a trust or an education fund was the main

purchase by grandparents for their grandchildren (31%; Ploeg et al., 2004). Some cross-sectional studies have found that people who received intergenerational transfers were more likely to purchase a house compared with people who did not receive intergenerational transfers (Gale & Scholz, 1994; Schoeni, 1997). Those studies used data sets that represent the U.S. population: the Survey of Consumer Finances, which is a random sample of 3,824 U.S. households (Gale & Scholz, 1994), and the PSID, which is a representative sample of more than 6,000 U.S. households (Schoeni, 1997). Despite the fact that both studies were based on old data (i.e., from 1983, 1986, and 1988), the gap between poor and rich families in the US has grown over the years (Oliver & Shapiro, 1995), thus the magnitude of the relationship reported would probably be greater today. In addition, a longitudinal study over 25 years using the PSID data set found that every inherited dollar contributed $0.91 of wealth for White families and $0.20 of wealth for African American families (Shapiro, Meschede, & Osoro, 2013).

Although intergenerational transfers are assumed to be a significant source of wealth, the majority of the population never receives an inheritance (Wilhelm, 2003; Shapiro et al., 2013). Therefore, it can be assumed that the main influence of intergenerational transfers on family members' or offspring's saving and asset accumulation is from transfers during the giver's life rather than after his or her death.

The Relationship Between Saving and Investment Actions and Asset Accumulation

Beverly et al. (2008) suggest liquid savings, retirement savings, net financial worth, home equity, and net worth as four different ways to conceptualize assets. *Liquid assets* are the sum of checking, savings, stocks, funds, and other savings that can be used during a financial catastrophe (Huang, 2011). *Retirement savings* are savings accumulated in the present that can be used after retirement and create a more secure financial future (Nam et al., 2008a). Low-

income households usually do not have access to retirement savings (Cramer et al., 2008). *Net financial worth* is "the total amount of financial resources accumulated as precautionary savings" (Nam et al., 2008b) after subtracting unsecured debt. In general, *home equity* can be considered the largest contributor to net worth for American families, and specifically, it is the primary asset for low-income families (Beverly et al., 2008). However, it is important to keep in mind that although home equity is the asset with the largest financial value for American families, it also creates the largest debt (i.e., mortgage). Finally, *net worth*, which is the most commonly used measure of asset accumulation (Nam et al., 2008a), is the difference between everything a person owns and everything a person owes (Carasso & McKernan, 2008).

People allocate financial resources between saving and consumption (Schreiner et al., 2001), and saving and investment actions can affect asset accumulation (Beverly et al., 2008). Youth who participated in SEED and received the opportunity to open a CDA reported in a qualitative study that they were more cautious about withdrawing money and that holding the CDA helped them differentiate between needs and wants (Scanlon & Adams, 2009). Those youth were sampled from one location in San Francisco based on their saving behavior (low, moderate, and high savers); therefore, they cannot be considered a representative sample of any other population.

Higher consumption causes a decrease in saving, which in turn decreases the income that can be allocated between consumption and production in the future (Schreiner et al., 2001). Income affects the level of resources available for saving actions (Beverly et al., 2008; Sherraden et al., 2003); therefore it is even more essential for poor people who have fewer resources available to save which in turn depresses future production, income, and consumption (Barr, 2012; Schreiner et al., 2001). Low-income individuals experience higher resource scarcity that

leads to difficulties with payment for expenses (Shah, Mullainathan, & Shafir, 2012) such that people are forced to choose what expenses to spend their money on because they have no financial slack (Barr, 2012).

Shah et al. (2012) examined that relationship in a lab experiment, wherein participants were randomly assigned to receive small or large budgets for a game that reflected the real world regarding rewards and borrowing. They found that higher resource scarcity also led to different perspectives on problems and decision making, meaning that participants who received small budget were more engaged with current financial expenses and those were more urgent for them than future expenses. Although the study illustrated the supposed real world, it was still a simulation in a lab and participants played for virtual money. Regardless, reducing consumption to save for the future may potentially cause harm in the present time (Sherraden et al., 2003). For example, Moore et al. (2001) reported the previously discussed finding that almost 20% of participants that received the opportunity to open IDAs postponed doctor or dental visits and almost 10% gave up food to save more money. However, those participants received the institutional incentives through the ADD for a limited time. Therefore, it may be that such behaviors are specific to short-term programs and less of a concern for long-term ones.

Saving actions include the amount and frequency of deposits but also of withdrawals; *investment actions* include portfolio composition (Beverly et al., 2008). Investment actions are a set of choices a person has including principal-protected, interest-bearing accounts and bond funds and stocks (Sherraden, 1991). Beverly, Moore McBride, and Schreiner (2003) suggested that to accumulate assets, resources need to be converted from "some easy-to-spend form to a more difficult-to-spend form" (p. 4), but at the same time individuals need to resist pressures to spend their resources and try to maintain their savings to prepare for future needs and

investments such as pension, financial hardship, education, a house, and a car (Schreiner & Sherraden, 2007).

The decision about saving or not saving can also be affected by demographic characteristics such as income, race, education, and family size (Grinstein-Weiss, Zhan et al., 2006). Savings are the product of saving actions; they are a way to accumulate assets (Schreiner & Sherraden, 2007). Low-income individuals can and do save for the future (Grinstein-Weiss, Wagner et al., 2006; Grinstein-Weiss, Zhan et al., 2006; Schreiner & Sherraden, 2007; Shah et al., 2012). However, their savings are usually directed toward specific expenses and not a generic account (Shah et al., 2012). Home equity and accumulation in retirement pension accounts are the two main forms of assets related to savings (Sherraden, 1991).

The Relationships Between Asset Accumulation and Health and Psychological Well-Being

Asset holding can create long-term financial stability because it provides a financial safety net in times of economic hardship. This buffer for the future can increase the feeling of security in the present (Sherraden, 1991). In a longitudinal study using the PSID data set, Yadama and Sherraden (1996) found a positive effect of assets on individuals' confidence about the future. Specifically for asset-building programs, ADD and SEED participants who received the opportunity to open IDAs or CDAs reported more confidence and security about their future (Moore et al., 2001; Scanlon and Adams, 2009). Greater economic security can reduce individuals' stress and "people are likely to be happier if they have the additional security of asset ownership" (Lerman & McKernan, 2008, p. 197).

Lower stress levels can reduce psychological distress and depressive symptom severity, and higher stress levels can increase them (Drapeau et al., 2011; Hammen, 2005). At the 3-year follow-up for SEED OK, mothers in the treatment group reported significantly fewer depressive

symptoms compared with mothers in the control group (Huang et al., 2014). However, at the 4-year follow-up of Michigan SEED, there were no significant differences in distress levels between the treatment and comparison group (Marks et al., 2009). Additionally, orphan youth from Uganda who were in the treatment group in the Suubi project had a significant decrease in their depressive symptoms between baseline and the 20-month follow-up (Ssewamala et al., 2012).

Other studies not related to asset building have found that greater wealth was significantly associated with lower psychological distress and lower depressive symptom severity. Two longitudinal studies, one conducted in New Zealand (i.e., the Survey of Families, Income and Employment) and the other conducted in Australia (i.e., the Household, Income and Labour Dynamics in Australia Survey), found that less wealth was significantly associated with greater psychological distress compared with higher wealth even after controlling for sociodemographic and socioeconomic variables (Carter et al., 2009; Headey & Wooden, 2004). Although both studies used representative samples, Headey and Wooden (2004) limited their analysis to 25- to 59-year-old participants.

Similar results were found in studies that examined minority populations. For Black women aged 25 to 55 who participated in a longitudinal investigation of a peer-led dietary intervention in the Midwestern US, holding more assets (e.g., home ownership, checking accounts) was significantly associated with lower depressive-symptom severity (de Groot et al., 2003). Cubans, Mexicans, and Puerto Ricans (Xu, 2011) and South African adults (Myer et al., 2008) who reported lower wealth reported significantly more psychological distress. Both Xu (2011) and Myer et al. (2008) conducted cross-sectional studies. The former study's participants were from the National Latino and Asian American Study, which is a nationally representative

community household survey. The latter's participants were from the South African Stress and Health national survey. The main limitation of both studies was that no conclusion about causality could be made; in other words, it is not clear if wealth influenced the participants' psychological distress or if their psychological distress influenced wealth.

A feeling of economic security in the present can allow a person to plan and think about his or her future. *Orientation toward the future* is an important key in achieving success. People who create future goals are more likely to behave in ways that allow them to achieve their goals (Sherraden, 1991). That assumption was supported by Yadama and Sherraden (1996), who found that people with more assets, which can lead to more economic security, reported significantly more protective personal behaviors (i.e., prudence[7], efficacy[8], horizons[9], and connectedness[10]). Protective behaviors can represent behaviors that allow people to achieve their goals, as was hypothesized by Sherraden (1991). Although Yadama and Sherraden (1996) used the PSID, which is a U.S. representative data set, they were restricted to five specific years (1968–1972) because questions about protective personal behaviors were omitted from questionnaires in the other years from which data were collected. That may have caused a result not necessarily representative of the influence of assets on protective personal behaviors at that current time or over longer periods of time.

In another study, individuals who were future oriented had a 7% lower chance of drinking and a 17% greater chance of exercising than individuals who were not (Chiteji, 2010).

---

[7] *Prudence* assessed risk avoidance.

[8] *Efficacy* reflected feelings, expectations, and confidence about the future.

[9] *Horizons* referred to future plans such as obtaining a new job, considering having more children, and having specific educational goals for children.

[10] *Connectedness* assessed contact with relatives, friends, and/or organizations that could provide information and help.

Another example is given by the Great Smoky Mountains Study, a longitudinal study that became a natural experiment after a gambling casino opened on the Eastern Band of the Cherokee Indians' federal reservation. The casino provided tribal members with additional income from the casino's profits and automatically deposited that income in trust funds for the tribe's children. The children who received that income after the casino opened showed significantly fewer psychiatric symptoms at adulthood than non-Cherokee-Indian children who did not receive the additional income from the casino (Costello, Erkanli, Copeland, & Angold, 2010). In addition, both Cherokee Indian and non-Cherokee-Indian children who moved out of poverty after receiving income from the casino showed a decrease in their mean number of psychiatric symptoms, but there was no change in the children who remained in poverty or those who were never in poverty (Costello, Compton, Keeler, & Angold, 2003). Costello et al. (2003) and Costello et al. (2010) mentioned several limitations of the study. For example, the intervention group (i.e., those who received additional income from the casino) included only American Indians while the control group included only non-Hispanic Whites.

Another example of the influence of asset accumulation on health was provided by Ssewamala et al. (2010) who reported a decrease in risky health-behavior intentions due to an increase in savings through a CDA intervention. In that asset-building demonstration project for orphans with AIDS in Uganda, 13-year-old children who received the opportunity to open a CDA had a significant reduction of 64% in self-reported, sexual, risk-taking intentions compared with those who did not receive that opportunity. However, as was mentioned in the previous chapter, that study had several limitations.

Asset-building programs provide the opportunities to open a matched savings account and to receive financial education, both of which can improve health outcomes and

psychological well-being. Merely providing the opportunity to receive health insurance can improve health outcomes and psychological well-being. For example, the opportunity to apply for Medicaid had a significant positive influence on a group of uninsured, low-income individuals in Oregon. In 2008, those uninsured, low-income individuals were randomly selected to receive the opportunity to apply for Medicaid. The selected participants reported a significant improvement in self-reported health, a significant increase in the probability of negative screening for depression, and a significant increase in self-reported overall happiness compared with participants who were not given the opportunity to enroll in Medicaid (Finkelstein et al., 2011). Finkelstein et al. (2011) stated that "to put this in perspective, if we compare our estimates to the literature on the impact of income on happiness, the impact of insurance [is] roughly equivalent to the impact of a doubling of income" (p. 1099).

It is important to keep in mind that the relationship between assets and behaviors can be reciprocal. Behaviors can influence asset accumulation, but a person with more assets will display certain behaviors (Sherraden, 1991). In a qualitative study of youth who participated in the SEED national demonstration project, a third of the participants who received the opportunity to open a CDA reported that since they had started their participation, they thought more about their future and their financial and educational goals (Scanlon & Adams, 2009). That reciprocal relationship holds true for health and health behaviors as well. In general, however, it is hard to compare the influence of assets on health across the different reviewed studies because different components and measures of assets were used (Carasso & McKernan, 2008).

In this chapter, I provided an explanation of each component of the asset-building theoretical framework (Figure 1) and evidence from the literature about the directional paths theorized between those components. The asset-building theoretical framework includes

institutional components, individual components, intergenerational transfers, saving and investment actions, asset accumulation, and health and psychological well-being components as well as the six directional paths theorized between those components. Most studies reported significant results on the relationships between those components, and few reported results opposite of the theory's expectations.

CHAPTER 3: METHODOLOGY

Design

This study is a longitudinal observational study that examined the asset-building theoretical framework (Figure 1) and psychological distress (Figure 2) using six years of data from the PSID data set. Figure 2 presents the theoretical model with psychological distress as the health outcome using the available observed variables of the PSID data set. The main advantage of a longitudinal study is that it helps in establishing temporal order, assessing change over time, and making stronger causal interpretations, all of which may increase the power of the study (Rajulton, 2001; Shadish et al., 2002).

A longitudinal study is appropriate for examining the asset-building theoretical framework because it includes information about the same participants over time, which allows examination of the influence of different components of the theory over time. The different components of the theory are dynamic and can change over time, therefore a cross-sectional study can suppress the true causal relationship between them. Although a longitudinal study can suffer from high attrition rates, the response rates for the PSID have ranged from 94% to 98% between waves, and it has a high response rate for asset questions, which reduces concerns about attrition (Ratcliff et al., 2008).

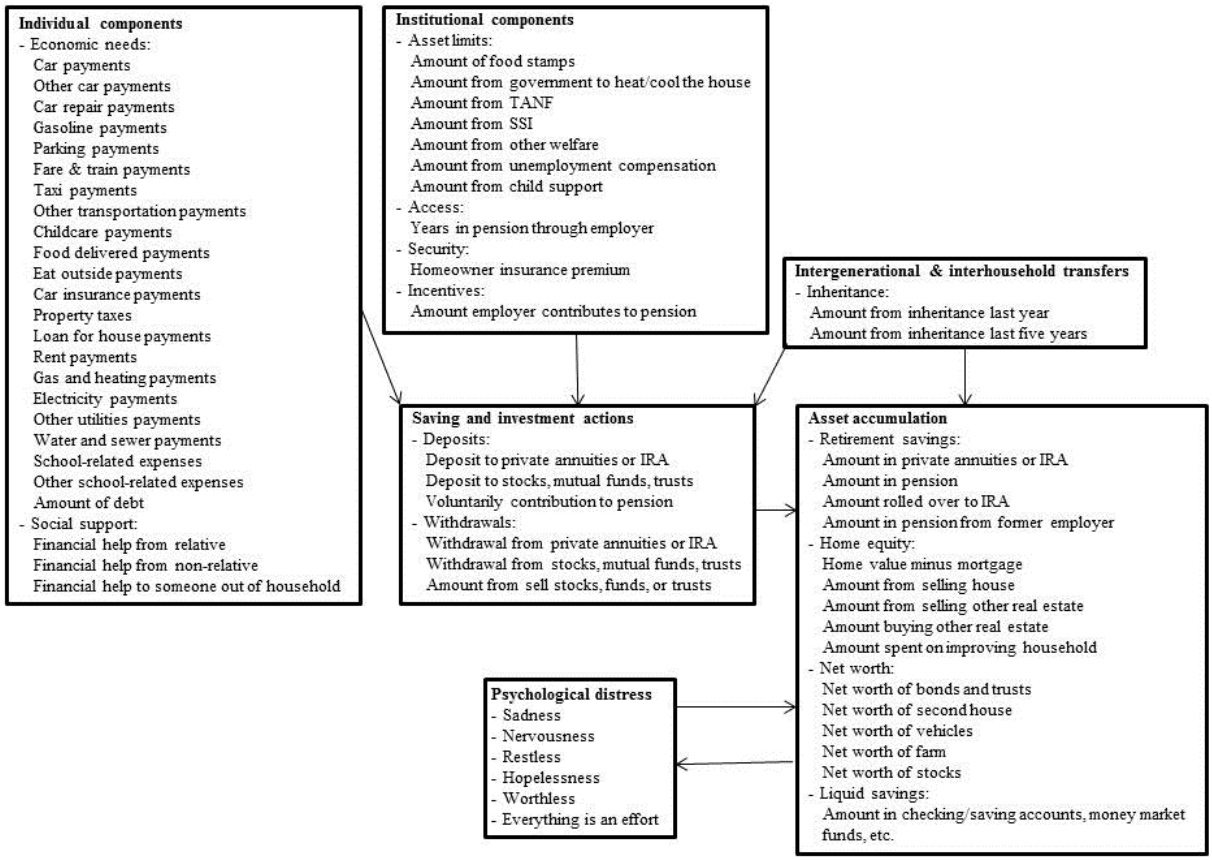

Figure 2. Asset-building theoretical framework with psychological distress and the observed variables of the Panel Study of Income Dynamics. IRA = individual retirement account; SSI = Supplemental Security Income; TANF = Temporary Assistance for Needy Families program.

The PSID was designed to examine the dynamics of poverty in the US (Duncan, 1990). The study has been conducted by the Survey Research Center at the Inter-University Consortium for Political and Social Research at the University of Michigan. It began in 1968, and data have been collected yearly with a nationally representative sample of over 18,000 individuals living in 5,000 families in the US. Beginning in 1999, the PSID collected data biennially. In the first five years, data collection was conducted by face-to-face interviews (1968-1972); each took about an hour to complete. Beginning in 1973, data were collected using telephone interviews that took about 30 minutes. For individuals without a telephone, the interview was conducted in a face-to-

face format. Since 1993, telephone interviews have been conducted with the assistance of computer-assisted telephone technology (McGonagle, Schoeni, Sastry & Freedman, 2012).

Only one person has been interviewed per family in each wave, usually the head of the household. That person has provided information on himself or herself and other family members (Duncan, 1990). The *head of household* (HH) is defined as the individual, 16 years old or older, who has the most financial responsibility for the family. However, females who fit that definition and have a husband or a boyfriend with whom they have lived for at least one year have not been considered HHs; their husbands or boyfriends have instead. That definition can be considered a limitation of the PSID. The HH has usually been a male with or without a spouse and a female if she has no spouse or boyfriend. Information about the assets of the studied individuals and families was collected every five years from 1984 to 1999, and since then it has been collected every other year.

There are other data sets available for researchers interested in assets and liabilities. Ratcliffe et al. (2008) identified 12 data sets that have sufficient information about assets and liabilities to test their influence on individuals and/or families. They compared three strong data sets: the PSID, the Survey of Consumer Finances (a cross-sectional study), and the SIPP, which does not include information on health outcomes. The PSID includes less-detailed questions about business equity and other assets compared with the Survey of Consumer Finances, which may influence the measures of wealth for very wealthy families. In addition, the PSID includes less information about assets and liabilities and a smaller sample size than the SIPP. None of the data sets includes information about future social security benefits, which is an important asset for the family, but the SIPP can be linked to other administrative data to estimate that value.

The reasons I used the PSID data set were that the PSID is a longitudinal data set that represents the U.S. population with an oversampling of low-income families. It has a high response rate across waves and estimates missing values based on several different techniques. It follows the same families over time; therefore, it allows examination of changes over time. And it includes comprehensive information about assets and several health outcomes, meaning that it is appropriate for examining the asset-building theoretical framework in relation to a health outcome.

However, data from the PSID also have limitations. First, although the PSID data set includes observed items that allow examination of each component of the asset-building theoretical framework, there are known omitted variables not measured in the PSID data set that may be essential for testing the asset-building theoretical framework. For example, for institutional components, there is no observed item in the PSID data set that represents the information a person gets about potential savings accounts and investments. Overall, four institutional mechanisms (i.e., information, facilitation, expectations, and restrictions), two individual mechanisms (i.e., financial literacy and psychological variables), three saving and investment actions mechanisms (i.e., frequency of deposits, withdrawals, and portfolios), and one asset mechanism (i.e., net financial worth) are not measured in the PSID data set.

Potential bias is possible in the strategy of data collection, specifically the interviewing of one person regarding information on HHs, wives, and other family members living in the same family unit. In other words, one person per family unit was the interviewee, and that person alone provided information on behalf of the other family members.

Historically, the PSID has held relatively little information on the health of its study population. Prior to the late 1980s, the only data available on health outcomes was information

on work limitations (Andreski, McGonagle, & Schoeni, 2009). In addition, psychological distress is not available as a measure for both HHs and wives but only for the one family member who was the interviewee. On balance, however, the many benefits of the data from the PSID mentioned in the previous paragraph outweigh those few limitations.

Sample Selection

Today, more than 37,000 individuals participate in the PSID. The PSID sample includes a combination of two independent samples and additional Latino households and immigrant families that were added to the PSID in 1990 and 1997, respectively (PSID, 2012). Although the oversampled low-income families portion of the study has been dropped since 1997 due to a budget cut (Burkhauser, Weathers, & Schroeder, 2006; Ratcliffe et al., 2008), the full sample of the PSID still has oversampling of low-income families.

The first independent sample came from the Survey Research Center (SRC) at the University of Michigan, which is a center involved in interdisciplinary social science research, including the collection and analysis of data from scientific sample surveys (SRC, 2013). The sample selected by the SRC was a national sample based on a stratified, multistage selection of the civilian, non-institutionalized (i.e., individuals who did not live in institutions) population of the US in 1968. The strata used to create the weights for each family in the study included the source of the sample (i.e., the U.S. representative sample from the SRC, the Survey of Economic Opportunity sample, and the additional sample of immigrants from 1997), the age of the HH (i.e., < 34 years, 35–54 years, 55+ years), the race of the HH (i.e., Black, Non-Black), and the region of residence (i.e., Northeast, Midwest, South, West; Heeringa, Berglund, Khan, Lee, & Gouskova, 2011).

The second independent sample came from the Survey of Economic Opportunity conducted by the Bureau of the Census for the Office of Economic Opportunity, a national sample of low-income families whose HHs were under age 60 and from standard metropolitan statistical areas or nonstandard metropolitan statistical areas in the Southern region[11] (PSID, 2012). Researchers working on the PSID successfully interviewed 1,872 low-income families from the 2,000 families in the Survey of Economic Opportunity sample.

The full sample of the PSID in 1968, comprised of the two previously explained independent samples, included 4,802 families from 40 states in the US. In addition, the full sample included a disproportionately large number of low-income households, which led to a large subsample of Blacks. The reason is that the original purpose of the study in 1968 was to examine the dynamics of poverty using poor and non-poor participants (Duncan, 1990). The sample remained representative of the nation's families and individuals over the years because it followed the original families and individuals who moved away from their original households, such as children who started their own households and other individuals who divorced and started new households (PSID, 2012).

Data

The PSID collects information at the individual level and the family-unit level. Most of the individual-level information is about the HH, which is the male for married-couple families but can be either female or male for other family structures, and the wife. Some information is collected about all individuals in the family unit. That information includes general health, psychological distress, height and weight, health history (e.g., incidence and prevalence of health

[11] No information was found regarding the reason the Southern region was selected to include participants from non-standard metropolitan statistical areas.

outcomes such as heart attack, asthma, high blood pressure), smoking, alcohol consumption, and physical activity.

This study focused on the 6,295 families from the 2001 wave. Those families were followed over six years and provided a total of two waves of data from 2001 and 2007. This study examined psychological distress as the health outcome. That specific outcome was selected because psychological distress captures a person's psychological health status that in turn can impact a person's physical health; in addition psychological distress can be sensitive to change over short and long periods of time. Health history was not examined as an outcome because each one of the outcomes included in that measure can have many other predictors not collected by the PSID, and therefore, it could not be controlled. In addition, from the temporality perspective, asset accumulation in the present cannot predict a health outcome that occurred in the past.

Both BMI and general health are appropriate health outcomes. The first is an objective measure that reflects a person's physical health status, and the other is a common measurement that can be easy to compare across studies. However, the purpose of this study was to examine the asset-building theoretical framework using structural equation modeling (SEM), a statistical technique that uses more than two observed variables to create latent variables (e.g., psychological distress). Both BMI and general health were measured with a single variable in the PSID. The three health behaviors (i.e., smoking, alcohol consumption, and physical activity) were not examined as dependent variables because the purpose of this study was to examine the asset-building theoretical framework regarding health outcomes and not behaviors. Future studies should examine health behaviors as well.

Data from two waves of the PSID were used: 2001 and 2007. The main reason to use these specific waves was that only those waves included information on wealth and psychological distress, which were the primary variables in this study. In addition, those time intervals are sufficiently long to capture changes in psychological distress. Psychological distress can be sensitive to changes in health outcomes for both a short period of time and a long period of time. For example, a decrease in socioeconomic status was significantly related to an increase in psychological distress using a three-year interval (Singh-Manoux, Marmot, & Adler, 2005), and an increase in the amount of a household's annual savings was significantly associated with increased levels of psychological well-being using a five-year interval (Brown, Taylor, & Wheatley Price, 2005).

Although there are more updated data in the PSID data set, the data used for this study were from before 2008, the year in which a recession occurred in the US, which likely affected families' socioeconomic and asset status. A recession is an economic national crisis that can take years to recover from. The asset-building theoretical framework does not take into consideration a national crisis like that. Using the years of the recession and those thereafter may present opposite results to what the theory proposes regarding asset accumulation. Although it is important to examine the effect of the recession on the U.S. population, it is beyond of the scope of this study.

This study used information aggregated to the family unit. Information about the HHs and the wives was used to explain their asset accumulation and psychological distress. Information was collected from one individual in each family unit. Psychological distress information was collected only for the individual who answered the questionnaire. Thus, in

families with a HH and a wife, there is information about psychological distress available only for one of them: the study respondent.

Measurements

Dependent Variable

Psychological distress. *Psychological distress* was an unobserved phenomenon assessed using the Kessler Psychological Distress Scale K6 (K6). This 6-item scale assesses the frequency (i.e., all, most, some, a little, and none of the time) of depression and anxiety (i.e., feeling nervous, hopeless, restless or fidgety, that nothing could cheer you up, that everything was an effort, and worthless) during the last month (Table 1). Individuals were asked to rate the frequency of the feelings they had over the last 30 days in the following manner:

In the past 30 days, about how often did you feel ___

- so sad, nothing could cheer you up?
- nervous?
- restless or fidgety?
- hopeless?
- that everything was an effort?, and
- worthless?

Participants were asked to rate the frequency of these feelings as "1-All of the time," "2-Most of the time," "3-Some of the time," "4-Little of the time," or "5-None of the time." Originally, the scores range from 0 to 24 (items scores range from 0 to 4), where lower scores present lower psychological distress, and serious psychological distress is considered a score of 13 or above (Kessler et al., 2002). However, the PSID coding was reversed (i.e. lower scores present higher psychological distress) and the scores were coded from 1 to 5. Therefore, serious psychological distress was considered a score of 15 or below.

Table 1.

Psychological Distress and Observed Item Numbers

	Variable	Observed Item #	
		HH	**W**
Psychological Distress (All of the time, Most of the time, Some of the time, Little of the time, or None of the time)	In the past 30 days, about how often did you feel so sad nothing could cheer you up?	X59	X67
	In the past 30 days, about how often did you feel nervous?	X60	X68
	In the past 30 days, about how often did you feel restless or fidgety?	X61	X69
	In the past 30 days, about how often did you feel hopeless?	X62	X70
	In the past 30 days, about how often did you feel that everything was an effort?	X63	X71
	In the past 30 days, about how often did you feel worthless?	X64	X72

Note: HH = head of household; W = wife.

The K6 has performed similarly to the Kessler Psychological Distress Scale K10 (K10). They have both demonstrated good precision, in the 90th to 99th percentile range, among the U.S. population distribution and across major sociodemographic subsamples (Kessler et al., 2002). Andrews and Slade (2007) stated that the K10 is preferred over the General Health Questionnaire and the 12-Item Short Form Health Survey measures of psychological distress. Therefore, it is assumed that the K6 would also be preferred over those other psychological distress measurement tools.

The K6 was examined as a latent variable and not as a composite score of its items. A summary of the scale's items provides only one dimension of psychological distress, but using each item as an individual path in measurement and structural models allows the presentation of

the psychological distress phenomenon in a multidimensional manner. This scale was validated in previous studies and demonstrated good internal consistency reliability at .89 as measured by Cronbach's alpha (Kessler et al., 2002; Kessler et al., 2003). In addition, Mitchell and Beals (2011) found a satisfactory fit for all 6 items onto one underlying factor, using a one-factor confirmatory factor analysis.

Independent Variables

The asset-building theoretical framework includes five latent variables (i.e., institutional components, individual components, intergenerational transfers, saving and investment actions, and asset accumulation) that directly and/or indirectly influence a latent health outcome (i.e., psychological distress). Each latent variable was estimated using available observed items, which will be shown in Tables 2 through 6 in this section.

The rationale for using the components of the asset-building theoretical framework as latent variables was that the items used to generate those latent variables were assumed to be caused by the unobserved phenomena (i.e., the latent variable) and that they were assumed to be highly correlated as opposed to index items that are not necessarily correlated (Bowen & Guo, 2012). Previous studies that examined parts of the asset-building theoretical framework using SEM analyses have also defined those components as latent. Rothwell and Han (2010) created a latent asset variable using three indicators: home value, estimated value of liquid assets, and estimated value of retirement savings. In addition, Rothwell and Sultana (2013) created a latent variable that identified patterns of cash-flow management and saving.

Latent variable of individual components. The latent variable of individual components of the asset-building theoretical framework (Figure 1) was based on 25 observed

items (Table 2). The individual components had two subcomponents, which were measured by those 25 items: economic resources and needs and informal social support.

Table 2.

Individual Components and Observed Item Numbers

Subcomponent	**Variable**	**Observed Item #**
Economic resources and needs	Current payment for car	X11
	Other payment for car	X12
	Payment for car repairs	X13
	Payment for gasoline	X14
	Payment for parking	X15
	Payment for fare and train fare	X16
	Payment for taxi	X17
	Payment for other transportation costs	X18
	Cost of child care	X19
	How much was spent on food delivered to the door	X20
	How much was spent on eating outside	X21
	Car insurance	X22
	Property taxes	X23
	Loan payment for house	X24
	Rent payment	X25
	Payment for gas and heating	X26
	Payment for electricity	X27
	Payment for other utilities	X28
	Payment for water and sewer	X29
	School-related expenses	X30
	Other school-related expenses	X31

Subcomponent	Variable	Observed Item #
	Total amount of other debts such as credit card charges, student loans, medical or legal bills, or loans from relatives	X32
Social support	Received any help from relatives	X33
	Received any help from non-relatives	X34
	Gave money toward the support of anyone who was not living at home	X35

Economic resources and needs. Economic resources and needs included the total of 22 financial expenses. Those financial expenses included payments for cars, transportation, child care, food, house and household related bills, school, luxuries, and other expenses. A positive value of payments for a car may suggest that the family possesses a car to use for their daily transportation needs.

Informal social support. Informal social support included two items representing the amount of financial help a person received from relatives and non-relatives in the last year and one item representing the amount of financial help a person gave to someone not living at home in the last year.

Latent variable of institutional components. The latent variable of institutional components of the asset-building theoretical framework (Figure 1) was based on 10 observed items (Table 3). The institutional components had four subcomponents, which were measured by the 10 items: access, security, incentives, and asset limits.

Table 3.

Institutional Components and Observed Item Numbers

Subcomponents	Variable	Observed Item #
Asset limits	Amount from food stamps	X1
	Amount of help from the government to pay for heating or cooling the house	X2
	How much money came from TANF	X3
	How much money came from SSI	X4
	How much money came from other welfare	X5
	How much money came from unemployment compensation	X6
	How much money came from child support	X7
Access	Years included in a main or basic pension or retirement plan by employer	X8
Security	Homeowner insurance premium	X9
Incentives	Amount employer contributed to pension	X10

Note. SSI = Supplemental Security Income; TANF = Temporary Assistance for Needy Families program.

Access. Access was based on one observed item. It asked how many years a person had been included in a main or basic pension or retirement plan by an employer. The range of years could be from zero to decades.

Security. Security was based on the amount of homeowner insurance premium in dollars that a person paid.

Incentives. Incentives assessed the amount of dollars an employer contributed to a person's pension.

Asset limits. Asset limits included the combined amounts of money received from seven welfare assistance programs including food stamps, help from the government to pay for cooling and heating a house, TANF, Supplemental Security Income, unemployment compensation, child

support, and other welfare assistance. As mentioned before, a use of welfare program assistance may cause people not to save in order to meet the welfare program's assets-test.

Latent variable of intergenerational transfers. The latent variable of intergenerational transfers of the asset-building theoretical framework (Figure 1) was based on two observed items (Table 4) that represent only one subcomponent of the latent variable of intergenerational transfers: actual inheritance.

Table 4

Intergenerational Transfers and Observed Item Numbers

Subcomponent	Variable	Observed Item #
Inheritance	Amount of inheritance last year	X36
	Amount of gifts and inheritances in last five years	X37

Actual inheritance. Actual inheritance included the amount of inheritance and gifts a person received in the last year and in the last five years.

Latent variable of saving and investment actions. The latent variable of saving and investment actions was based on five observed items (Table 5) that represent two subcomponents of the latent variable of saving and investment actions: deposits and withdrawals.

Table 5.

Saving and Investment Actions and Observed Item Numbers

Subcomponent	Variable	Observed Item #
Deposits	How much money was put aside in any private annuities or IRAs	X38

Subcomponent	Variable	Observed Item #
	How much money was put into stocks, mutual funds, or investment trusts	X39
	Amount voluntarily contributed to pension or retirement	X40
Withdrawals	How much cash was taken from any part of a pension, private annuity, or IRA	X41
	How much cash was taken from stocks, mutual funds, or investment trusts	X42
	Amount from the sale of any shares of stock in publicly held corporations, mutual funds, or investment trusts	X43

Note. IRA = individual retirement account.

Deposits. Deposits included the amount in dollars a person put aside for private annuities or IRAs, stocks, mutual funds, investment trusts, and pension or retirement accounts.

Withdrawals. Withdrawals included the amount in dollars a person took in cash from pensions, private annuities or IRAs, stocks, mutual funds, or investment trusts and any sales from shares of stock in publicly held corporations, mutual funds, or investment trusts.

Latent variable of asset accumulation. Wealth measures, which represent assets, are generally more complicated and difficult to measure compared with income. The assessment of wealth depends on time, taxes, and locale and it can be difficult to value. Study participants sometimes do not remember the value of each asset they own or they do not want to share that information with others because it is private (Pollack et al., 2007). In addition, wealth measures are usually not scales; rather, they are a sum of assets or a sum of values of assets that a person owns. Considering assets a latent variable that needs to be measured by several observed items, the reliability of such a measure relates to the proportion of variance attributed to the true score of assets (Cohen, Cohen, West, Aiken, 2003; Devellis, 2003). The latent variable of asset accumulation was based on 13 observed items (Table 6) that represent four subcomponents of

the latent variable of asset accumulation: liquid savings, retirement savings, net worth, and home equity.

Table 6.

Asset Accumulation and Observed Item Numbers

Subcomponent	**Variable**	**Observed Item #**
Retirement savings	Amount in private annuities or IRA	X44
	Amount in pension	X45
	Amount rolled over to IRA	X46
	Amount in pension from former employer	X47
Home equity	Home value minus principle of mortgage	X48
	Amount from sale of home used as main dwelling, not including sale commissions and costs	X49
	Amount from sale of other real estate	X50
	Amount put into buying any real estate other than main home	X51
	Amount put into additions or improvements of home or real estate	X52
Net worth	Value of bond funds, a life insurance policy, a collection for investment purposes, or rights in a trust or estate minus debt	X53
	Value of second house minus debt	X54
	Value of all vehicles minus debt	X55
	Value of farm minus debt	X56
	Amount invested in stock in publicly held corporations, mutual funds, or investment trusts minus anything owed on it	X57
Liquid savings	Amount in checking or savings accounts, money market funds, certificates of deposit, government savings bonds, or Treasury bills	X58

Note. IRA = individual retirement account.

Liquid savings. Liquid savings included the sum of dollars in checking or savings accounts, money market funds, certificates of deposit, government savings bonds, and Treasury bills. A positive or negative amount in a checking or savings accounts may suggest that those families had a bank account, indicating bank account ownership.

Retirement savings. Retirement savings included the sum of dollars in pensions, pensions from a former employer, and amount of savings rolled over to an IRA.

Net worth. Net worth included the dollar value of a primary and secondary home, vehicles, farm, and business and stock in publicly held corporations, mutual funds, or investment trusts minus debts.

Home equity. Home equity included home value and the amount of money spent on additions or improvements to the home. A positive or negative value given for home value may suggest that those families owned a home, and thus possessed homeownership.

Control Variables

This study included four groups of control variables that may have influenced asset accumulation and psychological distress (Table 7).

Table 7.

Control Variables for Head of Household (HH), Wife (W), and Family Items

Groups	Variables	Description in PSID	Item	
			HH	W
Individual and sociodemographic	Age	Age in years	ξ6	ξ7
	Race	White, Black, Native American, Asian, Pacific Islander, or another race	ξ9	ξ10
	Gender	Male or female	ξ8	

Groups	Variables	Description in PSID	Item	
			Family	
	Family size	Number of persons in FU at the time of the interview	ξ16	
	Family composition	Number of persons in the FU under 18 years of age	ξ17	
	Marital status	Married, Never married, Widowed, Divorced/Annulled, Separated	ξ19	
Socioeconomic	Income	Sum of income from wages and salary, farming, other farming or market gardening, businesses, professional practices or trades, roomers or boarders, rent, dividends, interest, trust funds, Social Security, Veteran's Administration, retirement pensions, annuities, workers' compensation, alimony or separate maintenance, big settlement from an insurance company, and other	ξ18	
			HH	**W**
	Education	Less than high school, graduate from high school, GED, or college degree	ξ11	ξ12
	Occupation	3-digit occupation code from 1970 Census of Population: Not Working, Professional/Technical and Kindred Workers, Managers and Administrators, Sales Workers, Clerical and Kindred Workers, Craftsman and Kindred Workers, Operatives, Transport Equipment Operatives, Laborers, Farmers and Farm Managers, Farm Laborers and Farm Foremen, Service Workers, Private Household Workers	ξ4	ξ5
Health-related	Chronic illnesses	Had any of the following illnesses (yes/no): stroke, high blood pressure, diabetes, cancer, chronic lung disease, heart attack, coronary heart disease, psychiatric problem, arthritis, asthma, and permanent loss of memory or mental ability	ξ13	ξ14

Groups	Variables	Description in PSID	Item Family
	Health insurance	Health insurance coverage during the last year: no, yes, Medicare or Medicaid	ξ15
Statistical variables	Imputed values	Had any imputed value for independent variables (yes/no)	ξ20
	Wife in FU	Whether there was a wife in the FU	ξ21

Note: FU = family unit; GED = general equivalency diploma, PSID = Panel Study of Income Dynamics.

Individual and sociodemographic variables. The first group was individual and sociodemographic variables that included age, race, gender, family size, family composition, and marital status. Older age has been significantly related to higher household net worth (Carasso & McKernan, 2008; Carney & Gale, 2003) and asset accumulation through IDAs in the ADD program (Schreiner & Sherraden, 2007). However, mixed results have been reported for the relationship between age and psychological distress. Some studies found no significant association (Myer et al., 2008; Xu, 2011), and others reported a significant association, but with different directions for that relationship. Some found that older people had higher levels of psychological distress compared with younger people (Headey & Wooden, 2004; Pirraglia et al., 2011), and others reported the opposite (i.e., older people had lower levels of psychological distress compared with younger people; Carter et al., 2009; G. Kim, Bryant, & Parmelee, 2012). Compared with White families, non-White or Hispanic families held significantly fewer assets and had less net worth (Carasso & McKernan, 2008; Carney & Gale, 2003) and higher levels of psychological distress (G. Kim et al., 2011; Pirraglia, Hampton, Rosen, & Witt, 2011). Women had significantly lower net worth (Lusardi & Mitchell, 2007) and reported greater psychological distress compared with men (Carter et al., 2009; Headey & Wooden, 2004; G. Kim et al., 2011; Pirraglia et al., 2011; Xu, 2011).

Although family size standardizes income and assets across families (Liberatos et al., 1988), Cobb-Clark and Hildebrand (2006) found no significant difference in the net worth of households with and without children, though Smith and Ward (1980) found a negative influence of family size on asset accumulation only when children were born early in a marriage. Couples with children reported significantly lower psychological distress compared with sole parents or those not in a family nucleus[12] (Carter et al., 2009). Finally, married couples held significantly more assets, had higher net worth (Carney & Gale, 2003; Carasso & McKernan, 2008) and reported significantly less psychological distress (G. Kim et al., 2011; Pirraglia et al., 2011).

Socioeconomic variables. The second group of control variables was socioeconomic variables that included income, education, and occupation. As was discussed in Chapter 1, higher income has been significantly related to higher household net worth (Carney & Gale, 2003), but it has not been significantly related to asset accumulation through IDAs in the ADD (Schreiner & Sherraden, 2007). It is important to hold family income constant because it provides an independent influence of asset accumulation on health outcomes. In addition, higher income has been significantly related to less psychological distress (Carter et al., 2009; G. Kim et al., 2011; Pirraglia et al., 2011). More years of education have also been significantly related to higher household net worth (Carasso & McKernan, 2008; Carney & Gale, 2003; Zagorsky, 2005) and less psychological distress (G. Kim et al., 2011; Pirraglia et al., 2011; Xu, 2011). Finally, compared with higher occupational statuses, a lower occupational status has been significantly related to lower net worth (Oliver & Shapiro, 1995).

Compared with employed individuals, unemployed individuals have reported significantly greater psychological distress (Carter et al., 2009). In some cases, income, education, and occupation were not significantly associated with psychological distress; those

[12] Carter et al. (2009) did not provide a definition to this term

cases have included specific races or after holding other socioeconomic variables constant (Headey & Wooden, 2004; G. Kim et al., 2011; Xu, 2011).

Health-related variables. The third group was health-related variables that included the prevalence, answered by yes or no, of any chronic illnesses such as stroke, high blood pressure, diabetes, cancer, chronic lung disease, heart attack, coronary heart disease, psychiatric problems, arthritis, asthma, and permanent loss of memory or mental ability that could influence psychological distress. In addition, health insurance coverage during the last year (indicated by a Yes, No, Medicare, or Medicaid answer) was controlled, because lack of insurance can cause high expenses in cases of acute or chronic illness, which can jeopardize the ability to save and accumulate assets (Beverly et al., 2008) and reduce health-care utilization due to the high expenses it generates. The PSID provides information about health insurance for anyone in the family unit and not individually for each member of the family unit. Therefore, health insurance was considered a family control variable that could influence asset accumulation and the psychological distress of HHs and wives.

Statistical variables. The last group of control variables included two dichotomous variables: the first indicated if a participant had any imputed values in the independent variables and was added to control for the influence of missing values imputed by the PSID, and the second indicated whether a family unit included a wife or not. The later was added to control for missing data due to the absence of a wife in the family unit.

Missing Data

Although missing data is a problem in every type of study, for a longitudinal study, the issue can be more complicated. The PSID, however, has had a high response rate over the years and low item-nonresponse rates (Ratcliffe et al., 2008). The PSID user's guide suggests using

appropriate sampling weights or multiple imputation methods to deal with missing data (PSID, 2012).

In addition, the PSID imputes missing values for some variables such as wealth, income, and employment (Duffy, 2011; PSID, 2012). For example, the PSID imputed missing values of wealth variables for 347 families (4.7%) in the 2001 family data set (PSID, 2003) and 353 families (4.3%) in the 2007 family data set (PSID, 2009). Each missing value received one imputed value calculated by the PSID using several imputation strategies, and each missing value was imputed using more than one imputation strategy (Duffy, 2011). Those strategies included using (a) other data that were collected in the PSID, (b) inflation-adjusted wealth values from previous waves of the PSID, (c) mean group replacement, (d) hotdeck replacement, and (e) median replacement (Duffy, 2011).

Sampling Weights

Although the number of low-income families in the PSID was reduced in 1997, there is still oversampling of this population in the PSID data set. Therefore, there was a need to account for sample weights in the analyses. The PSID provides users with a variable that includes the weight for each year at the individual and family level. The PSID uses division into strata as the first step for obtaining the individual weight, and after obtaining the individual weight, family weight is calculated as the average of the individual weights of the family members. The variable of family weight was used in all of this study's analyses to address the sample weight.

Analytic Plan

First, descriptive statistics were provided for the dependent variable, independent variables, and control variables. Second, bivariate analyses were conducted to examine the relationships between psychological distress and control variables and between specific control

variables. The third analysis was a separate measurement model for each of the latent variables with psychological distress; each model included the psychological distress of the HHs and the psychological distress of the wives with only one latent variable at a time. Fourth, a composite measurement model of the entire asset-building theoretical framework, including all latent variables simultaneously, was developed. Fifth, an asset-building, theory-based SEM analysis that simultaneously examined the direct and indirect relationships among exogenous[13] and endogenous[14] predictors and psychological distress was performed in addition to the inclusion of control variables as exogenous predictors of psychological distress. The fit of the data to the theory was examined, and when the fit was not sufficient, in some cases, modification indices (MIs) were used. Sixth, after obtaining a good fit for the cross-sectional SEM of the first wave, a longitudinal SEM was conducted using the first-wave-modified, cross-sectional SEM model for the two waves.

Descriptive statistics and bivariate analyses were performed using SAS software version 9.3 (SAS Institute, Cary, NC), and measurement and structural models were tested using Mplus version 6.0 (Muthén & Muthén, 1998–2011). Significance was set at $p < .001$ for the bivariate analyses to adjust for the large sample size and $p < .05$ for measurement and structural models.

Bivariate Analyses

The relationships between control variables and psychological distress were examined using bivariate analyses of the first wave. The type of bivariate analysis to use can be determined by the type of expressed units of the outcome variable (i.e., continuous, dichotomous, or more than two categories) and the type of each control variable (Cohen et al., 2003). Assuming psychological distress was normally distributed among the representative population under

[13] A variable that is not explained by any other variables.

[14] A variable that is explained or predicted by one or more variables.

study, dichotomous control variables (i.e., gender, prevalence of chronic illnesses, and imputed values) were tested using a two-sample *t*-test. Categorical control variables that had more than two levels (i.e., education, occupation, marital status, race, and health insurance coverage in this study) were tested using one-way analyses of variances, and the continuous variables (i.e., income, age, and family size) were tested using a simple linear regression that examined the linear relationship between health outcomes and the continuous control variables. A quadratic term for each continuous control variable was tested in a multiple linear regression to avoid misleading results due to a non-linear relationship between health outcomes and any of the continuous predictors (Allison, 1999).

Measurement Model Analysis

Separate measurement models for each latent variable with psychological distress. For the first wave of this study, the 2001 data, separate measurement models were developed to examine the magnitude and significance of the effect a latent variable had on the observed items (the paths referred to as lambda [λ]) and the correlation (referred to as phi [φ]) between each latent variable and psychological distress (Figure 3). In other words, a separate measurement model was constructed for psychological distress with each latent variable. Each observed item had an error term (referred to as delta [δ]) that influenced the observed item and represented the measurement error of each item. Standardized scores for all variables were used, therefore the paths between observed items and error terms were fixed at 1 (Bowen & Guo, 2012). Because these models included only a correlation between the latent variables and psychological distress, latent variables and psychological distress were considered exogenous (referred as xi [ξ]). In addition, the path loading between one observed item for each latent variable was fixed at 1 to

"set a metric for the latent variable . . . for the scaling of the error variance and for identification purposes" (Bowen & Guo, 2012, p. 83).

Using a maximum likelihood estimator (MLE) was appropriate to test the fit of the data to the separate measurement models, because it handles continuous data, large sample sizes (Bowen & Guo, 2012), and the use of MIs to modify the models. Modification indices suggest additional paths that can be added to the model to improve its fit (Bowen & Guo, 2012).

To evaluate the fit of the data to the measurement models, several fit indices were used: the chi-square distribution (χ^2), the Tucker-Lewis index (TLI), and the root mean square error of approximation (RMSEA; Dimitrov, 2010). Although the comparative fit index is "an incremental fit index that measures the relative improvement in the fit of the researcher's model over that of a baseline model" (Kline, 2011, p. 208), it is always higher than the TLI (Kenny, 2014); therefore only the TLI was used in this study. The TLI accounts for the expected χ^2 of the target model that assumes a central χ^2 distribution (Kaplan, 2009), and the RMSEA measures the discrepancy between the implied and the observed variance–covariance matrix (Bowen & Guo, 2012). The data were assumed to fit the model when the χ^2 estimated value was low and the *p*-value was greater than .05 (Hoyle, 1995), the obtained TLI was greater than 0.90; and the obtained RMSEA was lower than 0.06 (Dimitrov, 2010). Because the sample size of this study was large (n = 6,925 families), it was assumed that the χ^2 value would be large and significant, meaning that the data would not fit the model considering the χ^2 value. However, the χ^2 is known to be sensitive to large sample sizes, so the other fit indices should be used as well (Bowen & Guo, 2012).

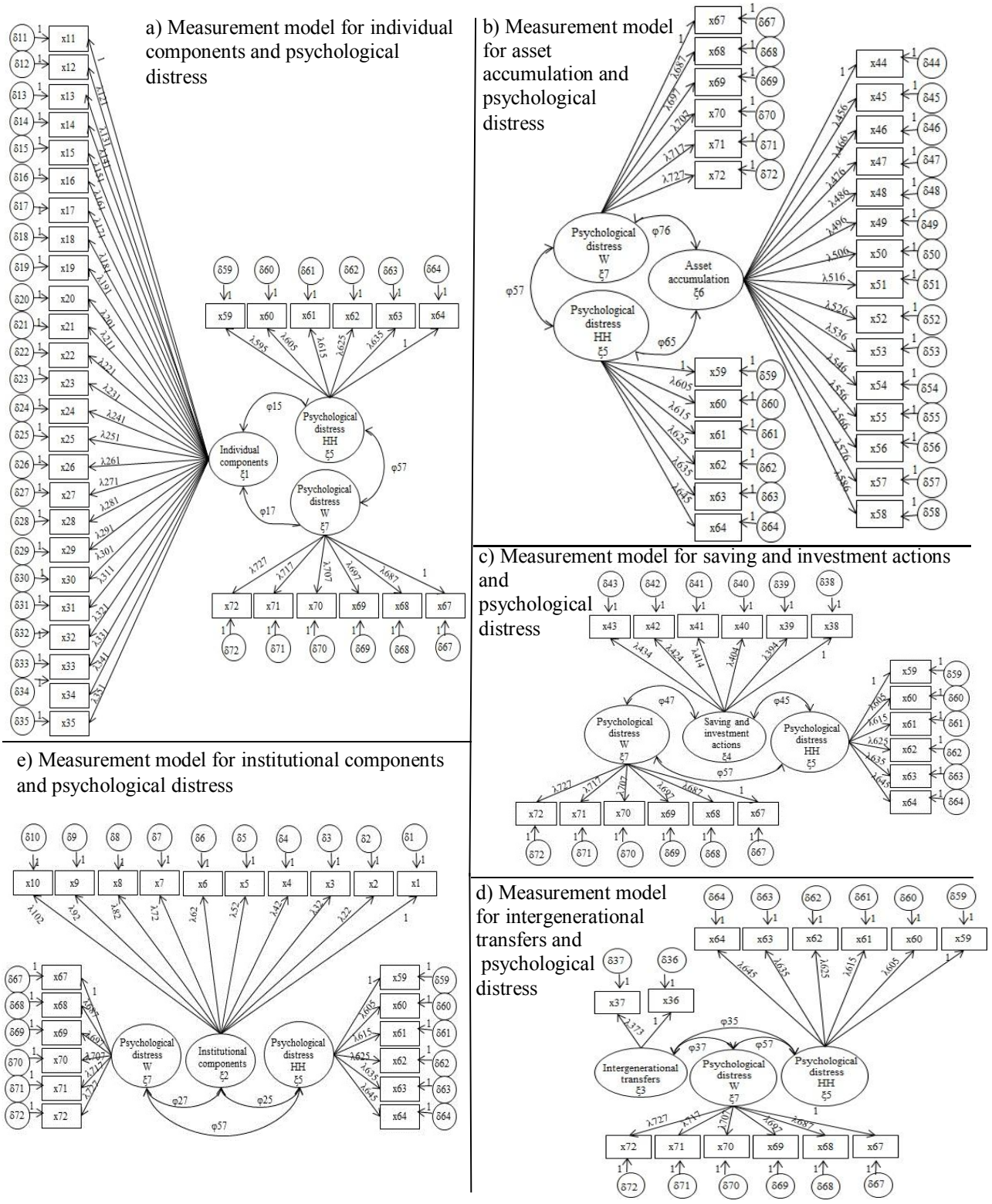

Figure 3. Separate measurement models for the latent variables of the asset-building theoretical framework and psychological distress. HH = heads of households; W = wives; x# = item number, the definitions of which can be found in the following locations within this dissertation: x1–x10 in Table 3, x11–x35 in Table 27, x36–x37 in Table 4, x38–x43 in Table 5, x44–x58 in Table 6, and x59–x72 in Table 1.

The latent variables in this study were not constructed scales but a group of observed items expected to load on the latent variables. Therefore, the correlation between some of the items may not have been high. According to Kenny (2014), the TLI relies on the average size of the correlations between variables in the data, but whenever the average correlation is not high, the TLI will not be high either. To examine the contribution of the independent variables to the model more directly, many control variables were added in the cross-sectional and longitudinal models. Although the addition of these control variables was important to detect the contribution of the independent variables to the model, their addition may have caused a lower correlation between the variables and statistically reduced the value of the TLI. To examine that possibility, Kenny (2014) suggested examining the RMSEA for the null model, a model that includes all relevant variables but no correlations between them at all. A value of .158 suggests that the RMSEA of the examined model is .05 and the TLI of the examined model is .90. In case the RMSEA of the null model is smaller than .158, the TLI of the examined model will be less than .90 and may not be informative.

Composite measurement models. Next, using the modified separate measurement models explained previously, a composite measurement model was estimated for the first wave of this study (2001 data; Figure 4). This model examined the strength and significance of the correlations (φ) between all the latent variables. It included observed items that loaded on the six latent variables (i.e., institutional components, individual components, intergenerational transfers, saving and investment actions, asset accumulation, and psychological distress) and the correlations between these six latent variables. No control variables were added to the model (Bowen & Guo, 2012). Figure 4 illustrates the asset-building theory based on the composite measurement model for the psychological distress of HHs and wives. Again, just as in the

separate measurement models, all latent variables were considered exogenous (ξ), the path loading (λ) between one observed item for each latent variable was fixed at 1, each observed item had an error term (δ), and the paths between observed items and error terms was fixed at 1.

This model allowed a test of the hypothesized relationships among the variables because it was over-identified (*df* = 2463), meaning that the number of parameters to be estimated, a total of 165 from the sums of $7\xi + 21\varphi + 72\delta + 65\lambda$ for psychological distress, was lower than the number of unique pieces of information, a total of 2628 arrived at from the equation of 72 observed items × [(1 + 72 observed items) ÷ 2] (Bowen & Guo, 2012; Hoyle, 1995). The estimated coefficients of the direct relationships between observed items and latent variables were interpreted as regression coefficients in multiple regressions (Kline, 2011) and considered significant at $p < .05$. Again, an MLE was appropriate to test the fit of the data to the full measurement model, using the same fit indices that were mentioned previously (i.e., χ^2, TLI, and RMSEA). The null hypothesis was that the observed covariance of the population under study would not significantly differ from the covariance of the parameter estimates of the measurement model (Bowen & Guo, 2012). In the case of a non-good fit, modifications such as removing loading paths were conducted based on MIs and the asset-building theoretical framework.

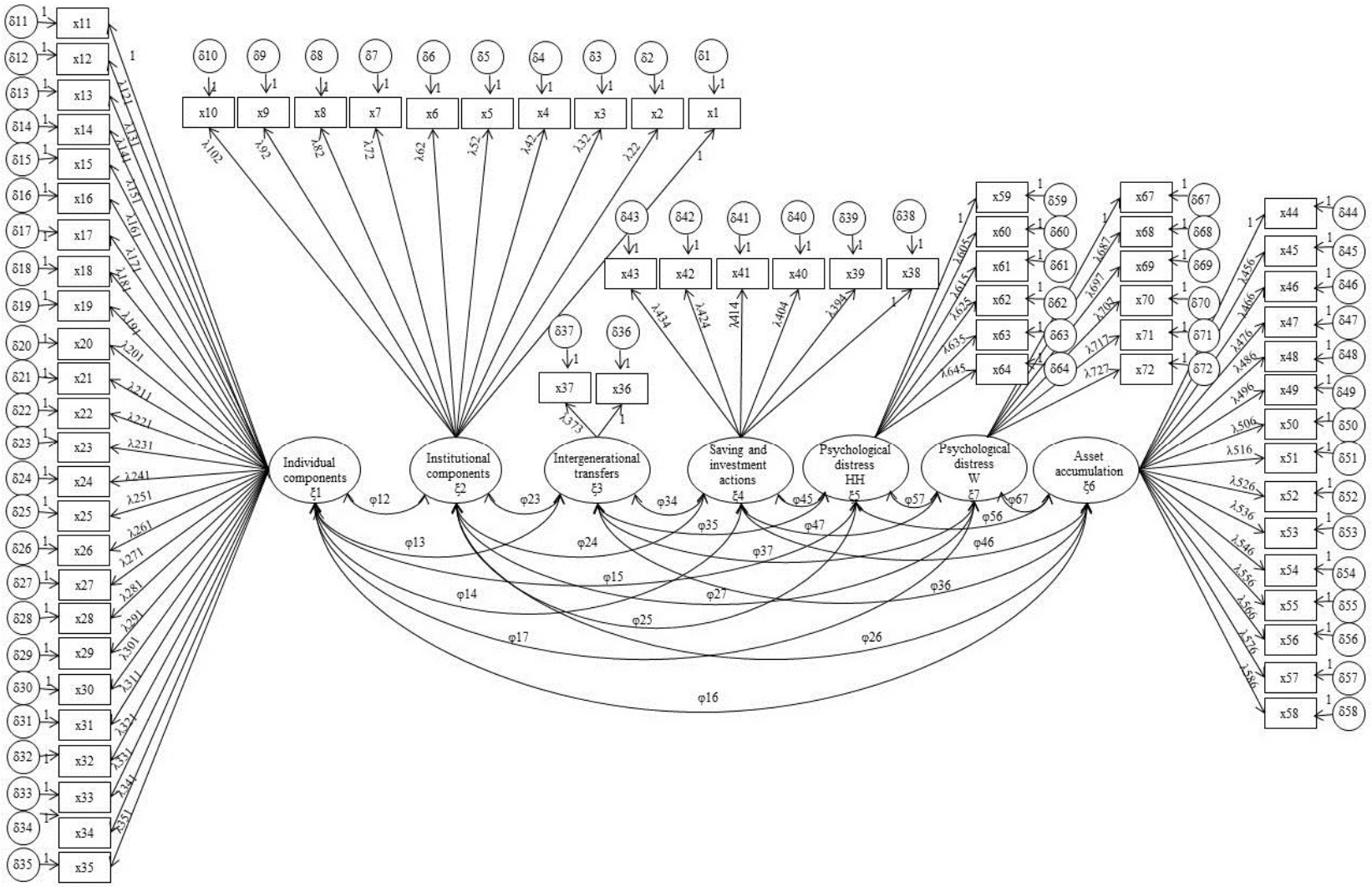

Figure 4. The composite measurement model of the asset-building theoretical framework for psychological distress. HH = head of household; W = wife; x# = item number, the definitions of which can be found in the following locations within this dissertation: x1–x10 in Table 3, x11–x35 in Table 27, x36–x37 in Table 4, x38–x43 in Table 5, x44–x58 in Table 6, and x59–x72 in Table 1.

Cross-Sectional Structural Equation Modeling Analysis

To simultaneously examine direct and indirect effects, correlations, and the reciprocal relationship of the latent variables and the observed control variables, SEM was performed on data from the 2001 PSID (Bowen & Guo, 2012). Figure 5 summarizes the asset-building theoretical framework, which represents a set of regression equations with causal diagrams (Allison, 1999) and relationships between latent and control variables. To make this figure clearer, it excludes the measurement model (i.e., δ, λ, and ε), but that was taken into account in the analysis. Three latent variables (i.e., individual components, institutional components, and intergenerational transfers) were considered exogenous (i.e., ξ) predictors of the latent variable of saving and investment actions, meaning they were not explained by other variables in the model (Bowen & Guo, 2012). Although the exogenous latent variables were not explained by other variables in the model, they were assumed to be correlated with each other (Bowen & Guo, 2012).

Saving and investment actions, asset accumulation, and psychological distress were considered endogenous latent variables (referred to as eta [η]), meaning they were predicted by other variables in the model (Bowen & Guo, 2012). Each of the endogenous latent variables had a structural error term (referred to as zeta [ζ]). The error term could have influenced the endogenous latent variables, and the path between them was fixed at 1 because the variance of the structural error term was the parameter of interest (Bowen & Guo, 2012).

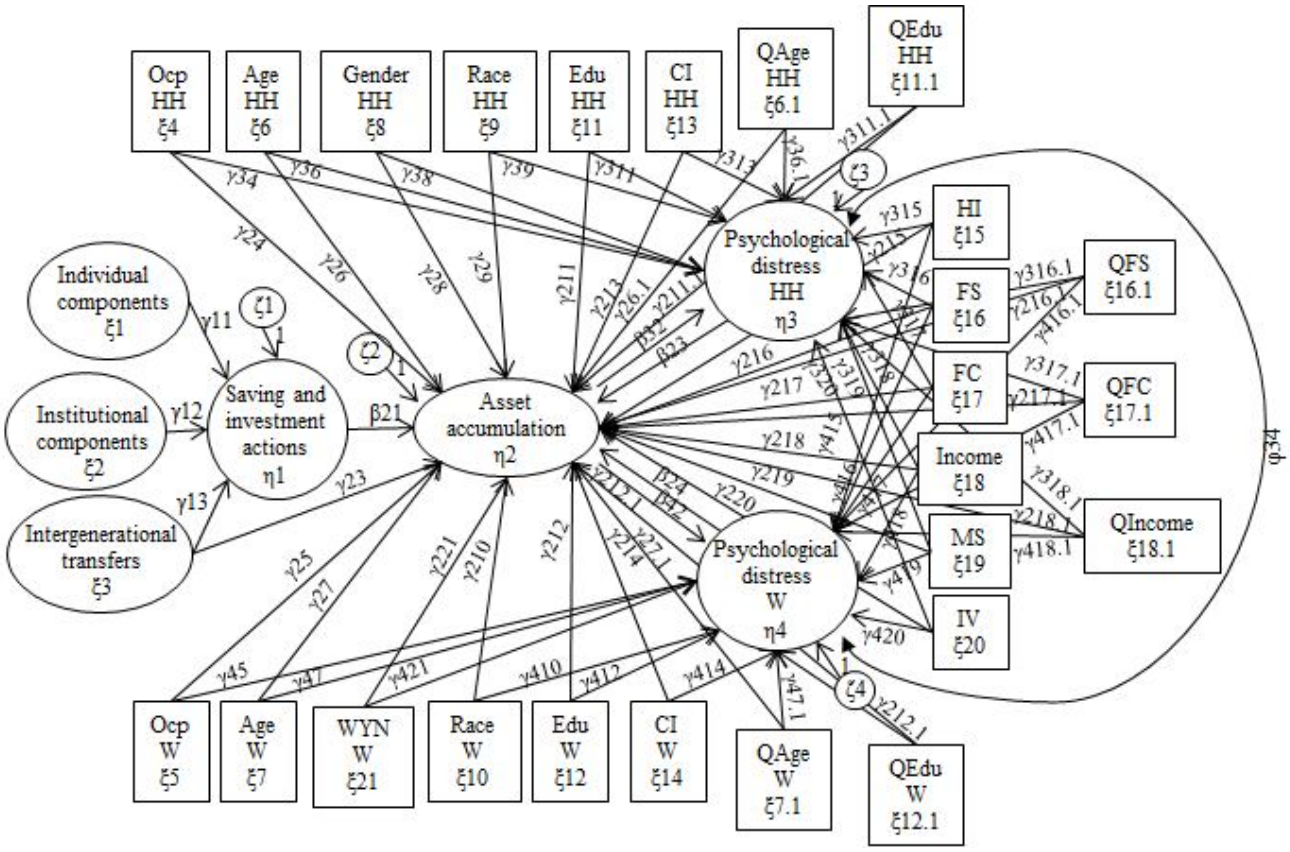

Figure 5. Cross-sectional structural equation modeling for the asset-building theoretical framework and psychological distress. CI = chronic illness; Edu = education; FC = family composition; FS = family size; HH = head of household; HI = health insurance; IV = imputed values; MS = marital status; Ocp = occupation; Q = quadratic term; W = wife; WYN = wife yes/no in the family unit.

The main hypothesis of this study was about the fit of the data to the model. The null hypothesis was that the observed covariance of the population under study would not significantly differ from the covariance of the parameter estimates of the path model (Bowen & Guo, 2012). In addition, the significance and magnitude of all the direct and indirect hypotheses of both independent and control variables, which were described in Chapter 1, were examined.

This model estimated the direct effect between the three exogenous predictors of the latent variable of saving and investment actions and the direct effect between the latent variable of intergenerational transfers and the latent variable of asset accumulation (referred to as gamma

[γ]), and the direct effect between endogenous latent variables (referred to as beta [β]) such as the path between the latent variable of saving and investment actions and the latent variable of asset accumulation, the path between the latent variable of asset accumulation and psychological distress, and the reciprocal path between psychological distress and the latent variable of asset accumulation.

Indirect paths were examined between the three exogenous latent variables and the latent variable of asset accumulation through the latent variable of saving and investment actions, and between the three exogenous latent variables and psychological distress through the latent variable of saving and investment actions and the latent variable of asset accumulation. Another examined indirect path was between the latent variable of saving and investment actions and psychological distress through the latent variable of asset accumulation.

Because psychological distress is the outcome variable, the measurement error terms of the observed items that the latent psychological distress variable predicted were marked as epsilon (ε) instead of delta (δ); however, they are not presented in Figure 5.

Direct effects are the estimated coefficients of paths between exogenous or endogenous latent variables and endogenous latent variables (Raudenbush & Sampson, 1999). The indirect effect is a mediation of an exogenous predictor on an outcome through an endogenous predictor (Bowen & Guo, 2012). Indirect effects can be calculated by multiplying the estimated coefficients of paths between predictor latent variables to the mediator latent variables and paths between the mediator latent variables to the dependent latent variables (Raudenbush & Sampson, 1999). For example, three estimated coefficients were multiplied to calculate the indirect effect of the latent variable of institutional components on psychological distress. The estimated coefficient of the path between the latent variable of institution to the latent variable of saving

investment actions was multiplied with the estimated coefficient of the path between the latent variable of saving and investment actions to the latent variable of asset accumulation, and the product of those equations was multiplied with the estimated coefficient of the path between the latent variable of asset accumulation and psychological distress.

There are many individual factors such as race, gender, age, sociodemographic factors (e.g., family size, marital status), and socioeconomic factors (e.g., income, education level, and occupation) that are known to have a significant relationship with health outcomes. In addition, differences in health outcomes may account for differential effects of socioeconomic status by individual factors such as age, race, and gender (Duncan, Daly, McDonough, & Williams, 2002). For example, House, Kessler, and Herzog (1990) summarized different studies that examined the influence of socioeconomic status and health outcomes in relation to age. They found that higher socioeconomic groups experienced less morbidity and fewer functional limitations compared with lower socioeconomic groups and that morbidity and functional limitations increased steadily throughout middle and early old age. Therefore, an examination of the interactions between socioeconomic status, race, and gender needed to be performed (Williams, 1996).

Most of these factors may also affect asset accumulation. In addition, sociodemographic and socioeconomic factors should be examined and interpreted using intersectionality theory. *Intersectionality theory* implies that gender should be examined not as a single analytic frame but in combination with factors like race, migration status, history, and social class (Samuels & Ross-Sheriff, 2008). In summary, health outcomes can be influenced by socioeconomic, sociodemographic, and individual factors and the interaction between gender and race. Also, individual factors can moderate the influence of socioeconomic factors on health outcomes. An interaction term between race and gender was added to the model to examine its effect on asset

accumulation and psychological distress (Figure 6). In case the fit of the model was not becoming significantly worse, considering the changes in the chi-square value and the degrees of freedom (*df*), the interaction term would be included in the final model.

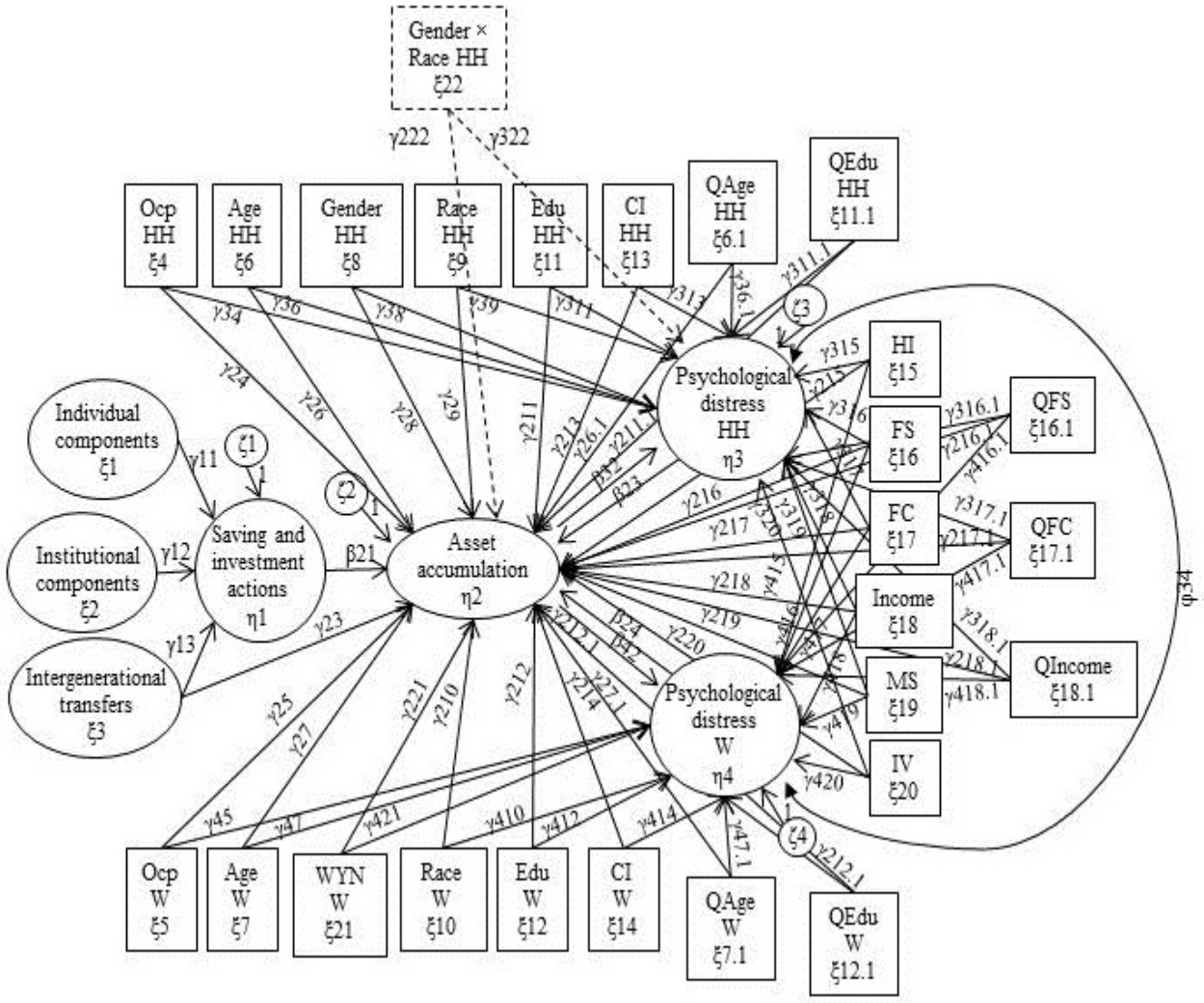

Figure 6. Moderation of race and gender on the cross-sectional structural equation modeling for the asset-building theoretical framework and psychological distress. CI = chronic illness; Edu = education; FC = family composition; FS = family size; HH = head of household; HI = health insurance; IV = imputed values; MS = marital status; Ocp = occupation; Q = quadratic term; W = wife; WYN = wife yes/no in the family unit.

The structural model allowed a test of the hypothesized relationships among the variables because it was over-identified, 113 *df*, meaning the number of parameters to be estimated, a total of 97 arrived at from the sum of $28\xi + 4\eta + 55\gamma + 5\beta + 4\zeta + 1\varphi$, was fewer than the number of unique pieces of information, a total of 210 arrived at from the equation of 20 observed control items and latent variables × [(1 + 20 observed items and latent variables) ÷ 2] (Bowen & Guo, 2012; Hoyle, 1995).

Again, as in the measurement model, the estimated coefficients between endogenous and endogenous variables were interpreted as regression coefficients in multiple regressions (Kline, 2011) and direct and indirect paths were examined and considered significant for $p < .05$. A MLE was used to test the fit of the data to the structural model, using the same fit indices that were discussed previously (i.e., χ^2, TLI, and RMSEA). In case the data did not have a sufficient fit to the model, a modification of the model would be performed based on the three Byrne, Shavelson, and Muthen (1989) conditions: the changes should be theoretically based, minor, and cause no significant changes in other items in the model. Using MIs, modifications such as removing or adding paths were done based on the data but also following the theory.

Longitudinal Structural Equation Modeling Analysis

A longitudinal analog of the modified cross-sectional model was used to test the asset-building theoretical framework over six years, using two time points of 2001 and 2007. Figure 7 presents this longitudinal model, but for clarity, only path coefficients (γ and β) and structural errors (ζ) are included. Each time point included all paths that were examined in the cross-sectional SEM. Paths were added between each latent variable from Time 1 to its corresponding latent variable in Time 2. In addition, paths were added between latent variables from Time 1 and their hypothesized outcomes in Time 2.

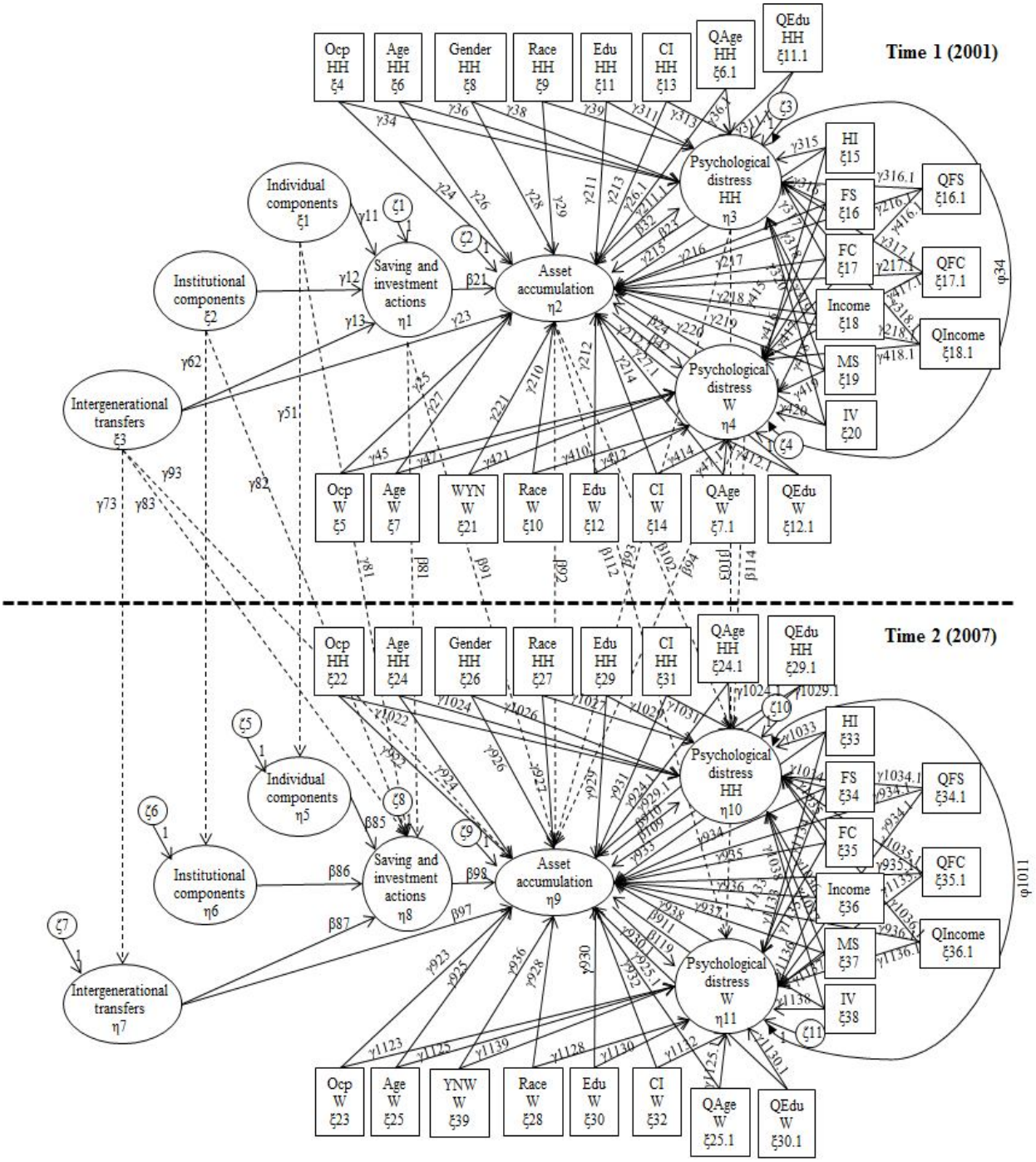

Figure 7. Longitudinal structural equation modeling of the asset-building theoretical framework and psychological distress. CI = chronic illness; Edu = education; FC = family composition; FS = family size; HH = head of household; HI = health insurance; IV = imputed values; MS = marital status; Ocp = occupation; Q = quadratic term; W = wife; WYN = wife yes/no in the family unit.

For example, the latent variable of institutional components in Time 1 predicted the latent variables of institutional components in Time 2 and saving and investment actions in Time 2. Paths between the exogenous latent variables in Time 1 and exogenous and endogenous latent variables in Time 2 were marked with gamma (γ), and all other cross-time paths were considered as paths between endogenous and endogenous latent variables and were marked as beta (β). Once again, the null hypothesis was that the data would fit the model, and an MLE was appropriate to use to test the fit of the data to the longitudinal structural model, using the same fit indices that were mentioned before (i.e., χ^2, TLI, and RMSEA). In the case of a non-good fit, potential modifications such as removing or adding paths were examined according to the theory and using MIs.

Power Analysis

In running an SEM analysis, a power analysis is required to determine whether the study has adequate power to reject a false hypothesis (Bowen & Guo, 2012). To determine the power of this study, three components needed to be fixed: sample size, *df*, and effect size. The PSID provided a fixed number of families ($N = 6,295$), and the identification of the models as measurement and structural provided a fixed number of *df* (2463 *df* and 113 *df*, respectively). The effect size of the study was determined using the RMSEA (Bowen & Guo, 2012). In general, the power of a study is influenced by sample size in relation to the *df*; because this study has more than 100 *df* and more than 500 participants, the power is essentially 100% (MacCallum, Browne, & Sugawara, 1996).

CHAPTER 4: RESULT

This chapter presents the analyses of this study. First, descriptive statistics will be provided regarding the study sample, sociodemographic information, independent, dependent, and control variables. Second, the results for each separate measurement model for the independent latent variables will be described. Third, a composite measurement model will be examined. Fourth, a cross-sectional model that includes all control variables will be tested using SEM. Fifth, a longitudinal model will be described. In the cross-sectional and longitudinal analyses, direct and indirect hypotheses will be presented. In addition, in the longitudinal analysis, expected paths over time will be reported. All analyses will be provided with and without sampling weights.

Descriptive Statistics

This section describes the study sample, followed by sociodemographic information on the HHs, wives, or family-level variables (e.g., annual family income, number of people in the family unit, number of children in the family unit). Next, information about the independent variables is presented followed by information about psychological distress, the dependent variable, for HHs and wives. Finally, control variables are explored.

Study Sample

This study focused on 6,295 families represented by 9,634 participants who were considered HHs or wives in 2001. The original sample included 27,778 participants over the two time points, but only 11,873 were considered HHs or wives in 2001, and only 81.1% (n = 9,634) had information at the two time points. There were 3,721 (59.1%) families in which the HH was

male and there was a wife in the family unit. In 1,789 (28.4%) families, the HH was a female, and in the rest of the families (n = 785, 12.5%), there was a male HH without a wife.

Sociodemographic Information

Tables 8 and 9 display sociodemographic information on HHs, wives, and families in this study. The mean age of participants was 44.1 (± 15.1) for HHs and 42.5 (± 13.4) for wives, and their mean numbers of years of education were 12.9 (± 2.8) and 13.1 (± 2.6), respectively. About half of the HHs were married (54.6%). The majority of HHs and wives were White (60.6% and 70%, respectively), and the minority of both did not work for money (21.8% and 31.9%, respectively). Families in this study had 1 to 13 (mean = 2.8 ± 1.5) people in the family unit, and the number of children in the family unit ranged between 0 and 9 (mean = 0.9 ± 1.2). The mean total family taxable income was $53,883 (± $76,841). It was not normally distributed, and it was positively skewed (Figure 8). The average wage was $31,665 (± $41,117) for HHs and $19,876 (± $32,261) for wives. Other descriptive statistics of the components of total family income are presented in Table 10.

Table 8.

Descriptive Statistics of Continuous Sociodemographic Variables

Continuous sociodemographic variables	***n***	**Mean (*SD*)**	**Min.**	**Max.**
Age of HHs	6,292	44.1 (15.1)	17	96
Age of wives	3,719	42.5 (13.4)	17	88
Education of HHs	5,949	12.9 (2.8)	0	17
Education of wives	3,439	13.1 (2.6)	0	17
Number of people in the FU	6,295	2.8 (1.5)	1	13

Continuous sociodemographic variables	*n*	Mean (*SD*)	Min.	Max.
Number of children in the FU	6,295	0.9 (1.2)	0	9
Number of children in the FU for families with children	3,076	1.9 (1.0)	1	9
Total family taxable income[a] ($)	6,295	53,883.3 (76,840.7)	–59,948	2,112,300

Note. FU = family unit; HH= Heads of the household; Max. = maximum; Min. = minimum; *SD* = standard deviation.

[a]Calculated by the PSID and includes family incomes from farms, business, HH's and wife's wages, dividends, interest, funds, and HH's income from bonuses, overtime, tips, commissions, professional practice, gardening, roomers or boarders, extra jobs, and others.

Table 9.

Descriptive Statistics of Categorical Sociodemographic Variables

Category	Sociodemographic Variables	% of yes answers (*n*)	
		HHs[a]	Wives[b]
Race	White	60.6 (3,747)	70.0 (2,532)
	Black	31.1 (1,921)	20.6 (745)
	Latino	4.8 (296)	5.7 (205)
	Asian	1.6 (96)	2.0 (71)
	American Indian/Aleut/Eskimo	0.6 (39)	0.4 (14)
	Other	1.3 (82)	1.3 (457)
Marital status	Married	54.6	NR
	Unmarried	20.8	
	Widowed	6.0	
	Divorced	14.3	
	Separated	4.3	
Occupation	Professional, Technical, and Kindred Workers	15.4 (965)	19.1 (705)
	Managers and Administrators (except Farm)	12.2 (762)	9.2 (342)

Category	Sociodemographic Variables	% of yes answers (*n*)	
		HHs[a]	Wives[b]
	Sales Workers	4.5 (280)	3.2 (118)
	Clerical and Kindred Workers	8.4 (526)	18.9 (698)
	Craftsman and Kindred Workers	12.4 (777)	1.4 (53)
	Operatives, except Transport	6.3 (394)	4.2 (154)
	Transport Equipment Operatives	4.6 (291)	0.6 (22)
	Laborers (except Farm)	3.5 (222)	0.6 (24)
	Farmers and Farm Managers	0.7 (46)	0.1 (2)
	Farm Laborers and Farm Foremen	9.1 (569)	0.2 (8)
	Service Workers (except Private Household)	0.3 (18)	10.2 (376)
	Private Household Workers	21.8 (1,368)	0.5 (18)
	Did not work for money		31.9 (1,179)

Note. HH = Heads of the household; NR = not relevant.

[a]There were three variables that provided the race of the HH. The first variable that included information about all HHs was used. The other two variables included 15 White, 5 Black, 65 Indian, 1 Asian, 21 Latino, and 16 Other designations. [b]There were three variables that provided the race of the wife. The first variable that included information about all wives was used. The other two variables included 5 White, 44 Indian, 1 Asian, 7 Latino, and 4 Other designations.

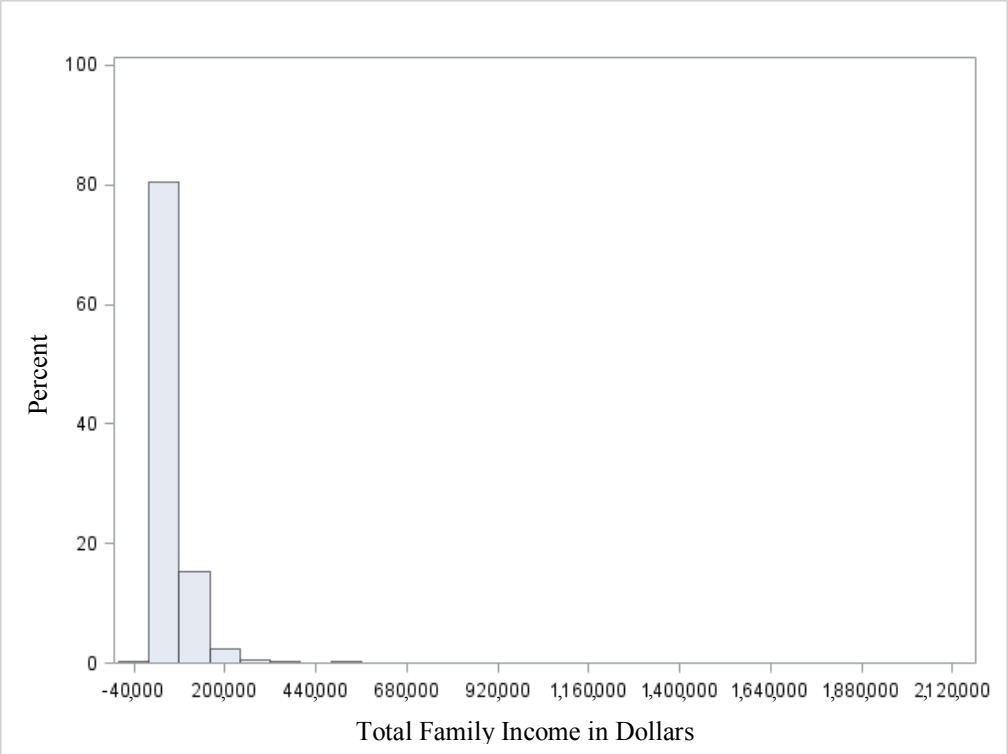

Figure 8. Distribution of total family income in 2001.

Table 10.

Descriptive Statistics of Components of Total Family Income

Annual income type	***n***	**Mean (*SD*) in $**	**Min $**	**Max $**
HHs wages/salary	6,259	31,665.0 (41,116.7)	0	850,000
Wives wages/salary	3,558	19,875.6 (32,261.2)	0	1,135,000
HHs dividends	6,160	929.7 (10,350.0)	0	480,000
Wives dividends	3,690	130.1 (1,938.7)	0	75,000
HHs interest	6,099	636.3 (5,404.0)	0	250,000
Wives interest	3,701	230.5 (9,912.2)	0	600,000
HHs fund/trust	6,286	192.4 (7,075.6)	0	480,000
Wives fund/trust	3,718	12.5 (400.2)	0	20,000
HHs bonus	6,259	696.5 (11,014.2)	0	450,000

Annual income type	*n*	Mean (*SD*) in $	Min $	Max $
HHs overtime	6,259	120.8 (1,304.9)	0	45,000
HHs tips	6,259	22.4 (458.9)	0	19,000
HHs commission	6,259	172.3 (3,502.0)	0	200,000
HHs roomer/boarder	6,295	19.7 (360.2)	0	16,800
HHs other	6,295	43.9 (1,276.7)	0	70,000
Wives other	3,710	479.8 (11,132.4)	0	624,000
HHs extra job	6,295	72.0 (1,371.8)	0	80,000
HHs professional practice	6,295	243.7 (10,953.9)	0	840,000
HHs market/gardening	6,295	21.2 (461.6)	0	21,000
Wives other assets	3,715	64.0 (1,399.4)	0	58,000
HHs anything else	6,266	515.8 (13,601.9)	0	1,040,000
Family business (-expenses)	6,295	2372.3 (30,522.6)	–200,000	1,500,000
Family farm (-expenses)	6,295	281.2 (6,782.2)	–38,000	400,000
Total family taxable income[a]	6,295	53,883.3 (76,840.7)	–59,948	2,112,300

Note. HH= Head of the household; *SD*= standard deviation.

[a]Calculated by the PSID and includes family incomes from farms, business, HH's and wife's wages, dividends, interest, funds, and HH's income from bonuses, overtime, tips, commissions, professional practices, gardening, roomers/boarders, extra jobs, and other sources.

Independent Variables

Family business net worth (i.e., the profit minus expenses) ranged between –$200,000 and $1,500,000. Family farm net worth ranged between –$38,000 and $400,000. Households in the sample had a variety of monthly and annual payments such as buying food for the home (91.5%), electricity (89%), and gasoline (84.9%; Table 11). A small proportion of households received public assistance such as food stamps (7.9%), TANF (1.9% for HHs and 0.5% for wives), and social security income (3.4% for HHs and 0.8% for wives; Table 12). More

households supported someone outside of the family unit (13.4%) than were supported by relatives (8.7% for HHs and 2.5% for wives) or non-relatives (4.8% for HHs and 0.003% for wives; Table 11). An even smaller percentage of households received any inheritance (1.5% in the last year and 3.6% in the last five years; Table 13). About a third of HHs and wives had a pension account through their employer, and for about 40% of those, the employer contributed to the pension accounts. However, only 8% of employers contributed to other saving plans for HHs and only 5.4% for wives (Table 12).

Table 11.

Descriptive Statistics of Individual Components

Sub-components	**Variables**	**% of yes[a]**	**N for mean**	**Mean $ (SD)**	**Min $**	**Max $**
Economic resources and needs (Annually)	Car load/lease	27.5%	6,149	1,645.2 (2,851.4)	0	48,084
	Car insurance	82.6%	5,851	1,200.9 (1,992.4)	0	115,200
	Other car payments	62.4%	6,243	1,262.4 (2,786.9)	0	54,000
	Car repairs	41.4%	6,241	1,445.5 (4,001.4)	0	74,400
	Gasoline	84.9%	6,188	1,442.3 (1,827.5)	0	72,000
	Parking	6.3%	6,273	42.3 (362.8)	0	21,600
	Fare and train fare	4.9%	6,281	41.5 (375.2)	0	19,200
	Taxi	2.4%	6,281	12.9 (140.8)	0	7,200
	Other transportation	3.3%	6,282	138.7 (1,339.4)	0	36,000
	Child care	9.7%	6,274	396.4 (1,412.9)	0	21,000

Sub-components	Variables	% of yes[a]	N for mean	Mean $ (SD)	Min $	Max $
	Adult care	0.3%	6,292	6.0 (323.9)	0	24,000
	Food at home	91.5%	6,262	33,575.4 (385,736.0)	0	5,199,948
	Food delivered to door	13.3%	6,293	2,792.5 (114,521.2)	0	5,199,948
	Eat outside	85.5%	6,264	15,508.9 (257,176.9)	0	5,199,948
	Property tax	53.9%	5,930	1,033. (2,279.6)	0	95,000
	Mortgage on a house	45.4%	6,244	5,105.7 (11,644.9)	0	600,000
	Rent	34.1%	6,248	2,016.3 (3,644.5)	0	60,000
	Gas and heat	59.9%	6,029	665.4 (872.7)	0	10,800
	Electricity	89.6%	6,087	1,085.5 (793.8)	0	9,600
	Other utilities	23.5%	6,277	209.7 (508.1)	0	6,000
	Water and sewer	58.3%	6,031	284.8 (379.3)	0	9,600
	School-related expenses	34.5%	6,262	1,125.5 (4,481.7)	0	92,000
	Other school-related expenses	4.5%	6,292	42.9 (856.1)	0	60,000
	Home repairs and maintenance	7.3%	6,284	2,321.8 (22,969.1)	0	1,500,000
	Other debts	52.9%	6,295	6,439.0 (19,626.4)	0	450,000
Social support (Annually)	Help from relatives - HHs	8.7%	6,244	258.3 (1,844.9)	0	41,600
	Help from relatives - wives	2.5%	3,711	81.7 (995.0)	0	26,000
	Help from non-relatives - HHs	4.8%	6,256	90.2 (906.6)	0	30,000
	Help from non-relatives - wives	0.003%	3,721	12.0 (394.0)	0	20,000

Sub-components	Variables	% of yes[a]	N for mean	Mean $ (SD)	Min $	Max $
	Supporting someone out of the FU	13.4%	6,257	559.8 (3,170.1)	0	70,000

Note. FU = family unit; HH = Heads of the household; *SD* = standard deviation.
[a]Out of 6,259 families total.

Table 12.

Descriptive Statistics of Institutional Components

Institutional components		Family unit	% of yes[a]	*n*	Mean (*SD*)	Min	Max
Asset limits (annual amount in $)	Food stamps	Family	7.9%	6,222	213.6 (1,012.2)	0	25,064
	Government help to pay heating	Family	3.9%	6,216	11.3 (79.4)	0	2,544
	TANF	HHs	1.9%	6,238	70.3 (644.7)	0	23,904
		Wives	0.5%	3,705	16.4 (288.1)	0	8,952
	SSI	HHs	3.4%	6,236	125.5 (994.2)	0	28,800
		Wives	0.8%	3,703	36.3 (487.4)	0	13,200
	Other welfare	HHs	0.5%	6,238	17.4 (309.5)	0	10,464
		Wives	0.2%	3,704	5.5 (206.0)	0	9,600
	Child support	HHs	5.4%	6,224	355.8 (8,107.6)	0	624,000
		Wives	4.1%	3,697	171.6 (1,258.8)	0	43,200
	Unemployment compensation	HHs	3.7%	6,221	262.5 (3,452.7)	0	234,000
		Wives	2.8%	3,698	167.9 (1,401.6)	0	25,000
	Workers' compensation	HHs	1.1%	6,222	111.6 (2,923.9)	0	180,000
		Wives	0.6%	3,700	38.4 (977.5)	0	46,800
Access (in years)	Pension through an employer	HHs	39.2%	6,216	3.4 (6.9)	0	44
		Wives	30.7%	3,696	2.6	0	42

Institutional components		Family unit	% of yes[a]	*n*	Mean (*SD*)	Min	Max
					(5.9)		
Security (annual amount in $)	Homeowner insurance premium	Family	NI	5,816	336.2 (500.2)	0	8,000
Incentives (annual amount in $)	Employer contribution to pension	HHs	16.6%	6,080	112.9 (2,148.4)	0	110,000
		Wives	12.9%	3,635	28.8 (346.1)	0	15,600
	Employer contribution to saving plan	HHs	8.0%	6,195	81.3 (3,278.0)	0	197,600
		Wives	5.4%	3,685	11.9 (182.9)	0	7,000

Note. HH = Head of the household; NI = No information SD = standard deviation; SSI = Supplemental Security Income; TANF = Temporary Assistance for Needy Families.

[a]Out of 6,259 families and HHs, and out of 3,721 wives.

Table 13.

Descriptive Statistics of Intergenerational Transfers

Intergenerational transfers	% of yes[a]	*n*	Mean $ (*SD*)	Min $	Max $
Inheritance last year	1.5%	6,290	582.0 (9,446.9)	0	420,000
Inheritance in the last 2 years	3.6%	6,282	1,859.9 (18,497.8)	0	650,000

Note. SD = standard deviation.

[a]Out of 6,259 families.

The mean annual family deposits and withdrawals are presented in Table 14, and the median deposits and withdrawals were 0. Deposits ranged from $965 (± $11,589) in stocks, mutual funds, or investment trusts to $1,226 (± $7,241) in private annuities or IRAs; however, less than 2% of HHs and wives voluntarily contributed to their pension accounts. Mean withdrawals from previous employer's pensions were $225 (± $5,096) for HHs and $114 (±

$2,887) for wives. Mean family withdrawals from pensions, private annuities, or IRA was $725 (± $6,754).

Table 14.

Descriptive Statistics of Saving and Investment Actions

Saving and investment actions		Family unit	% of yes[a]	*n*	Mean $ (*SD*)	Min $	Max $
Deposits (Annually)	Private annuities or IRAs	Family	14.3%	6,222	1,226.4 (7,241.3)	0	225,000
	Stocks, mutual funds, or investment trusts	Family	13.9%	6,221	964.9 (11,589.3)	0	700,000
	Voluntarily contributions to pension	HHs	1.6%	6,153	162.7 (1,007.2)	0	26,000
		Wives	1.1%	3,669	84.8 (660.1)	0	15,000
Withdrawals (Annually)	Pensions, private annuities, or IRAs	Family	5.3%	6,279	725.2 (6,754.2)	0	275,000
	Stocks, mutual funds, or investment trusts	Family	1.8%	6,290	310.8 (10,555.7)	0	800,000
	Previous employer pensions	HHs	1.0%	6,285	225.1 (5,096.4)	0	275,000
		Wives	0.5%	3,719	113.7 (2,886.6)	0	160,000

Note. HH = Head of the household; SD = standard deviation.

[a]Out of 6,259 families.

In 2001, HHs and wives accumulated money through retirement savings (Table 15). The mean amount that was accumulated in pensions was $9,533 (± $143,594) for HHs and $2,388 (± $12,861) for wives. The mean amount in pensions from former employers was $1,322,349 (± $12,088,411) for HHs and $1,351 (± $13,444) for wives. Home values, after subtracting the mortgage principals, ranged between –$798,000 and $2,750,000. The majority of families owned

a vehicle (87.6%), and the mean net worth of those was $12,587 (± $19,039). Other assets that families owned included stocks, mutual funds, investment trusts (23.5%), secondary real estate (13.6%), farms or businesses (11.5%), and other assets (18%). The mean net worths of those assets were presented in Table 8. In addition, most families had liquid savings (75.8%) that on average held a value of $15,019 (± $86,932).

Table 15.

Descriptive Statistics of Asset Accumulation

Saving and investment actions		Family unit	% of yes[a]	*n*	Mean $ (*SD*)	Min $	Max $
Retirement savings	Pension	HHs	39.2%	5,914	9,533.4 (143,594.2)	0	10,000,000
		Wives	31.8%	3,529	2,388.3 (12,860.6)	0	255,000
	Private annuities or IRAs	Family	27.8%	6,295	21,833.6 (85,298.4)	0	1,750,000
	Rollover to IRA	HHs	0.6%	6,295	8,270.0 (282,017.2)	0	10,014,998
		Wives	0.3%	3,719	196.9 (6,106.9)	0	300,000
	Pension from former employer	HHs	18.4%	6,290	1,322,348.7 (12,088,411.3)	0	199,999,996
		Wives	13.7%	3,679	1,350.8 (13,444.0)	0	400,000
Home equity	Home value minus principle of mortgage	Family	61.3%	6,295	51,653.8 (103,398.8)	–798000	275,0000
	Sold home		4.2%	6,286	6,473.4 (47,283.9)	0	1,450,000
	Sold other real estate		1.5%	6,290	1,106.2 (16,005.2)	0	500,000

Saving and investment actions		Family unit	% of yes[a]	*n*	Mean $ (*SD*)	Min $	Max $
	Bought other real estate		3.3%	6,290	1,921.7 (26,637.2)	0	1,300,000
	Addition/ improvements of home/real estate		7.3%	6,284	2,321.8 (22,969.1)	0	1,500,000
Net worth (Value of owned asset minus debt)	Second real estate	Family	13.6%	6,295	23,688.7 (283,583.8)	0	15,000,000
	Vehicles		87.6%	6,295	12,586.9 (19,039.5)	0	300,000
	Farm/business		11.5%	6,295	27,634.3 (368,511.4)	0	22,000,000
	Stocks, mutual funds, investment trusts		23.5%	6,295	33,114.3 (533,704.9)	0	40,000,000
	Other assets[b]		18.0%	6,295	9,227.3 (63,320.5)	0	2,000,000
Liquid savings	Checking/ savings account, money market funds, etc.	Family	75.8%	6,259	15,019.1 (86,931.6)	0	4,000,000

Note. HH = Heads of the household; IRA = individual retirement account; *SD* = standard deviation.

[a]Out of 6,259 families and HHs, and out of 3,721 wives. [b]The value of bond funds, a life insurance policy, a collection for investment purposes, or rights in a trust or estate.

Psychological Distress

Table 16 displays the descriptive statistics of the total score and the six items of psychological distress for HHs and wives. There was information about psychological distress for 4,169 HHs (66.2%) and 2,067 wives (55.5%). As was mentioned in Chapter 3, information about psychological distress was available only for one family member, head of household, or wife. Only one person was interviewed by the PSID researchers during each wave, and it is not appropriate to answer the psychological distress measure as a proxy. The total score for

psychological distress ranged between 6 and 30 and the scores for the psychological distress items ranged between 1 and 5, with lower scores for both representing worse psychological distress. The mean of the total score for psychological distress was 26.52 (± 3.94) for HHs and 26.57 (± 3.80) for wives, and the median was 28.00. The means of the items for psychological distress ranged between 4.10 and 4.80 for HHs and wives, and the median for most of the psychological distress items was 5.00. The means and medians were similar, within one standard deviation, for the total score and for all items of psychological distress for HHs and wives. Similar information was obtained for the descriptive statistics using sampling weights.

Table 16.

Descriptive Statistics of Psychological Distress for Heads of Households (HHs; $n = 4169$) and Wives ($n = 2067$)

Psychological Distress Items[a]	**HHs or Wives**	**Mean**[b]	***SD***[b]	**Median**[b]	**Min**	**Max**
Total score	HHs	26.23 (26.78)	3.94 (3.74)	28.00	6	30
	Wives	26.57 (26.56)	3.80 (3.82)	28.00		
Sadness	HHs	4.4 (4.5)	0.9 (0.9)	5.00 (5.00)	1	5
Nervousness		4.3 (4.3)	0.9 (0.9)	5.00 (5.00)		
Restlessness		4.1 (4.1)	1.1 (1.0)	4.00 (4.00)		
Hopelessness		4.7 (4.7)	0.7 (0.7)	5.00 (5.00)		
Effort		4.2 (4.3)	1.2 (1.0)	5.00 (5.00)		
Worthlessness		4.8 (4.8)	0.6 (0.6)	5.00 (5.00)		
Sadness	Wives	4.5 (4.4)	0.9 (0.9)	5.00 (5.00)	1	5
Nervousness		4.2 (4.2)	1.0 (1.0)	5.00 (4.00)		
Restlessness		4.1 (4.1)	1.1 (1.0)	4.00 (4.00)		
Hopelessness		4.8 (4.7)	0.7 (0.7)	5.00 (5.00)		
Effort		4.2 (4.3)	1.1 (1.1)	5.00 (5.00)		

Psychological Distress Items[a]	HHs or Wives	Mean[b]	*SD*[b]	Median[b]	Min	Max
Worthlessness		4.8 (4.8)	0.6 (0.6)	5.00 (5.00)		

Note. For HHs, $N = 62,434,498$ for the descriptive statistics analysis with sampling weights. For wives, $N = 26,755,301$ for descriptive statistics analysis with sampling weight. *SD* = standard deviation.

[a]Lower scores represent worse psychological distress. [b]Results using sampling weights are reported in parentheses.

In addition, 44% of HHs ($n = 2,769$) and 23.9% of wives ($n = 1,505$) reported having at least one chronic illness, and the majority of families had health insurance (74%) for at least one family member (Table 17).

Table 17.

Descriptive Statistics of Categorical Control Variables

Category	Control Variables	% of yes (*n*)	
		Heads of Households	Wives
Medical history	High blood pressure	23.5% (1,466)	17.8% (655)
	Diabetes	7.5% (465)	5.6% (206)
	Cancer	3.6% (226)	3.7% (138)
	Lung disease	3.8% (239)	2.8% (102)
	Heart attack	3.8% (237)	1.2% (45)
	Heart disease	5.7% (358)	4.2% (155)
	Emotional problems	5.3% (331)	6.2% (230)
	Arthritis	16.3% (1,016)	14.9% (548)
	Asthma	7.4% (459)	8.4% (309
	Mental loss	1.6% (99)	1.0% (35)
	Chronic illness	44.0% (2,769)	23.9% (1,505)

Category	Control Variables	% of yes (*n*)
		Families
Health insurance	No health insurance	13.1% (824)
	Health insurance	74.0% (4,658)
	Medicare or Medicaid	12.9% (810)

Bivariate Analysis

The bivariate analyses were conducted with and without sampling weights. Tables in this section include information from both analyses; however, the text includes results only for the analysis without sampling weights. The reason is that all the relationships in the analysis with sampling weights were significant under $p < .001$ due to the large sample size of about 60 million for HHs and about 25 million for wives. Therefore, in the weighted analysis, it is important to examine the magnitude of the relationships instead of the statistical significance, meaning that a relationship between two variables may be statistically significant, but not clinically or practically significant.

In this bivariate analysis section, the relationships between control variables and psychological distress levels will be presented as well as the relationships between selected control variables.

The Relationships Between Control Variables and Psychological Distress During the Past 30 Days

Correlations between the psychological distress of HHs, wives, and all continuous control variables are presented in Table 18. Older age in HHs was significantly related to lower levels of psychological distress in the past 30 days; older age in wives was to lower levels of psychological distress in the past 30 days under $p < .05$ (Tables 18 and 19). Lower levels of

psychological distress were also significantly related to more years of education for HHs and wives (Tables 18 and 19). For both, psychological distress levels were not related to the number of people or children living in the family unit (Table 18); however, under $p < .05$, lower levels of psychological distress of HHs were related to more people living in the family unit and fewer children living in the family unit (Tables 18 and 19). For HHs and wives, greater family income was significantly associated with lower levels of psychological distress (Table 18), and the regression showed that the quadratic term of family income was also significantly related to the psychological distress of HHs and wives (Table 19).

Table 18.

Correlations Between Psychological Distress and Continuous Control Variables

	1.	**2.**	**3.**	**4.**	**5.**	**6.**	**7.**	**8.**	**9.**
1. Psychological distress HH	—								
2. Psychological distress W	0.00	—							
3. Income[a]	0.18*	0.10*	—						
4. # people	0.04**	–0.02	0.29*	—					
5. # children	–0.04**	–0.03	0.10*	0.86*	—				
6. Age HH	0.11*	0.07**	–0.05*	–0.18*	–0.30*	—			
7. Edu HH	0.16*	0.11*	0.42*	–0.09*	–0.10*	–0.08*	—		
8. Age W	0.07**	0.07**	–0.01	–0.27*	–0.37*	0.94*	0.02	—	
9. Edu W	0.08*	0.14*	0.46*	–0.11*	–0.07*	–0.11*	0.65*	–0.09*	—

Note. Edu = education level; HH = head of household; W = wife.

[a]A Spearman correlation was used to test correlations between income and other continuous control variables.

Table 19.

Relationship Between Psychological Distress in the Past 30 Days of Heads of the Households (n = 4161) and Wives (n = 2067) and Continuous Control Variables

Family Unit (FU)	Continuous Control Variables	*B*	*SE*	β	*p**
Heads of the households	Age (years)	0.275 (0.281)	0.039 (0.000)	0.109 (0.125)	< .001 (< .001)
	Education (years)	0.581 (0.418)	0.057 (0.000)	0.160 (0.124)	< .001 (< .001)
	# of people in FU	0.437 (0.546)	0.126 (0.001)	3.476 (0.192)	.001 (< .001)
	# of children in FU	–0.150 (–0.088)	0.053 (0.000)	–0.044 (–0.023)	.005 (< .001)
	Family income ($)	0.789 (0.591)	0.068 (0.000)	0.278 (0.255)	< .001 (< .001)
	Family income ($; quadratic)	–0.576 (–0.390)	0.080 (0.000)	–0.173 (–0.164)	< .001 (< .001)
Wives	Age (years)	0.197 (0.154)	0.066 (0.001)	0.066 (0.056)	.003 (< .001)
	Education (years)	0.722 (0.719)	0.122 (0.001)	0.135 (0.142)	< .001 (< .001)
	# of people in FU	–0.061 (–0.144)	0.062 (0.001)	–0.022 (–0.049)	.325 (< .001)
	# of children in FU	–0.096 (–0.112)	0.067 (0.001)	–0.031 (–0.035)	.157 (< .001)
	Family income ($)	0.447 (0.378)	0.082 (0.001)	0.196 (0.170)	< .001 (< .001)
	Family income ($; quadratic)	–0.283 (–0.264)	0.063 (0.001)	–0.161 (–0.117)	< .001 (< .001)

Note. Lower scores represent worse psychological distress. Results using sampling weights are reported in parenthesis. For heads of households, N = 62,326,543 for bivariate analysis with sampling weights. For wives, N = 26,755,301 for bivariate analysis with sampling weights. B = unstandardized beta coefficient; β = standardized beta coefficient; FU = family unit; SE = standard error.

*For bivariate analysis with sampling weights, all p-values were less than .001 including quadratic terms.

Significantly higher levels of psychological distress were reported by female HHs than male HHs (Table 20). In addition, race influenced psychological distress levels for HHs but not

for wives. Using a conservative significance level of 0.001, White HHs reported significantly lower levels of psychological distress compared with Black HHs (Table 20). For HHs, being married was significantly related to lower levels of psychological distress during the past 30 days compared with unmarried, widowed, divorced, and separated HHs. In addition, being a widowed HH or a divorced HH was also significantly associated with lower levels of psychological distress compared with being a separated HH. However, the marital status of HHs did not significantly predict psychological distress levels for wives (Table 20).

Table 20.

Relationship Between Psychological Distress in the Past 30 Days of Heads of the Households (n = 4161) and Wives (n = 2067) and Dichotomous and Categorical Control Variables

Dichotomous and categorical control variables		**Heads of households**			**Wives**		
		Mean	***SD***	**Post hoc***	**Mean**	***SD***	**Post hoc***
Sex	Male	27.18 (27.35)	3.35 (3.20)				
	Female	25.63 (25.90)	4.47 (4.30)				
		Statistical Values					
	t-value	12.22 (1,438.62)					
	df	3,123 (41,610,692)					
	p-value	< .001 (< .001)					
		Mean	***SD***	**Post hoc***	**Mean**	***SD***	**Post hoc***
Chronic illness	No	27.10 (27.32)	3.35 (3.17)		27.24 (27.23)	3.07 (3.06)	
	Yes	25.83 (26.22)	4.44 (4.18)		25.69 (25.73)	4.44 (4.44)	
		Statistical Values					

Dichotomous and categorical control variables		Heads of households			Wives		
		Mean	***SD***	**Post hoc***	**Mean**	***SD***	**Post hoc***
	t-value	10.30 (1,177.23)			8.94 (996.35)		
	df	3,450 (56,960,585)			1,510 (20,734,155)		
	p-value	< .001 (< .001)			< .001 (< .001)		
		Mean	***SD***	**Post hoc***	**Mean**	***SD***	**Post hoc***
Imputed values	No	26.46 (26.75)	3.98 (3.77)		26.47 (26.50)	3.77 (3.77)	
	Yes	26.84 (26.92)	3.73 (3.61)		26.82 (26.69)	3.86 (3.93)	
		Statistical Values					
	t-value	–2.48 (–143.48)			–1.90 (–111.76)		
	df	1,091 (16,331,499)			1,041 (14,160,050)		
	p-value	.013 (<.001)			.058 (<.001)		
		Mean	***SD***	**Post hoc***	**Mean**	***SD***	**Post hoc***
Race	White (A)	26.86 (26.88)	3.62 (3.62)	B	26.58 (26.62)	3.70 (3.73)	
	Black (B)	25.88 (26.06)	4.34 (4.34)	A	26.80 (26.63)	3.81 (3.81)	
	American Indian (C)	25.41 (27.00)	4.73 (3.90)		26.14 (25.02)	5.30 (5.35)	
	Asian (D)	27.16 (27.31)	3.47 (3.23)		26.70 (26.52)	2.77 (2.68)	
	Latino (E)	26.99 (27.05)	3.99 (3.66)		26.14 (26.25)	4.35 (4.31)	
	Other (F)	24.40 (27.00)	4.11 (3.74)		26.65 (26.51)	3.73 (3.92)	
		Statistical Values					
	F-statistics	12.44 (81,471.82)			0.68 (6,524.13)		

Dichotomous and categorical control variables		Heads of households			Wives		
		Mean	***SD***	**Post hoc***	**Mean**	***SD***	**Post hoc***
	df	4,135 (62,086,146)			2,006 (26,127,906)		
	p-value	< .001 (< .001)			.680 (< .001)		
		Mean	***SD***	**Post hoc***	**Mean**	***SD***	**Post hoc***
Marital status	Married (A)	27.57 (27.74)	3.02 (2.84)	B, C, D, E	26.66 (26.61)	3.75 (3.79)	
	Unmarried (B)	25.85 (26.12)	4.28 (4.07)	A	25.72 (25.96)	3.73 (3.38)	
	Widowed (C)	26.13 (26.44)	4.16 (3.92)	A, E	22.33 (21.60)	12.42 (10.26)	
	Divorced (D)	26.27 (26.43)	4.05 (3.97)	A, E	25.82 (26.15)	4.23 (4.30)	
	Separated (E)	24.86 (24.75)	4.88 (4.85)	A, C, D	21.33 (20.74)	5.32 (4.93)	
		Statistical Values					
	F-statistics	51.51 (787,954.09)			6.09 (55,961.11)		
	df	4162 (62,326,542)			2,066 (26,755,300)		
	p-value	< .001 (< .001)			< .001 (< .001)		
		Mean	***SD***	**Post hoc***	**Mean**	***SD***	**Post hoc***
Occupation	Not working (A)	25.61 (26.27)	4.76 (4.49)	B, C, F, G	26.05 (26.16)	4.29 (4.28)	B
	Professional, Technical (B)	27.31 (27.24)	2.85 (2.88)	A, E, L	27.27 (27.27)	2.86 (2.94)	A, G
	Managers and Administrators (C)	27.27 (27.43)	2.93 (2.78)	A, L	26.91 (26.78)	3.47 (3.52)	
	Sales Workers (D)	26.81 (26.79)	3.52 (3.49)		27.45 (27.67)	2.56 (2.26)	
	Clerical (E)	26.25 (26.48)	3.92 (3.79)	B	26.99 (26.79)	3.38 (3.53)	

Dichotomous and categorical control variables		Heads of households			Wives		
		Mean	***SD***	**Post hoc***	**Mean**	***SD***	**Post hoc***
	Craftsman (F)	27.36 (27.53)	3.21 (2.94)	A, L	27.16 (27.00)	3.00 (2.86)	
	Operatives (G)	27.04 (27.21)	3.73 (3.39)	A	25.24 (25.36)	4.42 (4.44)	B
	Transport Equipment Operatives (H)	26.39 (27.02)	4.16 (3.67)		26.25 (26.40)	2.82 (2.53)	
	Laborers (I)	26.15 (26.14)	4.08 (4.02)		26.07 (25.77)	3.43 (3.58)	
	Farmers, Farm Managers (J)	28.14 (28.15)	1.93 (1.90)		25.00 (25.00)	0.00 (0.00)	
	Farm Laborers, Farm Foremen (K)	26.71 (27.22)	5.06 (4.19)		28.00 (28.15)	4.02 (3.64)	
	Service Workers (L)	25.85 (25.91)	4.27 (4.22)	B, C, F	26.18 (26.08)	4.40 (4.24)	
	Private Household Workers (M)	25.44 (24.00)	6.48 (5.84)		25.67 (25.60)	4.48 (4.44)	
		Statistical Values					
	F-statistics	12.16 (128,042.31)			4.32 (44,602.53)		
	df	4,154 (62,229,145)			2,061 (26,721,389)		
	p-value	< .001 (< .001)			< .001 (< .001)		
		Mean	***SD***	**Post hoc***	**Mean**	***SD***	**Post hoc***
Health insurance	No health insurance (A)	25.35 (25.59)	4.50 (4.45)	B	25.45 (25.17)	5.18 (5.23)	B
	Health insurance (B)	26.96 (27.06)	3.46 (3.36)	A, C	26.79 (26.82)	3.48 (3.46)	A
	Medicare or Medicaid (C)	25.54 (26.30)	4.96 (4.55)	B	25.96 (25.87)	4.17 (4.39)	
		Statistical Values					
	F-statistics	64.57 (556,307.24)			15.57 (282,127.83)		

Dichotomous and categorical control variables	Heads of households			Wives		
	Mean	*SD*	Post hoc*	Mean	*SD*	Post hoc*
df	4,159 (62,241,547)			2,066 (26,755,300)		
p-value	< .001 (< .001)			< .001 (< .001)		

Note. Lowers score represent worse psychological distress. Results using sampling weights are reported in parenthesis. For heads of households, $N = 62,326,543$ for bivariate analysis with sampling weights. For wives, $N = 26,755,301$ for bivariate analysis with sampling weights. *df* = degrees of freedom; *SD*= standard deviation.

*For bivariate analyses with sampling weights, all *p*-values were less than .001 including quadratic terms.

Significant relationships among different occupations and psychological distress and pairwise comparisons between different occupations are presented in Table 20 for HHs and wives. For example, not-working HHs reported significantly higher levels of psychological distress compared with HHs whose occupation was professional/technical, manager and administrator, craftsman, and operatives.

Heads of the households and wives who had someone in the family unit with health insurance reported significantly lower levels of psychological distress compared with those who did not have anyone in the family unit with health insurance or those who had someone in the family unit with Medicaid or Medicare (Table 20). Higher levels of psychological distress were significantly related to HHs and wives who had a medical history of chronic illness compared with those who had no such history (Table 20). In addition, having imputed values were not significantly related to psychological distress levels for HHs and wives (Table 20).

The Relationship Between Selected Control Variables

Male HHs had significantly more years of education, greater income, and larger family sizes compared with female HHs (Table 21).

Table 21.

Relationships Between Continuous Control Variables and Genders of Heads of the Households (HHs; $n = 6295$)

Continuous control variables	Mean rank[a]		χ^2 (Pearson Correlation[b])	p*
	Male	Female		
Total family income	3,633.8 (3,616.6)	1,924.5 (1,983.2)	1,133.05 (–0.39)	< 0.001
Number of people in the FU	3,415.3 (3,079.0)	2,474.7 (1,731.7)	359.72 (–0.34)	< 0.001
Number of children in the FU	3,146.7 (2,823.1)	3,151.2 (2,463.3)	0.01 (–0.10)	0.924
Age of HHs	3,153.8 (3,519.1)	3,128.2 (3,701.5)	0.26 (0.04)	0.614
HHs years of education	3,095.1 (3,269.2)	2,671.1 (2,905.5)	76.50 (–0.09)	< 0.001

Note. $N = 90,103,635$ for bivariate analysis with sampling weights. FU = family unit.

[a]Results using sampling weights are reported in parenthesis. [b]Continuous control variables were ranked and tested for Pearson correlation with PROC FREQ.

*For bivariate analysis with sampling weight, all p-values were less than 0.001.

Table 22 displays the relationships between categorical control variables and HH gender. The marital status of female HHs was significantly more likely to be unmarried, widowed, divorced, and separated compared with male HHs who were significantly more likely to be married. There were significantly more White and Latino male HHs than female HHs who were significantly more likely to be Black. There were significant differences in occupations between male and female HHs. Male HHs were more likely to be managers, craftsman, transport equipment operatives, laborers and farmers, and female HHs were more likely to be clerical, services workers, private household workers, or not to work at all. Female HHs were significantly more likely to report a history of medical illness compared with male HHs, and male HHs were significantly more likely to have medical insurance compared with female HHs, who were more likely to have no medical insurance or be insured by Medicare or Medicaid.

Table 22.

Relationships Between Categorical Control Variables and Gender of Heads of the Households (HHs; $N = 6295$)

Category	Dichotomous control variables	Gender of HHs[b]		Total	*p**
		Male	Female		
Marital status	Married	3,411 (48,616,909)	27 (336,040)	3,438 (48,952,949)	< 0.001
	Unmarried	602 (8,696,557)	707 (8,266,797)	1,309 (16,963,354)	< 0.001
	Widowed	59 (1,039,689)	317 (6,080,322)	376 (7,120,011)	< 0.001
	Divorced	348 (5,903,157)	552 (8,507,899)	900 (14,411,056)	< 0.001
	Separated	86 (971,025)	186 (1,685,240)	272 (2,656,265)	< 0.001
Race of HH	White	2,987 (52,069,567)	760 (17,087,161)	3,747 (69,156,728)	< 0.001
	Black	1,020 (5,393,070)	901 (5,626,366)	1,921 (11,019,436)	< 0.001
	American Indian	26 (397,328)	13 (120,279)	39 (517,607)	NS
	Asian	80 (1,322,399)	16 (324,366)	96 (1,646,765)	NS
	Latino	240 (4,007,311)	56 (1,133,700)	296 (5,141,011)	< 0.001
	Other	59 (985,673)	23 (421,978)	82 (1,407,651)	NS
Occupation of HH	Not working for money	790 (13,913,941)	578 (9,273,243)	1,368 (23,187,184)	< 0.001
	Professional/ Technical	714 (11,722,534)	251 (3,744,515)	965 (15,467,049)	NS
	Managers and Administrators	636 (10,215,585)	126 (1,800,009)	762 (12,015,594)	< 0.001

Category	Dichotomous control variables	Gender of HHs[b]		Total	*p**
		Male	Female		
	Sales Workers	221 (3,575,680)	59 (875,657)	280 (4,451,337)	NS
	Clerical	225 (2,886,652)	301 (4,139,604)	526 (7,026,256)	< 0.001
	Craftsman	744 (9,363,182)	33 (446,498)	777 (9,809,680)	< 0.001
	Operatives	290 (3,037,070)	104 (939,931)	394 (3,977,001)	NS
	Transport Equipment Operatives	278 (3,035,835)	13 (146,538)	291 (3,182,373)	< 0.001
	Laborers	201 (2,262,635)	21 (308,684)	222 (2,571,319)	< 0.001
	Farmers and Farm Managers	46 (681,426)	1 (15,362)	47 (696,788)	< 0.001
	Farm Laborers and Farm Foremen	44 (607,871)	2 (38,456)	46 (646,327)	< 0.001
	Service Workers	288 (3,638,733)	281 (2,900,574)	569 (6,539,307)	< 0.001
	Private Household Workers	1 (3,625)	17 (207,091)	18 (210,716)	< 0.001
Health insurance	No health insurance	536 (6,633,035)	288 (2,851,848)	824 (9,484,883)	< 0.001
	Health insurance	3,585 (51,508,881)	1,073 (15,701,407)	4,658 (67,210,288)	< 0.001
	Medicaid or Medicare	384 (7,079,647)	426 (6,243,822)	810 (13,323,469)	< 0.001
Chronic illness	No	2,680 (36,375,022)	846 (10,504,714)	3,526 (46,879,736)	< 0.001
	Yes	1,826 (28,852,315)	943 (14,371,584)	2,769 (43,223,899)	< 0.001

Category	Dichotomous control variables	Gender of HHs[b]		Total	*p**
		Male	Female		
Imputed values	No	3,554 (52,001,195)	1,415 (19,066,444)	4,969 (71,067,639)	NS
	Yes	952 (13,226,142)	374 (5,809,854)	1,326 (19,035,996)	NS

Note. $N = 90{,}103{,}635$ for the bivariate analyses with sampling weights. NS = not significant.

[a]Results using sampling weights are reported in parenthesis.

*For the bivariate analysis with sampling weight, all *p*-values were less than 0.001.

Significant associations were found between income and marital status (Table 23). Married HHs reported significantly higher income compared with other marital statuses, and unmarried HHs reported significantly greater income compared with widowed and divorced HHs.

Table 23.

Differences in Total Family Income Between Marital Status of Heads of the Households (HHs)

Marital status	Married	Not married	Widowed	Divorced	Separated
Married	—				
Not married	–28.90*	—			
Widowed	–23.32*	–12.83*	—		
Divorced	–20.06*	–5.96*	–14.00*	—	
Separated	–13.73*	–0.60	–8.75*	–2.76	—

Note. Table presents Z-score using the Mann-Whitney U.

*$p < 0.001$.

In addition, there were significant associations between income and HH race (Table 24). For example, White HHs reported significantly higher income than Black, American Indian, and Latino HHs. Black HHs reported significantly greater income compared with Asian and other races. Higher income was significantly associated with more years of education for HHs and wives, $r_s = .42$ and $r_s = .46$, respectively (Table 18).

Table 24.

Differences in Total Family Income Between Races of Heads of the Households (HHs)

HH Race	White	Black	American Indian	Asian	Latino	Other
White	—					
Black	–19.93*	—				
American Indian	–3.55*	–0.58	—			
Asian	–2.06	–7.04*	–3.87*	—		
Latino	–8.80*	–1.31	–1.02	–6.01*	—	
Other	–1.66	–3.79*	–2.29	–2.53	–3.19	—

Note. Table presents *Z*-score using the Mann-Whitney *U*.

*$p < 0.001$

Only a few relationships were significant when a participant had at least one imputed value for the independent variables and control variables (Tables 25 and 26). For example, HHs who were older, widowed, and not working for money were significantly more likely to have imputed values.

Table 25.

Relationships Between Categorical Control Variables and Imputed Values

Categories	Dichotomous control variables	Imputed values (counts)[a]		Total	*p**
		No	Yes		
Marital status of HH	Married	2,664 (38,268,011)	774 (10,684,938)	3,438 (48,952,949)	NS
	Unmarried	1,098 (14,288,339)	211 (2,675,015)	1,309 (16,963,354)	< 0.001
	Widowed	248 (4,499,740)	128 (2,620,271)	376 (7,120,011)	< 0.001
	Divorced	733 (11,865,298)	167 (2,545,758)	900 (14,411,056)	NS
	Separated	226 (2,146,251)	46 (510,014)	272 (2,656,265)	NS
Gender of HH	Male	3,554 (52,001,195)	952 (13,226,142)	4,506 (65,227,337)	NS
	Female	1,415 (19,066,444)	374 (5,809,854)	1,789 (24,876,298)	NS
Race of HH	White	2,987 (54,595,268)	760 (14,561,460)	3,747 (69,156,728)	NS
	Black	1,470 (8,391,232)	451 (2,628,204)	1,921 (11,019,436)	NS
	American Indian	32 (431,539)	7 (86,068)	39 (517,607)	NS
	Asian	77 (1,282,248)	19 (364,517)	96 (1,646,765)	NS
	Latino	250 (4,293,610)	46 (847,401)	296 (5,141,011)	NS
	Other	63 (1,089,408)	19 (318,243)	82 (1,407,651)	NS
Occupation of HH	Not working for money	1,034 (16,890,748)	334 (6,296,436)	1,368 (23,187,184)	< 0.001
	Professional/ Technical	752 (12,294,155)	213 (3,172,894)	965 (15,467,049)	NS

Categories	Dichotomous control variables	Imputed values (counts)[a]		Total	*p**
		No	Yes		
	Managers and Administrators	611 (9,601,903)	151 (2,413,691)	762 (12,015,594)	NS
	Sales Workers	230 (3,654,393)	50 (796,944)	280 (4,451,337)	NS
	Clerical	430 (5,869,508)	96 (1,156,748)	526 (7,026,256)	NS
	Craftsman	610 (8,019,866)	167 (1,789,814)	77 7 (9,809,680)	NS
	Operatives	308 (3,214,623)	86 (762,378)	394 (3,977,001)	NS
	Transport Equipment Operatives	236 (2,644,541)	55 (537,832)	291 (3,182,373)	NS
	Laborers	170 (1,910,029)	52 (661,290)	222 (2,571,319)	NS
	Farmers and Farm Managers	34 (518,179)	13 (178,609)	47 (696,788)	NS
	Farm Laborers and Farm Foremen	41 (565,049)	5 (81,278)	46 (646,327)	NS
	Service Workers	472 (5,412,926)	97 (1,126,381)	569 (6,539,307)	NS
	Private Household Workers	16 (178,578)	2 (32,138)	18 (210,716)	NS
Health insurance	No health insurance	694 (7,948,830)	130 (1,536,053)	824 (9,484,883)	< 0.001
	Health insurance	3,651 (53,297,315)	1,007 (13,912,973)	4,658 (67,210,288)	NS
	Medicaid or Medicare	622 (9,742,273)	188 (3,581,196)	810 (13,323,469)	NS
Chronic illness	No	2,835 (38,167,661)	691 (8,712,075)	3,526 (46,879,736)	NS

Categories	Dichotomous control variables	Imputed values (counts)[a]		Total	*p**
		No	Yes		
	Yes	2,134 (32,899,978)	635 (103,23,921)	2,769 (43,223,899)	NS

Note. HH = head of household; NS = not significant.

[a]Results using sampling weights are reported in parenthesis.

*For the bivariate analysis with sampling weights, all *p*-values were less than 0.001.

Table 26.

Relationships Between Continuous Control Variables and Imputed Values (N = 6,295)

Continuous control variables	Mean rank[a]		χ^2(Pearson Correlation[b])	*p**
	No	Yes		
Total family income	3,139.7 (3,202.5)	3,179.0 (3,028.2)	0.49 (–0.04)	0.484
# of people in the FU	3,134.9 (2,714.6)	3,197.0 (2,679.0)	1.28 (–0.01)	0.258
# of children in the FU	3,175.5 (2,760.5)	3,044.8 (2,586.7)	6.36 (–0.05)	0.012
Age of HH	3,032.2 (3,433.7)	3,575.0 (4,077.0)	93.45 (0.14)	< 0.001
Education of HH	2,979.2 (3,180.8)	2,959.4 (3,124.2)	0.14 (–0.01)	0.712

Note. N = 90,103,635 for bivariate analysis with sampling weights. FU = family unit; HH = head of household.

[a]Results using sampling weights are reported in parenthesis. [b]Continuous control variables were ranked and tested for Pearson correlation with PROC FREQ.

*For the bivariate analysis with sampling weights, all *p*-values were less than 0.001.

Separate Measurement Models

For data from 2001, five separate measurement models were constructed, one for each of the five latent variables. The correlation between psychological distress of HHs and psychological distress of wives was fixed to zero because each family had information on

psychological distress about only one family member (i.e., HHs or wives, but not both). Therefore, there cannot be a correlation between psychological distress of the HHs and the wives.

In all five separate measurement models, the loadings on psychological distress of HHs and wives were significant, $p < .001$, and their magnitude was good, .541 to .787. In addition, the chi-square of all the models was significant, $p < .001$, indicating that the fit of the data to the models was not good; however, that was expected due to the large sample size.

Latent Variable of Institutional Components[15]

In the analysis without sampling weights, the RMSEA for the null model was lower than .158, RMSEA = .131. Therefore, the TLI of the model was not expected to be sufficient, TLI < .900. The fit of the separate measurement model of institutional components with psychological distress (Figure 9) was good considering the RMSEA = .043, although the TLI was not sufficient, TLI = .894, as expected.

Two loadings on the latent variable were not significant in this model: income from unemployment compensation, $p = .727$, and child support, $p = .239$. But the exclusion of those two non-significant loadings caused a decrease in the fit of the model, RMSEA = .047 and TLI = .892. Therefore, the previous model, including the two non-significant loadings, was used in the composite measurement model. In addition, the correlations between institutional components and the psychological distress of HHs and wives were negatively significant, $r = -.464$ and $r = -.309$, respectively.

[15] From this point forward, I will refer to this latent variable as *institutional components.*

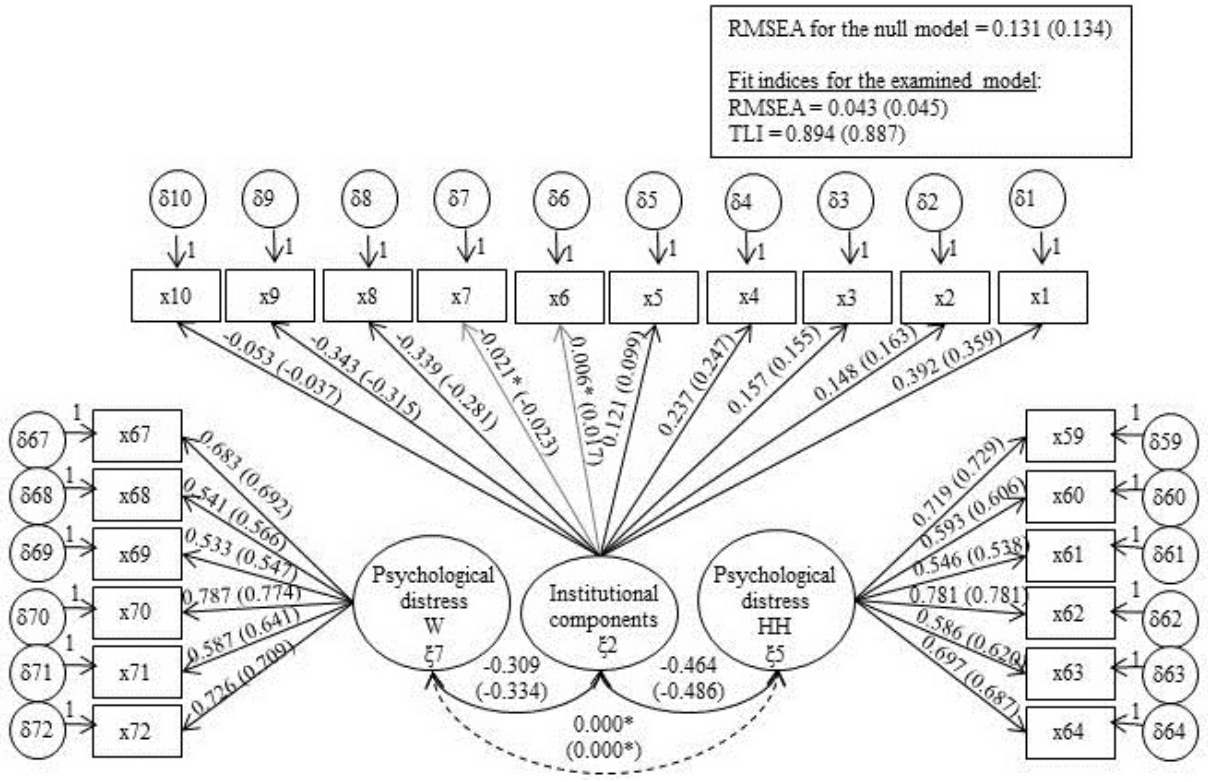

Figure 9. Separate measurement model of the latent variable of institutional components and psychological distress, unweighted and weighted analyses. Unweighted coefficient estimates are presented outside the parenthesis, and weighted coefficient estimates are presented inside the parenthesis. Loadings that were not significant in the unweighted analysis but were significant in the weighted analysis are presented as grey lines; paths that were not significant but were kept in the model are presented as dashed lines; all loadings and paths were significant under $p < 0.05$ unless otherwise stated. HH = head of household; RMSEA = root mean square error of approximation; TLI = Tucker-Lewis index; W = wife; x# = item #. The definitions of x1–x10 can be found in Table 3 and x59–x72 in Table 1.
* $p > 0.05$.

Similar results were found using family sampling weights of the 2001 data. The RMSEA for the null model was .134, the fit of the data to the model was good considering the RMSEA fit index, RMSEA = .045 and TLI = .887, and all loadings were significant, $p < .001$ (Figure 9). However, the variance of the two loadings on the latent variable that were not significant in the unweighted model did not contribute to the model, $R^2 < .001$. In addition, the correlations

between institutional components and the psychological distress of HHs and wives were negatively significant, $r = -.486$ and $r = -.334$, respectively.

In both models, unweighted and weighted, two loadings on institutional components did not contribute to the model but were included in it. Although the correlations between institutional components and psychological distress of HHs and wives were significant in both models, the magnitudes of these correlations were slightly higher in the weighted model.

Latent Variable of Individual Components

Due to limited variability in some of the observed items that represented individual components, several observed items were summed (Table 27). Those summed items include car payments (the sum of Items 11–13), transportation expenses (the sum of Items 14–18), food payments (the sum of Items 20 and 21), household possession payments (the sum of Items 24 and 25), household-related expenses (the sum of Items 26–29), and school payments (the sum of Items 30 and 31).

Table 27.

Individual Components, Observed Item Numbers, and Summarized Items

Sub-components	**Variables**	**Item #**	**Summarized items**
Economic resources and needs	Payment for car	X11	Car payments
	Other payment for car	X12	
	Payment for car repairs	X13	
	Payment for gasoline	X14	Transportation expenses
	Payment for parking	X15	
	Payment for fare & train fare	X16	
	Payment for taxi	X17	
	Payment for other transportation costs	X18	

Sub-components	Variables	Item #	Summarized items
	Cost of child care	X19	
	How much spent on food delivered to the door	X20	Food payments
	How much spend on eating outside the home	X21	
	Car insurance	X22	
	Property taxes	X23	
	Loan payment for house	X24	Household possession payments
	Rent payment	X25	
	Payment for gas and heating	X26	Household related expenses
	Payment for electricity	X27	
	Payment for other utilities	X28	
	Payment for water and sewer services	X29	
	School-related expenses	X30	School payments
	Other school-related expenses	X31	
	Total amount of other debts such as credit card charges, student loans, medical or legal bills, or loans from relatives	X32	
Social support	Received any help from relatives	X33	
	Receive any help from non-relatives	X34	
	Gave money toward the support of anyone not living at the home	X35	

The RMSEA for the null model, RMSEA = .120, indicated that the TLI would be insufficient in the unweighted model. The fit of the separate measurement model of individual components with psychological distress (Figure 10) was good considering the RMSEA fit index, RMSEA = .042, TLI = .880. Two loadings on the latent variable were not significant: food payments, $p = .277$, and financial help from non-relatives, $p = .552$. Although the fit of the data to the model was still good after the exclusion of those two non-significant loadings, RMSEA =

.045 and TLI = .882, it caused a decrease in the fit of the RMSEA. Therefore, the model with the two non-significant loadings was used in the composite measurement model. In addition, the correlations between individual components and the psychological distress of HHs and wives were significant, $p < .001$. The magnitude of the correlation between individual components and the psychological distress of HHs, $r = .201$, was greater than the magnitude of the correlation between individual components and the psychological distress of wives, $r = .105$.

The RMSEA for the null model using family sampling weights of the 2001 data was identical to the RMSEA for the null model without sampling weights. Considering the RMSEA fit index, the data had a good fit to the model, RMSEA = .045, TLI = .859, and all loadings were significant, $p < .001$ (Figure 10). Again, the variance of the two loadings on the latent variables that were not significant in the unweighted model did not contribute to the model, $R^2 < .003$. In addition, the correlations between individual components and the psychological distress of HHs and wives were positively significant, $r = .179$ and $r = .060$, respectively.

In both models, unweighted and weighted, two loadings on individual components did not contribute to the model but were still included. Although the correlations between individual components and the psychological distress of HHs and wives were significant in both models, the magnitudes of these correlations were slightly lower in the weighted model.

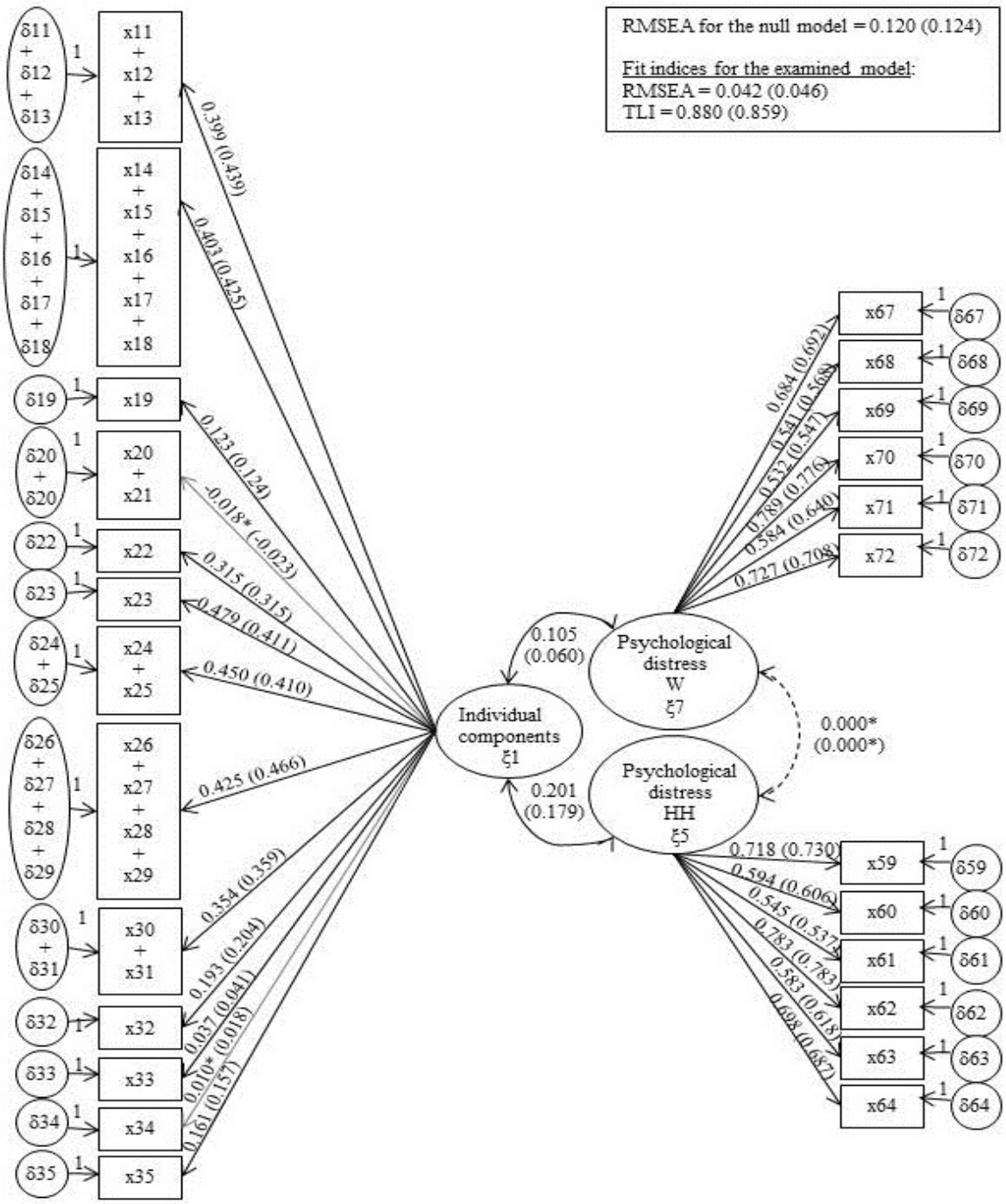

Figure 10. The separate measurement model of the latent variable of individual components and psychological distress, unweighted and weighted analyses. Unweighted coefficient estimates are presented outside the parenthesis, and weighted coefficient estimates are presented inside the parenthesis. Loadings that were not significant in the unweighted analysis but were significant in the weighted analysis are presented as grey lines. Paths that were not significant but were kept in the model are presented as dashed lines. All loadings and paths were significant under $p < 0.05$ unless otherwise stated. HH = head of household; RMSEA = root mean square error of approximation; TLI = Tucker-Lewis index; W = wife; x# = Item #. The definition of x11–x35 can be found in Table 27 and x59–x72 in Table 1.
*$p > 0.05$.

Latent Variable of Intergenerational Transfers

In the unweighted analysis, the RMSEA for the null model was greater than .158, RMSEA = .204; thus, the TLI was expected to be sufficient. Indeed, the fit of the separate measurement model of intergenerational transfers with psychological distress (Figure 11) was reasonable considering the RMSEA and TLI fit indices, .063 and .906, respectively. No modification was made to improve the fit of the data to the model because the two loadings on intergenerational transfers were not significant, $p = .282$ for both, and the correlations between intergenerational transfers and the psychological distress of HHs and wives were not significant, $p = .957$ and $p = .381$, respectively. However, intergenerational transfers was still included in the composite measurement model to examine if this conclusion changed after including the other parts of that model.

The results from the weighted model indicated the same pattern for the fit to the model, a reasonable fit of the data to the model considering the RMSEA and TLI fit indices, .064 and .905, respectively (Figure 11). However, the two loadings on the inheritance latent variable were significant, $p < .001$. One of their variances had a large contribution to the model and the other had a small contribution to the model, $R^2 = .723$ and .163, respectively. In addition, the correlations between intergenerational transfers and the psychological distress of HHs and wives were significant, $p < .001$, but had extremely low magnitudes, $r = -.002$ and $r = -.022$, respectively.

The weighted and unweighted analyses indicated similar fits of the data to the model but yielded different results. Although the loadings on the latent variable and the correlations between the latent variable and the psychological distress of HHs and wives were not significant in the unweighted model, they were significant under $p < .001$ in the weighted model.

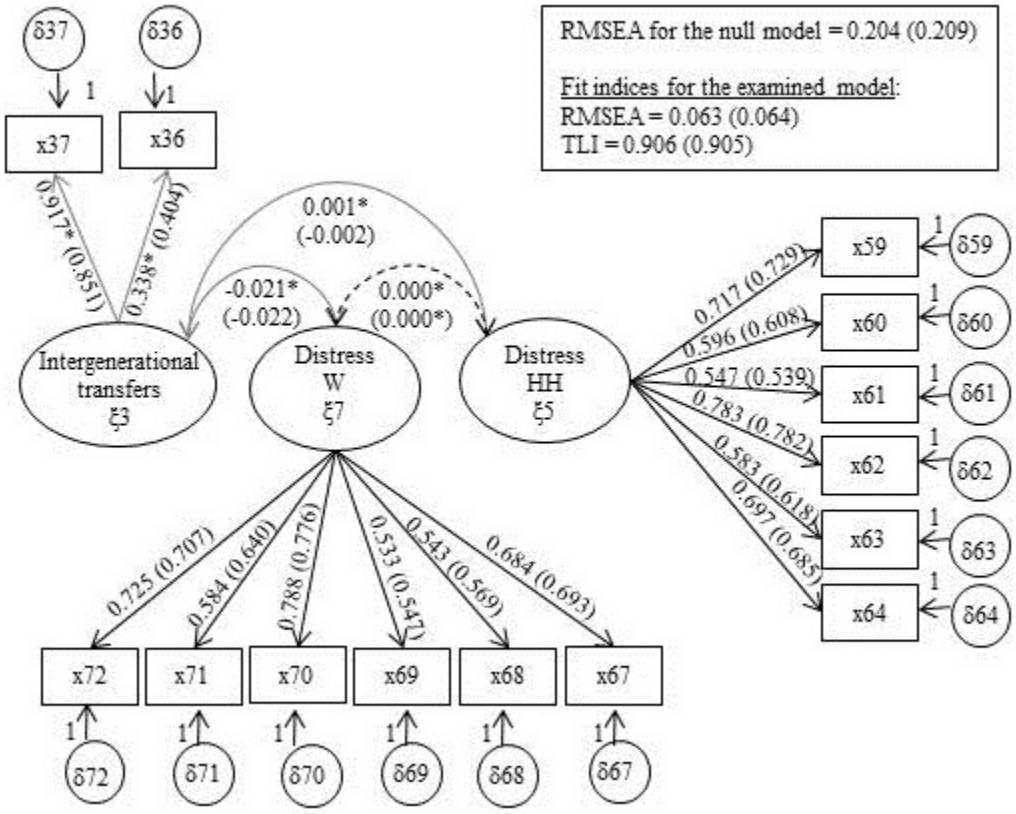

Figure 41. The separate measurement model of the latent variable of intergenerational transfers and psychological distress, unweighted and weighted analyses. Unweighted coefficient estimates are presented outside the parenthesis, and weighted coefficient estimates are presented inside the parenthesis. Loadings that were not significant in the unweighted analysis but were significant in the weighted analysis are presented as grey lines. Paths that were not significant but were kept in the model are presented as dashed lines. All loadings and paths were significant under $p < 0.05$ unless otherwise stated. HH = head of household; RMSEA = root mean square error of approximation; TLI = Tucker-Lewis index; W = wife; x# = Item #. The definition of x36–x37 can be found in Table 4 and x59–x72 in Table 1.
*$p > 0.05$.

Latent Variable of Saving and Investment Actions

Due to problems with the starting values of one of the observed items (Item 42 in Table 5), that item was excluded from this analysis and all future analyses.

The RMSEA for the null model was greater than .158, RMSEA = .166, in the unweighted model; thus, the TLI of the examined model was expected to be sufficient. The fit of the separate

measurement model of saving and investment actions with psychological distress (Figure 12) was reasonable, RMSEA = .050 and TLI = .910. Two loadings on the latent variable were not significant: amount family withdraws from pension, $p = .901$, and amount family withdraws from stocks, $p = .813$. However, the exclusion of those two non-significant loadings caused a decrease in the fit of the model, RMSEA = .058 and TLI = .907. Therefore, the model with the two non-significant loadings was used in the composite measurement model.

To improve the fit of the data to the model, two modifications were made by including: correlations between the error terms of "feeling restless" and "feeling nervous" in the last 30 days for HHs and wives. In this modified model with the two non-significant loadings (Figure 12), the fit of the data to the model was good considering the RMSEA and TLI, .033 and .961, respectively. In addition, the correlations between saving and investment actions and the psychological distress of HHs and wives were significant, $p < .001$ and $p = .007$, respectively, but their magnitudes were low, $r = .099$ and $r = .058$, respectively.

In the weighted model (Figure 12), the RMSEA of the null model was .170, and the RMSEA and the TLI indicated a reasonable fit of the data to the model, .053 and .904, respectively. All loadings on saving and investment actions were significant, $p < .01$, but the variance of the two loadings that were not significant in the unweighted model did not contribute to the model, $R^2 < .001$. To improve the fit of the data to the model, the same two correlations between error correlations were added, just as in the unweighted model. The fit of the weighted modified model (Figure 12) was good, RMSEA = .036 and TLI = .956, and the correlations between saving and investment actions and the psychological distress of HHs and wives were significant, $p < .001$.

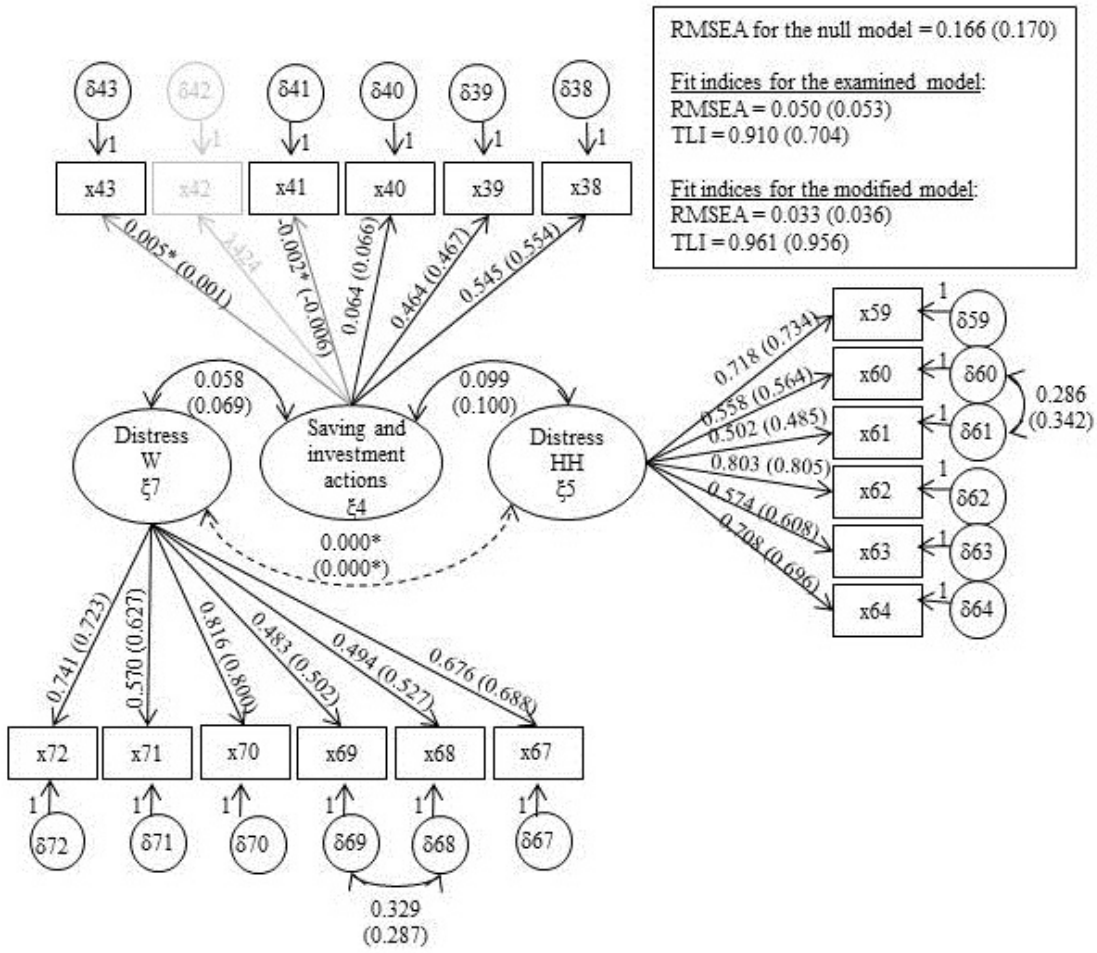

Figure 52. The separate measurement model of the latent variable of saving and investment actions and psychological distress, unweighted and weighted analyses. Unweighted coefficient estimates are presented outside the parenthesis, and weighted coefficient estimates are presented inside the parenthesis. Loadings that were not significant in the unweighted analysis but were significant in the weighted analysis are presented as grey lines. Paths that were not significant but were kept in the model are presented as dashed lines. Observed items that had problematic starting values were excluded from the analyses and are marked in light grey. All loadings and paths were significant under $p < 0.05$ unless otherwise stated. HH = head of household; RMSEA = root mean square error of approximation; TLI = Tucker-Lewis index; W = wife; x# = Item #. The definition of x38–x43 can be found in Table 5 and x59–x72 in Table 1.
*$p > 0.05$.

The same two loadings did not contribute to the model in the weighted and unweighted models, but those loadings were left in. By adding two correlations between error terms, the fit of the weighted and unweighted models were improved from reasonable fit to good fit,

considering the RMSEA and TLI fit indices. In both models, the correlations between saving and investment actions and the psychological distress of HHs and wives were significant; However, their magnitude was slightly higher in the weighted model.

Latent Variable of Asset Accumulation

In the analysis without sampling weights, the RMSEA for the null model was .120; therefore, the TLI of the model was not expected to be sufficient, TLI < .900. The fit of the separate measurement model of asset accumulation with psychological distress (Figure 13) was reasonable considering the RMSEA, RMSEA = .052, but not sufficient considering the TLI fit index, TLI = .815. Of the 15 loadings on asset accumulation, 2 were not significant: amount from rollover money to IRA, $p = .592$, and amount in pension from former employer, $p = .398$. Following the removal of these non-significant loadings, the fit of the model worsened, RMSEA = .056 and TLI = .815. Therefore, the model with the two non-significant loadings was used in the composite model. Considering the RMSEA fit index, the fit of the data to the model became good after adding correlations between the error terms of feeling restlessness and feeling nervousness in the last 30 days for HHs and wives (Figure 7), but the TLI was not sufficient, TLI = .851. In addition, the correlations between asset accumulation and the psychological distress of HHs and wives were significant, $p < .001$, but their magnitudes were relatively low, $r = .183$ and $r = .114$, respectively.

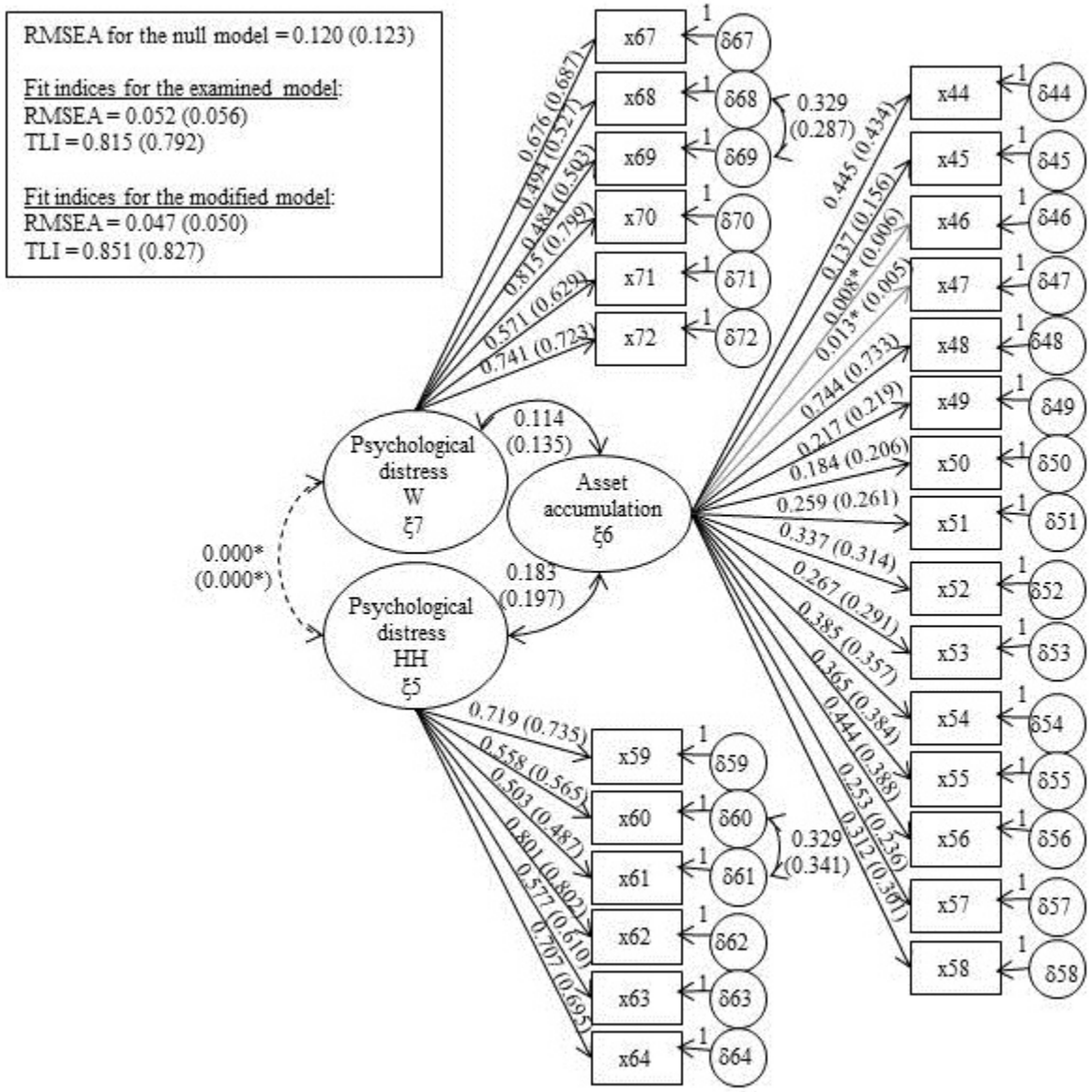

Figure 6. The separate measurement model of the latent variable of asset accumulation and psychological distress, unweighted and weighted analyses. Unweighted coefficient estimates are presented outside the parenthesis, and weighted coefficient estimates are presented inside the parenthesis. Loadings that were not significant in the unweighted analysis but were significant in the weighted analysis are presented as grey lines. Paths that were not significant but were kept in the model are presented as dashed lines. All loadings and paths were significant under $p < 0.05$ unless otherwise stated. HH = head of household; RMSEA = root mean square error of approximation; TLI = Tucker-Lewis index; W = wife; x# = Item #. The definition of x44–x58 can be found in Table 6 and x59–x72 in Table 1.
*$p > 0.05$.

Similar results presented in the weighted analysis (Figure 13). The RMSEA of the null model was .123, the RMSEA of the examined model was reasonable, RMSEA =.056, and the TLI was not sufficient, TLI =.792. Although, the loadings on asset accumulation were significant, $p < .001$, the contributions of the variances of the two loadings that were not significant to the unweighted model were close to zero, $R^2 < .001$. To improve the model, the same two correlations between error terms, as in the unweighted model, were added to the model (Figure 13). A good fit was reached according to the RMSEA fit index, RMSEA = .050, but the TLI was still not sufficient, TLI = .827.

In the weighted and unweighted models, the RMSEA of the null model indicated that the RMSEA of the examined model would be sufficient and the TLI would not. The RMSEA was indeed sufficient for both models, and they reached a good fit after the addition of the same two correlations between error terms. The same two loadings did not contribute to the model. In the unweighted model, they were not significant, but in the weighted model, they were significant but had a multiple correlation squared of less than .001. In addition, the correlations between asset accumulation and psychological distress of HHs and wives was significant in the weighted and unweighted models, but was slightly higher for the weighted model.

Composite Measurement Model

Using the modified separate models from the previous section, a composite measurement model was developed and tested. The composite model included five latent independent variables (i.e., individual components, institutional components, intergenerational transfers, saving and investment actions, and asset accumulation) and the psychological distress of HHs and wives. All latent independent variables were correlated with each other and with the psychological distress of HHs and wives.

The composite model did not run in its original structure (i.e., Items 1–10 were loaded on institutional components, Items 11–35 were loaded on individuals components, Items 36–37 were loaded on intergenerational transfers, Items 38–43 were loaded on saving and investment actions, and Items 44–58 were loaded on asset accumulation), and one observed item needed to be shifted from one latent independent variable to another. The observed item amount of home insurance that was loaded on institutional component was shifted to be loaded on the individual component; theoretically, the amount of home insurance was thought to be related to a person's feeling of security about his or her assets as an indicator of institutional components, but perhaps the amount of home insurance was more related to the financial burden of a family as measured in by individual components.

In the unweighted model (Figure 14), the RMSEA of the null model was .068, which is much lower than .158 and indicates an insufficient TLI. Indeed, the fit of the model was good considering the RMSEA= .031, but not sufficient considering the TLI= .790. The same loadings that were not significant in the separate measurement models were not significant in the composite measurement model. A new loading was not significant in the composite measurement model but was kept in the model. Most of the correlations between latent independent variables and psychological distress were significant, except the correlations between intergenerational transfers and the psychological distress of HHs and wives. Although these correlations were not significant, they were not removed from the composite measurement models because they are an essential part of these models.

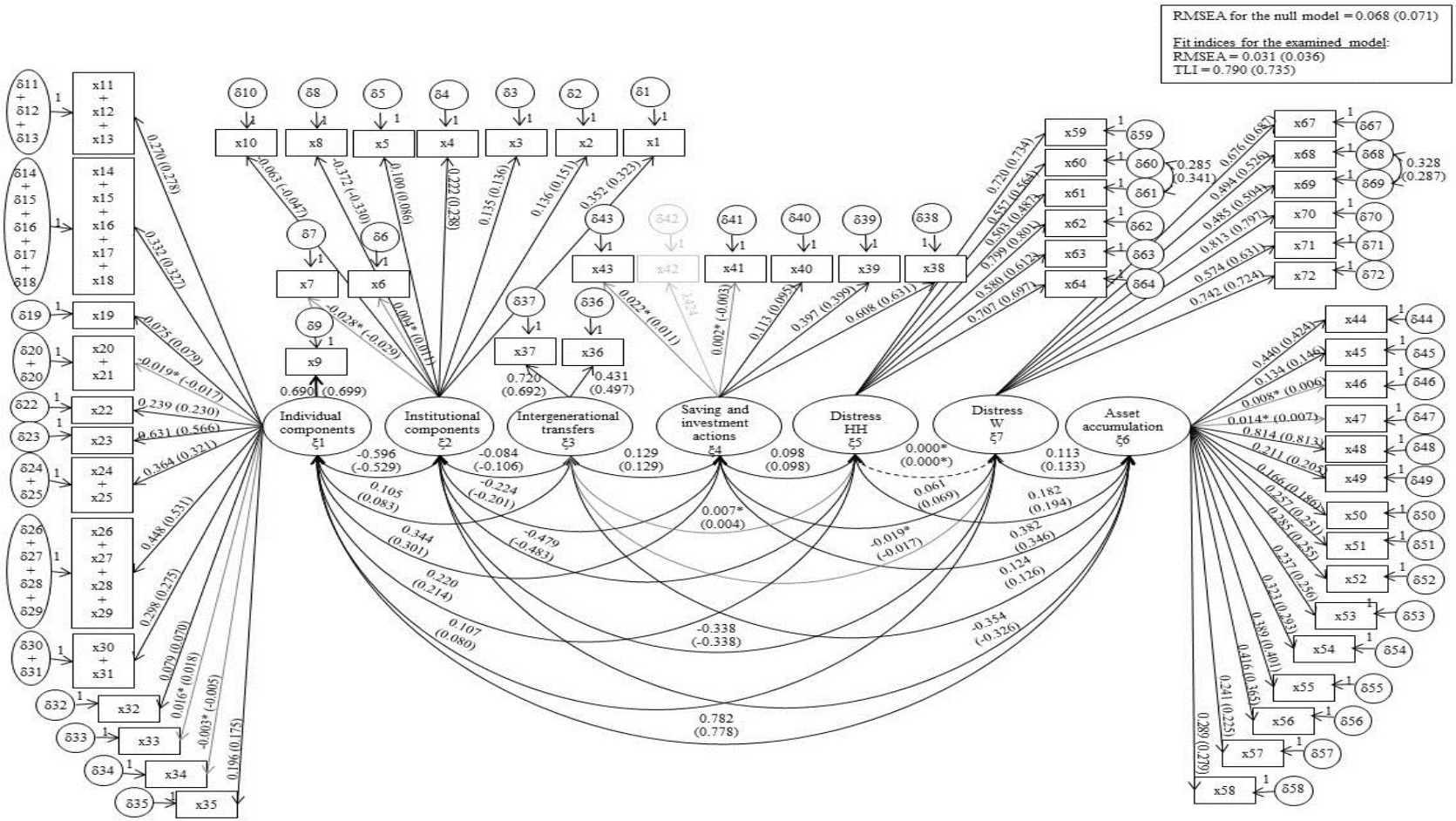

Figure 74. The composite measurement model of the asset-building theoretical framework and psychological distress, unweighted and weighted analyses. Unweighted coefficient estimates are presented outside the parenthesis, and weighted coefficient estimates are presented inside the parenthesis. Loadings that were not significant in the unweighted analysis but were significant in the weighted analysis are presented as grey lines. Observed items that had problematic starting values were excluded from the analyses and are marked as light grey. Paths that were not significant but were kept in the model are presented by dashed lines. All loadings and paths were significant under $p < 0.05$ unless otherwise stated. HH = head of household; RMSEA = root mean square error of approximation; TLI = Tucker-Lewis index; W = wife; x# = Item #. The definition of x1–x10 can be found in Table 3, x11–x35 in Table 27, x36–x37 in Table 4, x38–x43 in Table 5, x44–x58 in Table 6, and x59–x72 in Table 1.
*$p > 0.05$.

Similar results were found in the weighted composite measurement model (Figure 14). Although the TLI of the examined model was not sufficient, TLI = .735, the RMSEA for the null model was lower than .158, RMSEA = .071, and the fit of the data to the examined model was good considering the RMSEA fit index, RMSEA = .036. All loadings on the latent independent variables were significant under $p < .001$ as well as the correlations between latent independent variables and the psychological distress of HHs and wives. However, the magnitude of the correlations between intergenerational transfers and the psychological distress of HHs and wives was low, .004 and −.017, respectively. In addition, the loadings on the latent independent variables that were not significant in the unweighted model did not contribute to the weighted composite model, $R^2 < .001$.

In the weighted and unweighted models, the RMSEA of the null model indicated that the RMSEA of the examined model would be good and the TLI of the examined model would not be sufficient. The same seven loadings on both models did not contribute to the fit of the data to the model, and most of the correlations between the latent independent variables and psychological distress were significant. The two correlations that were not significant in the unweighted composite measurement model had extremely low magnitude in the weighted composite measurement model.

Cross-Sectional Model

The cross-sectional model included directional paths between latent variables, independent and dependent, according to the asset-building theoretical framework using data from the 2001 wave. To account for other confounding variables that could have influenced the model, all control variables were added as exogenous variables that predicted asset accumulation and the psychological distress of HHs and wives. In addition, correlations between the

exogenous individual components, institutional components, and intergenerational transfers were added to the cross-sectional model. The two correlations between error terms that were added in previous models were added as well. The examination of the cross-sectional model that included the interaction term of race and gender showed that the fit of the model significantly worsened with the interaction term. Therefore, only the cross-sectional model without the interaction term was examined.

The main hypothesis of this study was that the data would fit the theoretical model (H1). In addition, there were seven direct and seven indirect hypotheses:

- *Direct Hypothesis 1 (DH1)*: Improvement in individual components (i.e., larger economic resources, fewer economic needs, and less informal financial social support) will increase saving and investment actions (i.e., larger deposits and smaller withdrawals).

- *Direct Hypothesis 2 (DH2)*: Improvement in institutional components (i.e., lower asset limits and greater access, security, and incentives) will increase saving and investment.

- *Direct Hypothesis 3 (DH3)*: Larger intergenerational and interhousehold transfers (i.e., larger inheritances) will increase saving and investment actions.

- *Direct Hypothesis 4 (DH4)*: Larger intergenerational and interhousehold transfers will increase asset accumulation (i.e., greater retirement savings, home equity, net worth, and liquid savings).

- *Direct Hypothesis 5 (DH5)*: Greater saving and investment actions will increase asset accumulation.

- *Direct Hypotheses 6 (DH6)*: Greater asset accumulation will improve psychological well-being (i.e., lower psychological distress).

- *Direct Hypotheses 7 (DH7)*: Better psychological well-being will increase asset accumulation.

- *Indirect Hypothesis 1 (IH1)*: Improvement in individual components will increase asset accumulation through an increase in saving and investment actions.

- *Indirect Hypothesis 2 (IH2)*: Improvement in institutional components will increase asset accumulation through an increase in saving and investment actions.

- *Indirect Hypothesis 3 (IH3)*: Larger intergenerational and interhousehold transfers will increase asset accumulation through an increase in saving and investment actions.

- *Indirect Hypothesis 4 (IH4)*: Improvement in individual components will improve psychological well-being through an increase in saving and investment actions and through an increase in asset accumulation.

- *Indirect Hypothesis 5 (IH5)*: Improvement in institutional components will improve psychological well-being through an increase in saving and investment actions and through an increase in asset accumulation.

- *Indirect Hypothesis 6 (IH6)*: Larger intergenerational and interhousehold transfers will improve psychological well-being through an increase in saving and investment actions and through an increase in asset accumulation.

- *Indirect Hypothesis 7 (IH7)*: Greater saving and investment actions will improve psychological well-being through an increase in asset accumulation.

Table 28 displays the main statistical results of the unweighted and weighted models and whether the hypotheses of the study were supported.

Table 28.

Summary of Main Statistical Results and Hypotheses Support in the Cross-Sectional Model, Unweighted and Weighted Analyses

Hypotheses		**Statistical results**		**Hypothesis support**	
		Unweighted model	**Weighted model**	**Unweighted model**	**Weighted model**
Main hypothesis	The observed covariance of the population under study is not significantly different from the covariance of the parameter estimates of the hypothesized model.	RMSEA = 0.037	RMSEA = 0.043	Yes	Yes

Hypotheses		Statistical results		Hypothesis support	
		Unweighted model	Weighted model	Unweighted model	Weighted model
Direct hypotheses (DH#)	DH1-Improvement in individual components will increase saving and investment actions.	$\gamma = 1.127$	$\gamma = 0.938$	Yes	Yes
	DH2-Improvement in institutional components will increase saving and investment actions.	$\gamma = 0.531$	$\gamma = 0.302$	Yes	Yes
	DH3-Larger intergenerational and interhousehold transfers will increase saving and investment actions.	$\gamma = 0.277$	$\gamma = 0.275$	Yes	Yes
	DH4-Larger intergenerational and interhousehold transfers will increase asset accumulation.	$\gamma = -0.133$	$\gamma = -0.115$	No	No
	DH5-Greater saving and investment actions will increase asset accumulation.	$\beta = 0.657$	$\beta = 0.661$	Yes	Yes
	DH6-Greater asset accumulation will improve psychological distress.	$\beta = -0.187$ for HH $\beta = -0.164$ for W	$\beta = -0.291$ for HH $\beta = -0.144$ for W	No	No
	DH7-Better psychological distress will increase asset accumulation.	$\beta = 0.186$ for HH $\beta = 0.115$ for W	$\beta = 0.272$ for HH $\beta = 0.114$ for W	Yes	Yes

Hypotheses		Statistical results		Hypothesis support	
		Unweighted model	Weighted model	Unweighted model	Weighted model
Indirect hypotheses (IH#)	IH1-Improvement in individual components will increase asset accumulation through an increase in saving and investment actions ($\gamma 11 \times \beta 21$).	Indirect effect = 0.740	Indirect effect = 0.620	Yes	Yes
	IH2-Improvement in institutional components will increase asset accumulation through an increase in saving and investment actions ($\gamma 12 \times \beta 21$).	Indirect effect = 0.349	Indirect effect = 0.200	Yes	Yes
	IH3-Larger intergenerational and interhousehold transfers will increase asset accumulation through an increase in saving and investment actions ($\gamma 13 \times \beta 21$).	Indirect effect = 0.182	Indirect effect = 0.182	Yes	Yes
	IH4-Improvement in individual components will improve psychological distress through an increase in saving and investment actions and through an increase in asset accumulation ($\gamma 11 \times \beta 21 \times \beta 32$ and $\gamma 11 \times \beta 21 \times \beta 42$).	Indirect effect = HH –0.138 W –0.121	Indirect effect = HH –0.180 W –0.089	No	No

Hypotheses		Statistical results		Hypothesis support	
		Unweighted model	Weighted model	Unweighted model	Weighted model
	IH5-Improvement in institutional components will improve psychological distress through an increase in saving and investment actions and through an increase in asset accumulation (γ12 × β21 × β32 and γ12 × β21 × β42).	Indirect effect = HH –0.065 W –0.057	Indirect effect = HH –0.058 W –0.029	No	No
	IH6-Larger intergenerational & interhousehold transfers will improve psychological distress through an increase in saving and investment actions and through an increase in asset accumulation (γ13 × β21 × β32 and γ13 × β21 X β42).	Indirect effect = HH –0.034 W –0.030	Indirect effect = HH–0.053 W –0.026	No	No
	IH7-Greater saving and investment actions will improve psychological distress through an increase in asset accumulation (β21 × β32 and β21 × β42).	Indirect effect = HH –0.123 W –0.108	Indirect effect = HH –0.192 W –0.100	No	No

Note. HH = head of household; RMSEA = root mean square error of approximation; W = wife.

Unweighted Cross-Sectional Model

H1: The RMSEA for the null model was lower than 0.158, null RMSEA = .108, meaning the RMSEA of the examined model was good, .037, and the TLI was insufficient, .599. Thus, the main hypothesis was supported. Two out of the nine loadings that were not significant in previous models became significant in the unweighted cross-sectional model, $p < .05$ (Figure

15): income from child support from institutional components and amount family withdraws from stocks from saving and investment actions.

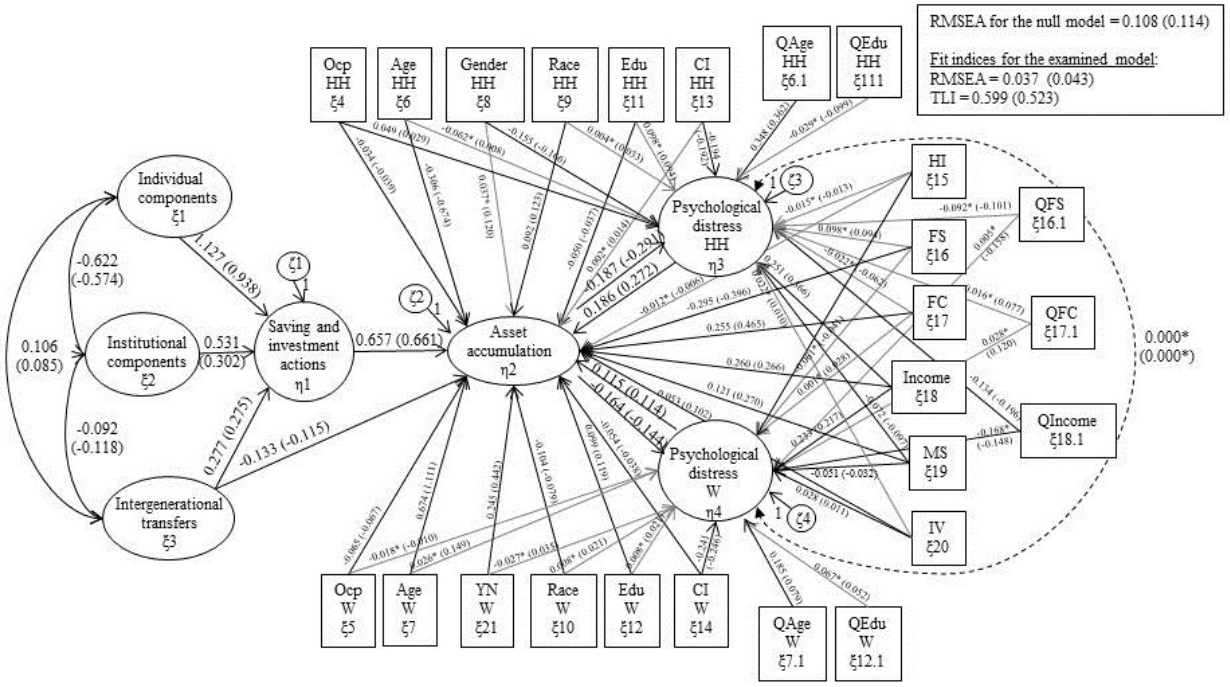

Figure 8. The cross-sectional model of the asset-building theoretical framework and psychological distress, unweighted and weighted analyses. Unweighted coefficient estimates are presented outside the parenthesis, and weighted coefficient estimates are presented inside the parenthesis. Loadings on the latent variables are not presented due to space limits of the page. Paths that were not significant in the unweighted analysis but were significant in the weighted analysis are presented as grey lines. Paths that were not significant but were kept in the model are presented as dashed lines. All paths were significant under $p < 0.05$ unless otherwise stated. CI = chronic illness; Edu = education; FC = family composition; FS = family size; HI = health insurance; IV = imputed values; HH = head of household; MS = marital status; Ocp = occupation; Q = quadratic term; W = wife; YN= yes/no.
*$p > 0.05$.

Saving and investment actions was positively significantly associated with individual components, $\gamma = 1.127$, institutional components, $\gamma = 0.531$, and intergenerational transfers, $\gamma = 0.277$. These findings support the first three hypotheses about direct effects in the asset-building theoretical framework (DH1, DH2, and DH3).

Direct Hypothesis 4 was not supported because asset accumulation was negatively significantly associated with intergenerational transfers, $\gamma = -0.133$. However, DH5 was supported; asset accumulation was positively significantly associated with saving and investment actions, $\beta = 0.657$.

The hypothesis regarding the positive reciprocal relationship between asset accumulation and psychological distress was partially supported. Psychological distress of HHs and wives was negatively significantly associated with asset accumulation, $\beta = -0.187$ and $\beta = -0.164$, respectively. This finding is opposite to the relationship hypothesized in DH6. However, asset accumulation was positively significantly associated with psychological distress of HHs, $\beta = 0.186$, and wives, $\beta = 0.115$, which supports DH7.

The first three hypotheses about indirect effects in the asset-building theoretical framework were supported: (IH1) improvement in individual components was significantly associated with an increase in asset accumulation through an increase in savings and investment actions, Indirect Effect $\times (\gamma 11 \times \beta 21) = 0.740$; (IH2) improvement in institutional components was significantly associated with an increase in asset accumulation through an increase in savings and investment actions, Indirect Effect $\times (\gamma 12 \times \beta 21) = 0.349$; and (IH3) larger intergenerational transfers was significantly associated with an increase in asset accumulation through an increase in saving and investment actions, Indirect Effect $\times (\gamma 13 \times \beta 21) = 0.182$.

All other hypotheses about indirect effects in the asset-building theoretical framework (IH4, IH5, IH6, and IH7) were not supported because the directional hypothesis that greater asset accumulation would improve psychological distress was not supported. This indicates that improvement in individual components was not associated with improvement in psychological distress through an increase in saving and investment actions or through an increase in asset

accumulation, γ11 × β21 × β32 and γ11 × β21 × β42. Improvement in institutional components was not associated with improvement in psychological distress through an increase in saving and investment actions or through an increase in asset accumulation, γ12 × β21 × β32 and γ12 × β21 × β42. Larger intergenerational transfers was not associated with improvement in psychological distress through an increase in saving and investment actions or through an increase in asset accumulation, γ13 × β21 × β32 and γ13 × β21 × β42. And greater saving and investment actions was not associated with improvement in psychological distress through an increase in asset accumulation, β21 × β32 and β21 × β42.

Individual components was significantly correlated with institutional components, $r = -.622$, and intergenerational transfers, $r = .106$. In addition, institutional components was significantly associated with intergenerational transfers, $r = -.092$.

Some of the control variables were not associated with asset accumulation or the psychological distress of HHs or wives, $p > .05$. For example, sex of HH, chronic illness history of HH, and if anyone in the family unit had health insurance were not associated with asset accumulation. The psychological distress of HHs was not associated with HH age, race, family size, number of children in the family unit, health insurance of someone in the family unit, imputed values, and quadratic terms of HH education, family size, and number of children in the family unit. Finally, the psychological distress of a wife was not associated with the wife's age, race, education, occupation, family size, number of children in the family unit, and the quadratic terms of a wife's education, family size, and number of children in the family unit. However, the exclusion of those non-significant control variables caused a decrease in the fit of the data to the model, RMSEA = .037 and TLI =.589. In addition, according to the literature, those control variables can influence asset accumulation and psychological distress. Therefore, all control

variables were left in the model regardless of their significant or non-significant relationship to asset accumulation or psychological distress.

Asset accumulation was significantly associated, under $p < .05$, with the age, race, education, and occupation of HHs and wives, family size, number of children in the family unit, marital status of HHs, income, chronic illness history of wives, if a family unit had a wife, and if the family had imputed values. The psychological distress of HHs was significantly associated with the HH quadratic terms of age, sex, marital status, education, occupation, chronic illness history, and by family income and the quadratic term of family income. And the psychological distress of the wives was significantly associated with the wives' quadratic terms of age, marital status of HH, chronic illness history of wives, and by family income and the quadratic term of income.

Weighted Cross-Sectional Model

The RMSEA for the null model was .114; therefore, a not-sufficient TLI was expected, TLI = .523, and the RMSEA of the examined model was good, RMSEA = .043 (Figure 15). Thus, the main hypothesis (H1) was supported. All loadings on the latent variables were significant, $p < .05$. In both separate and composite measurement models, nine loadings on the latent variables did not contribute to the models; the same nine loadings did not contribute to the weighted cross-sectional model as well, $R^2 < .001$.

The first three hypotheses about direct effects in the asset-building theoretical framework were supported: savings and investment actions was positively significantly associated with (DH1) individual components, $\gamma = 0.938$; (DH2) institutional components, $\gamma = 0.302$; and (DH3) intergenerational transfers, $\gamma = 0.275$. However, DH4 was not supported because asset accumulation was negatively significantly associated with intergenerational transfers, $\gamma =$

–0.115. In addition, asset accumulation was positively significantly associated with saving and investment actions, $\beta = 0.661$, supporting DH5.

The psychological distress of HHs and wives was negatively significantly associated with asset accumulation, $\beta = –0.291$ and $\beta = –0.144$, respectively, meaning that DH6 was not supported. However, asset accumulation was positively significantly associated with the psychological distress of HHs, $\beta = 0.272$, and wives, $\beta = 0.114$, which supports DH7.

Regarding the hypotheses about indirect effects in the asset-building theoretical framework, IH1, IH2, and IH3 were supported: (IH1) improvement in individual components was significantly associated with an increase in asset accumulation through an increase in saving and investment actions, Indirect Effect ($\gamma 11 \times \beta 21$) = 0.620; (IH2) improvement in institutional components was significantly associated with an increase in asset accumulation through an increase in saving and investment actions, Indirect Effect ($\gamma 12 \times \beta 21$) = 0.200; and (IH3) larger intergenerational transfers was significantly associated with an increase in asset accumulation through an increase in saving and investment actions, Indirect Effect ($\gamma 13 \times \beta 21$) = 0.182.

Due to the direction of the influence of asset accumulation on psychological distress being the opposite of the hypothesized direction, all other hypotheses about indirect effects in the asset-building theoretical framework were not supported (IH4, IH5, IH6, and IH7). In other words, improvement in individual components was not associated with improvement in psychological distress through an increase in savings and investment actions or through an increase in asset accumulation (IH4), $\gamma 11 \times \beta 21 \times \beta 32$ and $\gamma 11 \times \beta 21 \times \beta 42$. Improvement in institutional components was not associated with improvement in psychological distress through an increase in saving and investment actions and through an increase in asset accumulation (IH5), $\gamma 12 \times \beta 21 \times \beta 32$ and $\gamma 12 \times \beta 21 \times \beta 42$. Larger intergenerational transfers was not

associated with improvement in psychological distress through an increase in saving and investment actions and through an increase in asset accumulation (IH6), $\gamma 13 \times \beta 21 \times \beta 32$ and $\gamma 13 \times \beta 21 \times \beta 42$. And greater saving and investment actions was not associated with improvement in psychological distress through an increase in asset accumulation (IH7), $\beta 21 \times \beta 32$ and $\beta 21 \times \beta 42$.

Individual components was significantly correlated with the latent variables of institutional components, $r = -.574$, and intergenerational transfers, $r = .085$. In addition, institutional components was significantly associated with intergenerational transfers, $r = -.118$.

All control variables were significantly associated with asset accumulation, and the psychological distress of HHs and wives, $p < .001$. However, the magnitude of some of those paths was low. For example, a magnitude of less than 0.100 was presented for the directional path between asset accumulation and race of wives, education of HHs, occupation of HHs and wives, history of chronic illness of HHs and wives, and health insurance for someone in the family unit.

Comparison Between Unweighted and Weighted Cross-Sectional Models

In both models, the main hypothesis was supported (H1). In addition, the same direct (DH1, DH2, DH3, DH4, and DH7) and indirect (IH1, IH2, and IH3) hypotheses were supported in both models, and the same direct (DH5 and DH6) and indirect (IH4, IH5, IH6, and IH7) hypotheses were not supported in both models.

The weighted cross-sectional model presented a lower magnitude of the paths between saving and investment actions and the latent variables of individual components, institutional components, and intergenerational transfers compared with the unweighted cross-sectional model. However, in the weighted cross-sectional model, the magnitude of the paths between

asset accumulation and saving and investment actions and intergenerational transfers was higher compared with the unweighted model. The magnitude of the path between asset accumulation and the psychological distress of HHs was greater in the weighted model, and the path between asset accumulation and the psychological distress of wives was of similar magnitude in both models. In addition, the magnitude of the path between psychological distress of HHs and asset accumulation was greater in the weighted model, and the magnitude of the path between the psychological distress of wives and asset accumulation was smaller in the weighted model.

In the weighted cross-sectional model, all the paths between control variables and asset accumulation were significant. Three paths were not significant in the unweighted model (i.e., sex of HH, history of chronic illness of HH, and health insurance of someone in the family unit). Only nine paths between control variables and the psychological distress of HHs were significant in the unweighted cross-sectional model (i.e., sex, marital status, education, occupation, history of chronic illness of HH, family income and the quadratic terms of education and age of HH and family income), compared with the weighted cross-sectional model that presented significant paths between all control variables and the psychological distress of HHs. Out of 16 significant paths between control variables and the psychological distress of wives in the weighted model, 9 were significant in the unweighted model (i.e., marital status of HH, family income, education of wives, imputed values and the quadratic terms of education of wives, age of wives, family size, number of children, and family income).

Longitudinal Model

The longitudinal model included information from two time points, 2001 and 2007. For the weighted longitudinal model, family longitudinal sampling weights were used. The model used in the cross-sectional analysis was used for each time point, including control variables, and

directional paths were added between the time points. Each latent variable of the 2001 wave was assumed to predict the same latent variable of the 2007 wave. For example, individual components from the 2001 wave were expected to predict individual components from the 2007 wave. The psychological distress of HHs and wives in the 2001 wave were assumed to predict the psychological distress of HHs and wives in 2007, respectively. Table 29 displays the main statistical results of the unweighted and weighted models and whether the hypotheses of the study were supported. Table 29 also shows whether the expected influences of the latent variables in 2001 on the latent variables in 2007 were found.

Table 29.

Summary of Statistical Results and Hypotheses Support in the Longitudinal Model, Unweighted and Weighted Analyses

Hypotheses		**Statistical results**		**Hypothesis support**	
		Unweighted model	**Weighted model**	**Unweighted model**	**Weighted model**
Main hypothesis	The observed covariance of the population under study is not significantly different from the covariance of the parameter estimates of the hypothesized model.	RMSEA = 0.030	RMSEA = 0.035	Yes	Yes
Direct hypotheses (DH#) in 2001	DH1-Improvement in individual components will increase saving and investment actions.	$\gamma = 1.152$	$\gamma = 0.992$	Yes	Yes

Hypotheses		Statistical results		Hypothesis support	
		Unweighted model	Weighted model	Unweighted model	Weighted model
	DH2-Improvement in institutional components will increase saving and investment	$\gamma = 0.539$	$\gamma = 0.294$	Yes	Yes
	DH3-Larger intergenerational and interhousehold transfers will increase saving and investment actions.	$\gamma = 0.231$	$\gamma = 0.216$	Yes	Yes
	DH4-Larger intergenerational and interhousehold transfers will increase asset accumulation.	$\gamma = -0.108$	$\gamma = -0.080$	No	No
	DH5-Greater saving and investment actions will increase asset accumulation.	$\beta = 0.657$	$\beta = 0.661$	Yes	Yes
	DH6-Greater asset accumulation will improve psychological distress.	HH $\beta = -0.188$ W $\beta = -0.160$	HH $\beta = -0.224$ W $\beta = -0.154$	No	No
	DH7-Better psychological distress will increase asset accumulation.	HH $\beta = 0.187$ W $\beta = 0.113$	HH $\beta = 0.224$ W $\beta = 0.112$	Yes	Yes
Indirect hypotheses (IH#) in 2001	IH1-Improvement in individual components will increase asset accumulation through an increase in saving and investment actions ($\gamma 11 \times \beta 21$).	Indirect effect = 0.748	Indirect effect = 0.637	Yes	Yes

Hypotheses		Statistical results		Hypothesis support	
		Unweighted model	**Weighted model**	**Unweighted model**	**Weighted model**
	IH2-Improvement in institutional components will increase asset accumulation through an increase in saving and investment actions ($\gamma 12 \times \beta 21$).	Indirect effect = 0.350	Indirect effect = 0.189	Yes	Yes
	IH3-Larger intergenerational and interhousehold transfers will increase asset accumulation through an increase in saving and investment actions ($\gamma 13 \times \beta 21$).	Indirect effect = 0.150	Indirect effect = 0.139	Yes	Yes
	IH4-Improvement in individual components will improve psychological distress through an increase in saving and investment actions and through an increase in asset accumulation ($\gamma 11 \times \beta 21 \times \beta 32$ and $\gamma 11 \times \beta 21 \times \beta 42$).	Indirect effect = HH –0.141 W –0.120	Indirect effect = HH –0.143 W –0.089	No	No

Hypotheses		Statistical results		Hypothesis support	
		Unweighted model	Weighted model	Unweighted model	Weighted model
	IH5-Improvement in institutional components will improve psychological distress through an increase in saving and investment actions and through an increase in asset accumulation ($\gamma 12 \times \beta 21 \times \beta 32$ and $\gamma 12 \times \beta 21 \times \beta 42$).	Indirect effect = HH –0.066 W –0.056	Indirect effect = HH –0.042 W –0.029	No	No
	IH6-Larger intergenerational & interhousehold transfers will improve psychological distress through an increase in saving and investment actions and through an increase in asset accumulation ($\gamma 13 \times \beta 21 \times \beta 32$ and $\gamma 13 \times \beta 21 \times \beta 42$).	Indirect effect = HH –0.028 W –0.024	Indirect effect = HH–0.031 W –0.021	No	No
	IH7-Greater saving and investment actions will improve psychological distress through an increase in asset accumulation ($\beta 21 \times \beta 32$ and $\beta 21 \times \beta 42$).	Indirect effect = HH –0.122 W –0.104	Indirect effect = HH –0.144 W –0.100	No	No
Direct hypotheses in 2007	DH1-Improvement in individual components will increase saving and investment actions.	$\beta = 0.521$	$\beta = 0.770$	Yes	Yes

Hypotheses		Statistical results		Hypothesis support	
		Unweighted model	Weighted model	Unweighted model	Weighted model
	DH2-Improvement in institutional components will increase saving and investment.	β = –0.018*	β = –0.004*	No	No
	DH3-Larger intergenerational and interhousehold transfers will increase saving and investment actions.	β = 0.854	β = 0.436	Yes	Yes
	DH4-Larger intergenerational and interhousehold transfers will increase asset accumulation.	β = –1.040	β = –0.284	No	No
	DH5-Greater saving and investment actions will increase asset accumulation.	β = 1.341	β = 0.849	Yes	Yes
	DH6-Greater asset accumulation will improve psychological distress.	HH β = 0.030* W β = 0.087	HH β = –0.034 W β = 0.052	No for HH Yes for W	No for HH Yes for W
	DH7-Better psychological distress will increase asset accumulation.	HH β = –0.006* W β = –0.047	HH β = 0.042 W β = –0.015	No	Yes for HH No for W
Indirect hypotheses in 2007	IH1-Improvement in individual components will increase asset accumulation through an increase in saving and investment actions (β85 × β98).	Indirect effect = 0.699	Indirect effect = 0.654	Yes	Yes

Hypotheses		Statistical results		Hypothesis support	
		Unweighted model	Weighted model	Unweighted model	Weighted model
	IH2-Improvement in institutional components will increase asset accumulation through an increase in saving and investment actions (β86 × β98).	Indirect effect = –0.024*	Indirect effect = –0.003	No	No
	IH3-Larger intergenerational and interhousehold transfers will increase asset accumulation through an increase in saving and investment actions (β87 × β98).	Indirect effect = 1.145	Indirect effect = 0.370	Yes	Yes
	IH4-Improvement in individual components will improve psychological distress through an increase in saving and investment actions and through an increase in asset accumulation (β85 × β98 × β109 and β85 × β98 × β119).	Indirect effect = HH 0.021* W 0.061	Indirect effect = HH –0.022 W 0.034	No for HH Yes for W	No for HH Yes for W

Hypotheses		Statistical results		Hypothesis support	
		Unweighted model	**Weighted model**	**Unweighted model**	**Weighted model**
	IH5-Improvement in institutional components will improve psychological distress through an increase in saving and investment actions and through an increase in asset accumulation (β86 × β98 × β109 and β86 × β98 × β119).	Indirect effect = HH –0.001* W –0.002*	Indirect effect = HH < 0.001* W < 0.001*	No	No
	IH6-Larger intergenerational & interhousehold transfers will improve psychological distress through an increase in saving and investment actions and through an increase in asset accumulation (β87 × β98 × β109 and β87 × β98 × β119).	Indirect effect = HH 0.034* W 0.100	Indirect effect = HH –0.013* W 0.019	No for HH Yes for W	No for HH Yes for W
	IH7-Greater saving and investment actions will improve psychological distress through an increase in asset accumulation (β98 × β109 and β98 × β119).	Indirect effect = HH 0.040* W 0.117	Indirect effect = HH –0.029 W 0.044	No for HH Yes for W	No for HH Yes for W
Expected influence of 2001 latent variables on 2007 latent variables	Improvement in individual components in 2001 will improve individual components in 2007.	γ = 0.133	γ = 0.109	Yes	Yes

Hypotheses		Statistical results		Hypothesis support	
		Unweighted model	**Weighted model**	**Unweighted model**	**Weighted model**
	Improvement in institutional components in 2001 will improve institutional components in 2007.	$\gamma = 0.109$	$\gamma = 0.064$	Yes	Yes
	Larger intergenerational and interhousehold transfers in 2001 will increase intergenerational and interhousehold transfers in 2007.	$\gamma = 0.005$*	$\gamma = -0.001$*	No	No
	Greater saving and investment actions in 2001 will increase saving and investment actions in 2007.	$\beta = -0.106$*	$\beta = -0.205$	No	No
	Greater asset accumulation in 2001 will increase asset accumulation in 2007.	$\beta = 0.056$	$\beta = 0.087$	Yes	Yes
	Better psychological distress in 2001 will improve psychological distress in 2007.	HH $\beta = -0.036$ W $\beta = -0.024$*	HH $\beta = -0.063$ W $\beta = -0.024$	No	No
	Improvement in individual components in 2001 will increase saving and investment actions in 2007.	$\beta = 0.066$*	$\beta = 0.140$	No	Yes

Hypotheses		Statistical results		Hypothesis support	
		Unweighted model	Weighted model	Unweighted model	Weighted model
	Improvement in institutional components in 2001 will increase saving and investment in 2007.	β = 0.028*	β = 0.023*	No	No
	Larger intergenerational and interhousehold transfers in 2001 will increase saving and investment actions in 2007.	β = 0.017*	β = 0.019*	No	No
	Larger intergenerational and interhousehold transfers in 2001 will increase asset accumulation in 2007.	β = 0.040*	β = 0.050	No	Yes
	Greater saving and investment actions in 2001 will increase asset accumulation in 2007.	β = –0.046*	β = –0.061	No	No
	Greater asset accumulation in 2001 will improve psychological distress in 2007.	HH β = 0.006* W β = –0.029*	HH β = 0.005* W β = –0.038	No	No
	Better psychological distress in 2001 will increase asset accumulation in 2007.	HH β = –0.040 W β = 0.018*	HH β = –0.077 W β = 0.010	No	No for HH Yes for W

Note. HH = heads of the household; RMSEA = root mean square error of approximation; W =wives.
*$p > .05$.

Unweighted Longitudinal Model

The RMSEA for the null model was .079, indicating a good fit of the model according to the RMSEA of the examined model, RMSEA =.030, TLI =.545 (Figure 16). This finding supports the main hypothesis (H1). A total of 13 loadings on the latent variables were not significant in the unweighted longitudinal model; 7 in the 2001 wave and 6 in the 2007 wave. Only 4 non-significant loadings on the latent variables were similar in both waves: income from unemployment compensation, received financial help from relatives, received financial help from non-relatives, and amount in pension from former employer.

Just as in the cross-sectional model, saving and investment actions of the 2001 wave was significantly associated with the 2001 wave's latent variables: individual components, $\gamma = 1.152$; institutional components, $\gamma = 0.539$; and intergenerational transfers, $\gamma = 0.231$. These findings support the first three direct hypotheses (DH1, DH2, and DH3). However, only two of these hypotheses were supported in the 2007 wave (DH1 and DH3). Saving and investment actions in 2007 was significantly associated with the 2007 latent variables of individual components, $\beta = 0.521$, and intergenerational transfers, $\beta = 0.854$, but not by the 2007 latent variables of institutional components, $p = .165$. Although saving and investment actions in 2007 was expected to be predicted by the 2001 wave's latent variables, it was not: saving and investment actions, $p = .606$; individual components, $p = .783$; institutional components, $p = .820$; and intergenerational transfers, $p = .808$. Because the relationship between the latent variables was negative, DH4 was not supported, $\gamma = -0.108$. However, asset accumulation in the 2001 wave was significantly associated with saving and investment actions of 2001, $\beta = 0.649$. That finding supports DH5. Psychological distress of HHs and wives in the 2001 wave was negatively significantly associated with the 2001 wave's asset accumulation, $\beta = -0.188$ and $\beta = -0.160$,

respectively. Thus, only one part of the hypothesized positive reciprocal relationship between asset accumulation and psychological distress was supported (DH6). But DH7 was supported, because asset accumulation in the 2001 wave was significantly associated with the 2001 wave's psychological distress of HHs, $\beta = 0.187$, and wives, $\beta = 0.113$.

As hypothesized in DH5, asset accumulation in the 2007 wave was positively significantly associated with saving and investment actions in 2007, $\beta = 1.341$, $p < .001$. However, asset accumulation in 2007 was negatively significantly associated with the 2007 wave's intergenerational transfers, $\beta = -1.040$ and $p < .001$, and psychological distress of wives, $\beta = -0.047$ and $p = .003$, was opposed to the positive paths hypothesized in DH4 and DH6. In addition, asset accumulation in 2007 was not significantly associated with psychological distress of HHs in 2007, $p = .715$. In other words, the hypothesis regarding the relationship between asset accumulation and the psychological distress of HHs was not supported (DH6).

As expected, asset accumulation in 2001 positively significantly predicted asset accumulation in 2007, $\beta = 0.056$ and $p = .009$. Unexpectedly, psychological distress of HHs in the 2001 wave negatively significantly predicted asset accumulation in 2007, $\beta = -0.040$ and $p = .005$, and it was not predicted by psychological distress of wives in the 2001 wave, $p = .190$; saving and investment actions in the 2001 wave, $p = .558$; and intergenerational transfers in 2001, $p = .584$.

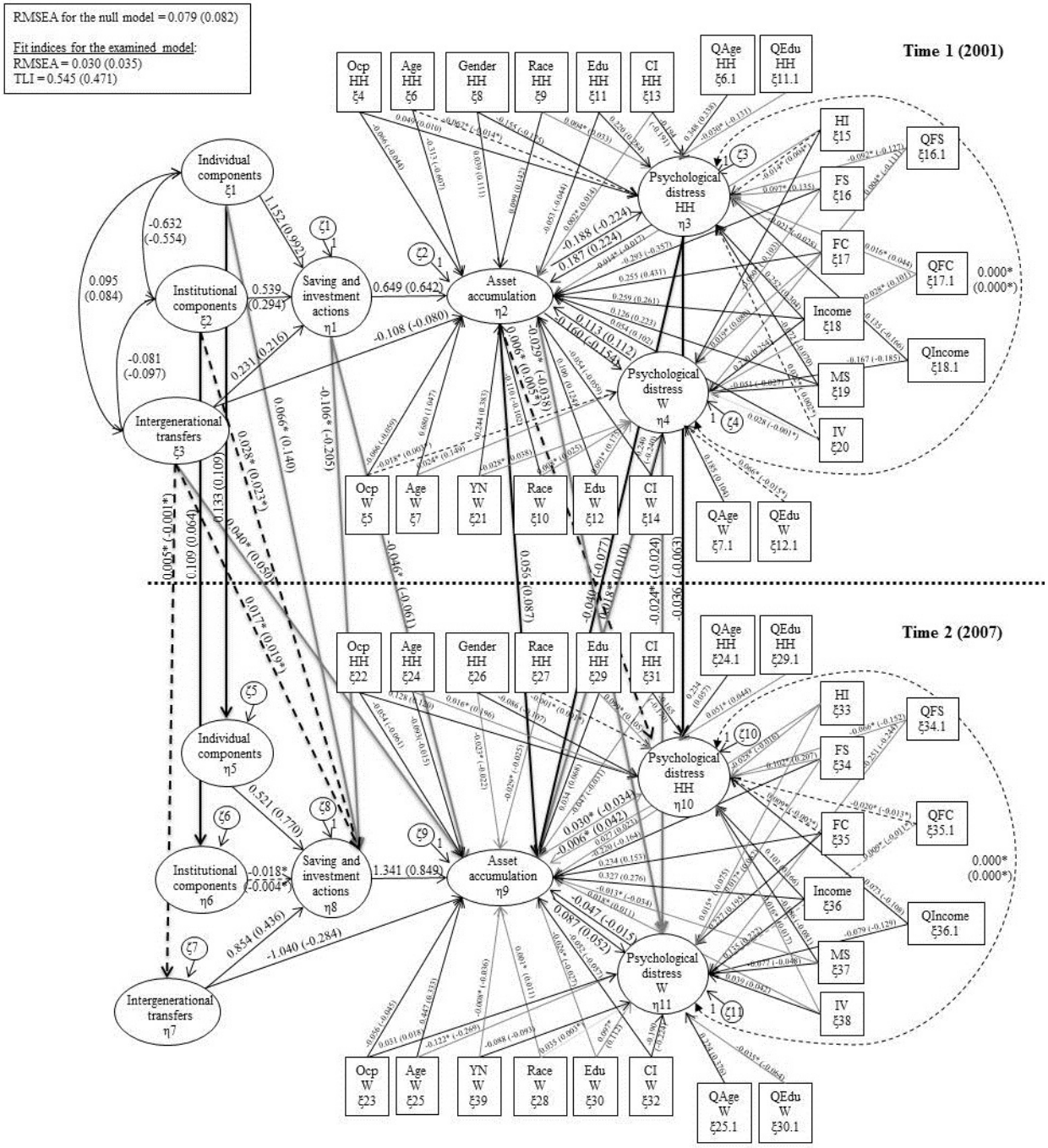

Figure 16. Longitudinal model of the asset-building theoretical framework and psychological distress, unweighted and weighted analyses. Unweighted coefficient estimates are presented outside the parenthesis, and weighted coefficient estimates are presented inside the parenthesis. Loadings on the latent variables are not presented due to space limits of the page. Paths that were not significant in the unweighted analysis but were significant in the weighted analysis are presented as dark grey lines. Paths that were significant in the unweighted analysis but were not significant in the weighted analysis are presented as light grey lines. Paths that were not significant in unweighted and weighted analyses but were kept in the model are presented as dashed lines. All paths were significant under $p < 0.05$ unless otherwise stated. CI = chronic illness; Edu = education; FC = family composition; FS = family size; HH = heads of household; HI= health insurance; IV = imputed values; MS = marital status; Ocp = occupation; Q = quadratic term; W = wives; YN = yes/no wife. *$p > 0.05$.

Psychological distress of HHs and wives in the 2001 wave was significantly associated with asset accumulation in the 2001 wave, $\beta = -0.188$ and $\beta = -0.160$, respectively. Psychological distress of HHs in the 2007 wave was significantly predicted by psychological distress of HHs in 2001, $\beta = -0.036$ and $p = .012$, but not by asset accumulation of the 2001 and 2007 waves, $p = .667$ and $p = .122$, respectively. For 2001 and 2007, the hypotheses regarding the positive reciprocal relationship between asset accumulation and psychological distress were not supported. However, as hypothesized in DH6, psychological distress of wives in 2007 was positively significantly associated with asset accumulation in 2007, $\beta = 0.087$ and $p < .001$. In addition, it was expected that psychological distress of wives in 2007 would be predicted by asset accumulation in 2001 and by psychological distress of wives in 2001; however, both paths were not significant, $p = .102$ and $p = .054$, respectively.

The same three indirect hypotheses that were supported in the cross-sectional model were also supported in the 2001 wave of the longitudinal model (IH1, IH2, and IH3). Improvement in individual components was significantly associated with an increase in asset accumulation through an increase in saving and investment actions, Indirect Effect $\times (\gamma 11 \times \beta 21) = 0.748$. Improvement in institutional components was significantly associated with an increase in asset accumulation through an increase in saving and investment actions, Indirect Effect $\times (\gamma 12 \times \beta 21) = 0.350$. Larger intergenerational transfers was significantly associated with an increase in asset accumulation through an increase in saving and investment actions, Indirect Effect $\times (\gamma 13 \times \beta 21) = 0.150$.

All other indirect hypotheses for the 2001 wave were not supported due to the negative influence of asset accumulation on psychological distress in 2001 (IH4, IH5, IH6, and IH7). That indicates that improvement in individual components was not associated with improvement in

psychological distress through an increase in saving and investment actions and through an increase in asset accumulation, γ11 × β21 × β32 and γ11 × β21 × β42 (IH4). Improvement in institutional components was not associated with improvement in psychological distress through an increase in saving and investment actions and through an increase in asset accumulation, γ12 × β21 × β32 and γ12 × β21 × β42 (IH5). Larger intergenerational transfers was not associated with improvement in psychological distress through an increase in saving and investment actions and through an increase in asset accumulation, γ13 × β21 × β32 and γ13 × β21 × β42 (IH6). And greater saving and investment actions was not associated with improvement in psychological distress through an increase in asset accumulation, β21 × β32 and β21 × β42 (IH7).

In 2007, four indirect hypotheses were supported (IH1, IH3, IH4, and IH6). Improvement in individual components was significantly associated with an increase in asset accumulation through an increase in saving and investment actions, Indirect Effect × (β85 × β98) = 0.699. Larger intergenerational transfers was significantly associated with an increase in asset accumulation through an increase in saving and investment actions, Indirect Effect × (β87 × β98) = 1.145. Improvement in individual components was significantly associated with improvement in psychological distress of wives through an increase in saving and investment actions and through an increase in asset accumulation, Indirect Effect × (β85 × β98 × β119) = 0.061. Larger intergenerational transfers was significantly associated with improvement in psychological distress through an increase in saving and investment actions and through an increase in asset accumulation, Indirect Effect × (β87 × β98 × β119) = 0.100.

Hypotheses that included institutional components were not supported because its influence on saving and investment actions was not significant (IH2). Therefore, improvement in institutional components was not associated with an increase in asset accumulation through an

increase in saving and investment actions, β86 × β98. In addition, hypotheses that included psychological distress of HHs were not supported because the influence of asset accumulation on psychological distress of HHs was not significant (IH5 and IH7). This indicates that improvement in institutional components was not associated with improvement in psychological distress through an increase in saving and investment actions or through an increase in asset accumulation, β86 × β98 × β109, and greater saving and investment actions was not associated with improvement in psychological distress through an increase in asset accumulation, β98 × β109.

In the 2001 wave, individual components was significantly correlated with institutional components, $r = -.632$, and intergenerational transfers, $r = .095$. And institutional components was significantly associated with intergenerational transfers, $r = -.081$. In addition, as expected, institutional components in 2001 positively significantly predicted institutional components in 2007, β = 0.133, and individual components in 2001 positively significantly predicted individual components in 2007, β = 0.109. However, intergenerational transfers in 2001 did not predict intergenerational transfers in 2007, $p = .755$.

The control variables, significant and non-significant, that were used in the unweighted cross-sectional model were also used in the longitudinal model. The non-significant paths between control variables and asset accumulation were different for the 2001 and 2007 waves. For 2001, they were history of chronic illness of HHs and health insurance of someone in the family unit. For 2007, they were race of HHs and wives, gender of HHs, marital status of HHs, imputed values, and whether there was a wife in the family unit.

Nine paths between control variables and psychological distress of HHs were not significant in the 2001 and 2007 waves (i.e., age of HHs, race of HHs, family size, number of

children, health insurance of someone in the family unit, imputed values and the quadratic terms of education of HHs, family size, and number of children), and education of HHs were not associated with psychological distress of HHs in the 2007 wave. In addition, five paths between control variables and psychological distress of wives were not significant in the 2001 and 2007 waves (i.e., age, education, family size and the quadratic terms of education of wives and number of children). An additional five paths were not significant in 2001 (i.e., race of waves, occupation of wives, number of children, whether there was a wife in the family unit, and the quadratic terms of family size).

Due to a good fit of the data to the model considering the RMSEA fit index and the importance of all non-significant paths to the model, those paths were not removed from the longitudinal model.

Weighted Longitudinal Model

Considering the RMSEA fit index, the data had a good fit to the model (Figure 16), RMSEA = .035. Although the TLI was .471, the RMSEA for the null model was .082, meaning that the main hypothesis (H1) was supported. In the weighted longitudinal model, one loading on a latent variable was not significant in the 2001 wave, and three loadings on the latent variables were not significant in the 2007 wave. There were no similar non-significant loadings on the latent variables in both waves.

In the 2001 wave of the weighted longitudinal model, as hypothesized in DH1, DH2, and DH3, saving and investment actions was positively significantly associated with the other latent variables of the 2001 wave: individual components, $\gamma = 0.992$; institutional components, $\gamma = 0.294$; and intergenerational transfers, $\gamma = 0.216$. Thus, the first three direct hypotheses (DH1, DH2, and DH3) were supported. In the 2007 wave of the weighted longitudinal model, only two

of those hypotheses were supported (DH1 and DH3); saving and investment actions in 2007 was significantly associated with the latent variables of individual components, $\beta = 0.770$, and intergenerational transfers, $\gamma = 0.436$, in 2007. However, DH2 was not supported; saving and investment actions in 2007 was not associated with the latent variables of institutional components in 2007, $p = .429$. As expected, saving and investment actions in 2007 was significantly predicted by the latent variables of saving and investment actions in 2001, $\beta = -0.205$, and individual components in 2001, $\beta = 0.140$, but unexpectedly, it was not predicted by institutional components in 2001, $p = .112$, and intergenerational transfers, $p = .163$, in 2001.

Direct hypothesis 4 was not supported because asset accumulation of the 2001 wave was negatively significantly associated with intergenerational transfers, $\gamma = -0.080$, but DH5 was supported in the 2001 wave; greater saving and investment actions was significantly associated with an increase in asset accumulation, $\beta = 0.642$. Psychological distress of HHs and wives in the 2001 wave were significantly associated with asset accumulation in the 2001 wave, $\beta = -0.224$ and $\beta = -0.154$, respectively; however, the direction of these paths was in opposition to DH6. In addition, asset accumulation in the 2001 wave was significantly associated with psychological distress of HHs, $\beta = 0.224$, and wives, $\beta = 0.112$ in 2001, which supports DH7.

In 2007, DH5 was supported; asset accumulation in 2007 was significantly associated with saving and investment actions, $\beta = 0.849$. The psychological distress of HHs and wives was significantly associated with asset accumulation in 2007, $\beta = -0.034$ and $\beta = 0.052$, respectively, but DH6 was supported only for wives. Although, the other direct paths (DH4 and DH7) were significant, they were in opposite to the hypothesized direction; asset accumulation in 2007 was negatively significantly associated with intergenerational transfers in 2007, $\beta = -0.284$, and the psychological distress of HHs and wives in 2007, $\beta = -0.042$ and $\beta = -0.015$, respectively.

As expected, asset accumulation in 2007 was significantly predicted by greater asset accumulation in 2001, $\beta = 0.087$, larger intergenerational transfers in 2001, $\gamma = 0.050$, and better psychological distress of wives in 2001, $\beta = 0.010$. Unexpectedly, asset accumulation in 2007 was significantly predicted by less saving and investment actions in 2001, $\beta = -0.061$, and worse psychological distress of HHs, $\beta = -0.077$. Unexpectedly, the psychological distress of HHs and wives in 2007 was negatively significantly predicted by their psychological distress in 2001, $\beta = -0.063$ and $\beta = -0.024$, respectively. In addition, asset accumulation in 2001 did not predict psychological distress of HHs in 2007, $p = .087$, and negatively significantly predicted psychological distress of wives in 2007, $\beta = -0.038$.

The latent variables of individual components, institutional components, and intergenerational transfers in 2001 were all significantly correlated with each other (Figure 10). Although, intergenerational transfers in 2001 did not predict intergenerational transfers in 2007 as expected, $p = .848$, institutional components in 2001 positively significantly predicted institutional components in 2007, $\beta = 0.109$, and individual components in 2001 positively significantly predicted individual components in 2007, $\beta = 0.064$.

Three indirect hypotheses were supported in the weighted longitudinal model in 2001: (IH1) improvement in individual components was significantly associated with an increase in asset accumulation through an increase in saving and investment actions, Indirect Effect $\times$ ($\gamma 11 \times \beta 21$) = 0.637; (IH2) improvement in institutional components was significantly associated with an increase in asset accumulation through an increase in saving and investment actions, Indirect Effect $\times$ ($\gamma 12 \times \beta 21$) = 0.189; and (IH3) larger intergenerational transfers was significantly associated with an increase in asset accumulation through an increase in saving and investment actions, Indirect Effect $\times$ ($\gamma 13 \times \beta 21$) = 0.139.

Due to the negative influence of asset accumulation on psychological distress in 2001, which is in opposition to DH6, all other indirect hypotheses in the 2001 were not supported (IH4, IH5, IH6, and IH7). In 2007, four indirect hypotheses were supported: (IH1) improvement in individual components was significantly associated with an increase in asset accumulation through an increase in saving and investment actions, Indirect Effect × (β85 × β98) = 0.654; (IH3) larger intergenerational transfers was significantly associated with an increase in asset accumulation through an increase in saving and investment actions, Indirect Effect × (β87 × β98) = 0.370; (IH4) improvement in individual components was significantly associated with improvement in psychological distress of wives through an increase in saving and investment actions and through an increase in asset accumulation, Indirect Effect × (β85 × β98 × β119) = 0.034; (IH6) larger intergenerational transfers was significantly associated with improvement in psychological distress through an increase in saving and investment actions and through an increase in asset accumulation, Indirect Effect × (β87 × β98 × β119) = 0.019.

Hypotheses that included institutional components were not supported because its influence on saving and investment actions was not significant (IH2). In addition, hypotheses that included psychological distress of HHs were not supported because the influence of asset accumulation on psychological distress of HHs was in opposition to IH5 and IH7.

All significant and non-significant paths between control variables and asset accumulation and the psychological distress of HHs and wives that were used in the weighted cross-sectional model were also used in the longitudinal model. There were no non-significant paths between control variables and asset accumulation for either the 2001 or 2007 waves. A total of six different paths between control variables and psychological distress of HHs were not significant for 2001 and 2007: three in 2001 (i.e., age of HH, health insurance, and imputed

values) and three in 2007 (i.e., race of HH, number of children, and the quadratic term of number of children). For paths between control variables and psychological distress of wives, three were not significant in 2001 (i.e., occupation of wives, imputed values, and the quadratic term of education of wives) and two were not significant in 2007 (i.e., race of wives and the quadratic term of number of children). Because the RMSEA fit index of the examined model indicated a good fit of the data to the model and the importance of all non-significant paths to the model, those paths were not removed from the longitudinal model.

Comparison Between Unweighted and Weighted Longitudinal Models

In the unweighted and weighted models, the RMSEA for the null model indicated that the examined model would have a good fit when considering the RMSEA fit index but not when considering the TLI fit index. Thus, the main hypothesis (H1) was supported in both models. In the unweighted longitudinal model, thirteen loadings on latent variables were not significant compared with four in the weighted longitudinal model. The four loadings that were not significant in the weighted model were also not significant in the unweighted model.

For 2001, saving and investment actions was positively significantly associated with individual components, institutional components, and intergenerational transfers in the unweighted and weighted models. The magnitude of these relationships was greater in the unweighted model compared with the weighted model. However, the same two latent variables in 2007 were significantly associated with saving and investment actions in 2007 in the unweighted model; the magnitude of the influence of the latent variables of individual components on saving and investment actions was greater in the weighted model, and the magnitude of the influence of intergenerational transfers on saving and investment actions was greater in the unweighted model. Across time points in the unweighted model, none of the latent

variables for 2001 predicted saving and investment actions for 2007. However, in the weighted model, it was significantly predicted for 2007 by saving and investment actions and individual components of the 2001 wave.

In the 2001 and 2007 waves' unweighted and weighted models, asset accumulation was positively significantly associated with saving and investment actions and negatively significantly associated with intergenerational transfers. The magnitude of these relationships was greater in the unweighted model compared with the weighted model. Although asset accumulation in the 2007 wave was not predicted by saving and investment actions in the 2001 wave in the unweighted model, it was negatively significantly predicted in the weighted model. Over time, asset accumulation in the 2007 wave was positively significantly predicted by asset accumulation in the 2001 wave in the unweighted and weighted models. However, only the weighted model showed a significant influence of saving and investment actions and intergenerational transfers from 2001 on asset accumulation in 2007.

Psychological distress of HHs and wives in 2001 was positively significantly associated with asset accumulation in unweighted and weighted models in 2001, and psychological distress of HHs and wives in the 2001 wave was negatively significantly associated with asset accumulation. However, there were mixed results in the unweighted and weighted models of the 2007 wave. In the unweighted model, psychological distress of HHs in 2007 was not associated with asset accumulation in 2007 nor asset accumulation in 2007 was associated with psychological distress of HHs in 2007. But in the weighted model, psychological distress of HHs was positively significantly associated with asset accumulation while asset accumulation was negatively significantly associated with psychological distress of HHs. In unweighted and weighted models, psychological distress of wives in 2007 was negatively significantly associated

with asset accumulation in 2007 while asset accumulation in 2007 was positively significantly associated with psychological distress of wives in 2007.

Considering the influence of psychological distress on asset accumulation over time in the unweighted model, psychological distress of HHs, but not wives, in 2001 significantly predicted asset accumulation in 2007. However, in the weighted model, the psychological distress of HHs and wives in 2001 predicted asset accumulation in 2007. Although the psychological distress of HHs and wives in 2007 was negatively significantly predicted by the psychological distress of HHs and wives in 2001 in the weighted model, that was true only for HHs in the unweighted model. In addition, in the unweighted model, the psychological distress of HHs and wives in 2007 was not predicted by asset accumulation in 2001. But in the weighted model, psychological distress of wives in 2007, but not of HHs, was negatively significantly predicted by asset accumulation in 2001.

In unweighted and weighted models, individual components, institutional components, and intergenerational transfers in 2001 were all significantly correlated with each other. In addition, individual components in 2001 and the latent variables of institutional components in 2007 positively significantly predicted individual components in 2001 and the latent variables of institutional components in 2007, respectively. However, intergenerational transfers in 2001 did not predict intergenerational transfers in 2007.

Compared with the weighted model, the unweighted model contains many more non-significant paths between control variables and asset accumulation and the psychological distress of HHs and wives. For example, there are no non-significant paths between control variables and asset accumulation in 2001 and 2007 in the weighted model, but eight non-significant paths were observed in the unweighted model, two in 2001 and six in 2007. As another example, six non-

significant paths between control variables and psychological distress of HHs were observed in the weighted model, three in 2001 and three in 2007, but 19 were observed in the unweighted model, nine in 2001 and ten in 2007.

In summary, the main finding of this study is that the data support the asset-building theoretical framework in the cross-sectional and longitudinal model, using unweighted and weighted analyses. However, not all direct and indirect hypotheses were supported and not all expected paths over time were supported.

CHAPTER 5: DISCUSSION AND CONCLUSIONS

This chapter summarizes the main findings of the longitudinal SEM of the asset-building theoretical framework and psychological distress. An interpretation of the findings in the context of the theory is provided. Next, the strengths and weakness of this study are provided, in addition to suggested future research and policy implications.

Discussion

The Main Hypothesis (H1): the Data Fits the Model

This study examined the asset-building theoretical framework and psychological distress, controlling for expected confounders, in a U.S. representative population (i.e., the HHs and wives) using longitudinal SEM. In the unweighted and weighted analyses, H1 was supported because the data fit the model according to the RMSEA fit index. In other words, the theoretical model that was first presented by Sherraden (1991) and later expanded by Beverly et al. (2008) and Lerman and McKernan (2008) was empirically supported.

Direct Hypothesis 1: Improvement in Individual Components Will Increase Saving and Investment Actions

This study supported Beverly et al.'s (2008) hypothesis that fewer financial expenses such as medical expenses, vehicle costs, and debt payment and more informal social support increase saving and investment actions. In 2001 and 2007, and in the unweighted and weighted models, greater individual components significantly increased saving and investment actions. In addition, in the weighted model, greater individual components in 2001 significantly predicted an increase in saving and investment actions in 2007.

This empirical evidence is in line with Barr's (2012) statement that suggests that those who have fewer financial resources have no slack and less financial flexibility. For example, low- and moderate-income individuals have been left with no money for ongoing expenses and none for savings after they cashed their paychecks and paid their debts and other payments (Caskey, 1997). Thus, low income individuals tend to manage their finances to meet present needs (e.g. cover daily consumption and monthly expenses) while high income individuals tend to manage their finances to meet future needs (e.g. saving for higher education, retirement savings, inheritance). Therefore, asset building programs, which provide institutional support to low income individuals, should take into consideration these differences in management of finances. For example, financial education, through asset building programs, should try to change management of finances of low income individuals to focus not only on meeting present needs but also on meeting future needs. The difficulty in changing management of finances is true not only for the low income individuals, but also to high income individuals; high income individuals who face economic hardship, might find it difficult to change their management of finances from meeting future needs to present needs.

In this study, informal social support was examined using positive and negative social support; positive social support defined as financial help to the family unit and negative social support was defined as financial help from the family unit to someone outside the household unit[16]. Both represented the latent variable of individual components. Unlike the Sherraden et al. (2005) study, which suggested that support from relatives and nonrelatives was important for a person's saving actions, in this study, financial help given to the family unit had little influence on saving and investment actions. However, the Sherraden et al. (2005) study was a qualitative

[16] The PSID uses the term *household unit* to describe the physical place where family members live; however, living in the household unit does not automatically make a person part of the family unit. Only people that meet the criteria of relatedness and economic integration are considered part of the family unit.

study with a small sample size. It may be that financial help to the family unit is important to saving and investment actions (Beverly et al., 2008), but within the overall asset-building theoretical framework tested by this study, it had a smaller influence compared with the other components.

Although Beverly et al. (2008) and Sherraden (1991) hypothesized that greater negative social support would be related to less saving and investment actions, the influence of financial help given to someone outside the household unit was positively related to greater saving and investment actions in this study. It is possible that different participants in the PSID interpreted the question differently. For example, the term *someone outside the household unit* could be a relative or non-relative that needs help to cover debt. It could also mean a child, even a minor, who does not live in the household unit (e.g., attends private school or college). In the latter situation, if the information was available for this study, that financial help would have been categorized as an intergenerational transfer rather than as negative social support (i.e., as financial help of the family unit to someone outside the household unit that could prevent the family unit from saving and accumulating assets). Due to the potential differences in the interpretation of "someone outside the household unit", providing financial help to someone outside the household unit may not necessarily have been a negative social support.

Future studies should try to differentiate between the two cases. For example, researchers could ask participants to divide the amount of financial help that was given to someone outside the household unit into whether the recipients were young dependents, older dependents, other family members, and/or non-family members. In that case, the amount of financial help given to children, elderly parents, or other close relatives living outside the household unit could be related to intergenerational transfers, and the amount of financial help given to other family

members and non-family members could be related to negative social support. Another way to look at that issue may be related to the circumstances rather than the person that receives the financial help. For example, a non-family member may have closer relationship to a person than a family member, therefore in similar circumstances as were mentioned before, the financial help would be considered, conceptually, as intergenerational transfers rather than negative social support.

In addition, the race of the family members in the household may have different impacts on how financial help given to someone outside the household unit affects their saving and investment actions. For example, a qualitative study reported that low-income African American and moderate-income Hispanics felt they could not save money due to the pressure they felt to share it with people outside their household (Caskey, 1997). Future studies should examine the differences in the influence of race on financial help given to someone outside the household unit and its effect on saving and investment actions.

Direct Hypothesis 2: Improvement in Institutional Components Will Increase Saving and Investment Actions

To examine this hypothesis, only three out of the seven dimensions of institutional components presented by Sherraden (2003) and Beverly et al. (2008) were used: access, incentives, and security. *Access* was measured as years in a pension plan offered through the employer, *incentives* were measured as the amount the employer contributes to the pension and *disincentives* (i.e., asset limits) were measured as amounts received from food stamps, the government, for heating or cooling the house, TANF, SSI, other welfare, unemployment compensation, and child support. *Security* was measured as homeowner insurance premiums.

These three dimensions were the only institutional components dimensions that had available observed items in the PSID data set, meaning that four other institutional components

dimensions of the asset-building theoretical framework had no representation in this study. However, access and incentives strongly affected the saving behaviors of low-income individuals in the ADD program (Sherraden, 2003), making them essential dimensions to study. In addition, Grinstein-Weiss, Wagner et al. (2006) found that for ADD participants, institutional components as a block explained 11% of the variance in AMNDs. Thus, these three dimensions were considered sufficient for representing institutional components in the current study.

The dimension of security was examined using an observed item that measured the amount a family paid for home insurance. However, the model tested required this observed item be shifted to represent the latent variable of individual components rather than the latent variable of institutional components. The "amount a family paid for home insurance" was assumed to represent security; however, this assumption was probably wrong. The magnitude of its loading on individual components was higher than on institutional components. It seems this measure represents a financial burden, rather than a feeling of security due to the reduced risk of property loss as hypothesized by Beverly et al. (2008). In other words, the power of the current financial hardship born from paying for home insurance may override the reduction in distress over unexpected hazards (e.g., fires, etc.) that may take away the family home.

Theoretically, people who have greater access to institutional components are more likely to have higher saving rates than those without access (Sherraden, 1991; Sherraden et al., 2003; Beverly et al., 2008). Access to institutional components can come through the tax system or through an employer (Beverly et al., 2008; Johnson & Sherraden; 1992; Sherraden, 1991; Sherraden et al., 2003). To improve retirement security, the current president of the US, Barack Obama, proposed providing access to retirement accounts called myRA to people who do not have access to retirement accounts through their employers. The estimation of the White House

is that myRA could provide access to one quarter of U.S. workers who do not have access to retirement savings accounts today (The White House, 2014; U.S. Department of the Treasury, 2014).

In this study, access was examined using the number of years a person had a pension through an employer and it loaded significantly on the latent variable of institutional components. The amount an employer contributes to a person's pension, an indicator of incentives, also significantly loaded on the latent variable of institutional components, but the magnitude of that loading was low. Although saving to a pension account is essential for asset accumulation at the time of retirement, it seems that the contribution of an employer to a pension account is not an important dimension of institutional components. That may be due to the restriction that pension accounts can only be used after retirement without paying a penalty. Perhaps employer contributions to short-term or medium-term savings accounts would have greater influence on institutional components. It may also be that the influence of employer contributions to a pension account depends on the age of the participants; a subgroup analysis may provide more information about that relationship.

Public and governmental assistance programs can discourage savings due to asset-tests (i.e., the requirement to own less than a specific amount of assets in order to be eligible for the assistance program). That lack of encouragement for saving is considered a disincentive for saving from the institution. In this study, amounts from several assistance programs loaded on the latent variable of institutional components. Most of the loadings were significant, but their magnitude was small, and their influence on savings may be small. Although the asset-tests of assistance programs do not allow asset accumulation over a certain threshold, that threshold may provide a goal that could foster the institutional component of expectation. In other words, asset

limits may create a saving goal for low-income individuals. Therefore, increasing the threshold for asset-tests may have two benefits: reducing disincentive in order to increase saving and increasing the saving goal. Additionally, assistance programs may discourage savings, but the influence of institutional components that do encourage savings may be greater on the individual. Practically, this may mean that policy should focus on institutional components that may encourage savings (e.g., match rates, cap rates, financial education) and increasing the threshold of assistance programs' asset limits rather than changing the eligibility requirements for assistance programs entirely.

These findings may provide another explanation for results from other studies regarding the relationship between institutional components and savings (Curley et al., 2009; Grinstein-Weiss, Wagner et al., 2006; Schreiner et al., 2001; Schreiner & Sherraden, 2007). A summary of findings from research on 401(k) plans (i.e., pension accounts) suggested that higher match rates increase participation (Schreiner et al., 2001, p.144). With the expectation of low match rates, match rates do not increase savings and may even decrease them. That finding was also supported by Grinstein-Weiss, Wagner et al. (2006) who found that a higher match rate was significantly associated with lower AMNDs for families with children who participated in the ADD.

However, studies that evaluated the ADD found that information, financial education, and expectations significantly increased the AMNDs of participants in the ADD, but they found no relationship between AMNDs and facilitation (i.e., direct deposit), access (i.e., number of deposit locations), and public assistance (Curley et al., 2009; Grinstein-Weiss, Wagner et al., 2006; Schreiner et al., 2001; Schreiner & Sherraden, 2007; Sherraden et al., 2003). In the R2S randomized control trial, each participant was randomly assigned to different suggested saving

amount of the tax refund (without matched funds). The suggested saving amounts were 25%, 50%, and 75% of the tax refund or specific amounts of $100 or $250 of the tax refund (Grinstein-Weiss, Comer et al., 2013). Participants who were randomly assigned to suggested saving amount of 50% of the tax refund saved significantly greater amounts from their tax refunds than participants who were randomly assigned to suggested saving amount of 25% of the tax refund. In addition, six months after the random assignment, participants who were randomly assigned to suggested saving amount of50% of the tax refund were significantly more likely to have still saved their tax refund compared with participants in the control group (Grinstein-Weiss, Comer et al., 2013).

In the current study, improvement in institutional components increased saving and investment actions in 2001 but not in 2007. In addition, institutional components in 2001 did not predict saving and investment actions in 2007. It is important to mention that when examined in a cross-sectional manner, this hypothesis was supported in both 2001 and 2007 (information regarding the 2007 cross-sectional SEM was not presented in the results section because it was similar to the 2001 cross-sectional SEM), but in the longitudinal model, it was not. It is unclear how the longitudinal model changed that path. It may be that using only three dimensions of this latent variable was not sufficient for detecting a longitudinal effect. Another explanation might be that the interval of six years between the waves was too long for showing a significant relationship; with a shorter period of time between waves, this path may have been significant.

It may also be that the theory does not apply to certain income levels, and that the influence of institutional components may have a more important role for low-income families' saving and investment actions than those of middle- and upper-income families. A positive influence of institutional components on saving and investment actions was present in findings

on asset-building programs that targeted low-income individuals (Grinstein-Weiss, Wagner et al., 2006; Grinstein-Weiss et al., 2012; Schreiner & Sherraden, 2007; Sherraden, 2003; Sherraden et al., 2003; Sherraden et al., 2005; Wheeler-Brooks & Scanlon, 2009). However, even in the ADD, almost half the participants in the intervention group were not considered savers, who were defined as individuals who saved at least $100 in net-IDA savings (Sherraden, 2008). In other words, almost half of the participants who received the opportunity to open a matched-savings account for a specific goal chose not to take full advantage of that opportunity, thus the finding in the current study that there was no significant effects of institutional components on savings over time is not surprising.

Schreiner and Sherraden (2007) proposed three lessons for policy makers on asset accumulation based on the ADD studies: saving is not easy for poor people, even with institutional support; there may be a need to improve the design of asset-building programs; and "unmatched withdrawals should be unrestricted so poor people cannot harm themselves by saving in IDAs" (p. 124). From a policy perspective, this means that institutional components should not only be available to people of all income levels but also be progressively distributed. For example, considering incentives such as match rates, the lower the income of a family, the greater the incentive the institution (e.g., a bank) should provide, and the higher the income of a family, the lower the incentive the institution should provide. In that example, instead of helping the rich to become richer, institutions such as banks or employers would and could promote the savings of low-income families.

The main difference between this study and the studies of asset-building programs is its nature; this study was an observational study, and the asset-building programs were interventional studies. According to the non-significant finding in this study and the significant

findings from the asset-building programs, it seems that institutional components have greater, and thus more important, influences on saving and investment actions over time in an asset-building program that includes IDAs and financial education. The differences between the findings from this study and findings from the studies of asset-building programs may illustrate the importance of comprehensive asset-building programs that include multiple components (e.g., financial education and matched savings accounts with restrictions on withdrawals except for specific goals). From the policy perspective, if providing financial education and matched-savings accounts restricted to specific goals, which can both be considered institutional components, in an intervention has a positive influence on savings, especially for low-income families, and providing institutional components such as matched-savings accounts without an intervention do not have an influence on savings, the conclusion may be that it is important to design interventions that provide financial education, especially for low-income families, and matched-savings accounts with restrictions for specific goals to promote savings.

For example, people without access to retirement accounts through their employers could be automatically enrolled in myRA. MyRA is supposed to be an accessible, tax-free retirement account designated for a specific goal (i.e., providing financial security during retirement), and it is planned to have a maximum savings amount of $15,000 (The White House, 2014; U.S. Department of the Treasury, 2014). Both restrictions for specific goals and maximum savings amounts, as discussed, have been shown to be motivating for potential savers. However, myRA's $15,000 maximum may be too low of a goal for funds intended for use in retirement.

Direct Hypothesis 3: Larger Intergenerational Transfers Will Increase Saving and Investment Actions

The two observed items that loaded on the latent variable of intergenerational transfers indicated whether the family received any inheritance during the last year and/or during the last

five years. They were both statistically significant and had high magnitudes. Thus, these two observed variables were strong indicators of the latent variable of intergenerational transfers. The hypothesis that larger inheritances would increase savings was supported for 2001 and 2007 and in unweighted and weighted models. That supports Beverly et al.'s (2008) and Sherraden's (1991) hypotheses, which suggest that intergenerational transfers can be associated with better saving behaviors. Similar findings were presented in other cross-sectional studies. For example, Zagorsky (2012) reported that people who received an inheritance had roughly six times more savings than people who did not receive an inheritance when controlling for income, race, gender, and age. Juster, Lupton, Smith, and Stafford (2004) reported that higher inheritances were significantly related to more savings when controlling for income, age, marital status, capital gains, and the participant's own pension.

However, considering the influence of inheritance on savings over time, intergenerational transfers in 2001 did not predict the saving and investment actions of 2007. It may be that the time interval between the two waves under study was too long to detect a significant influence of intergenerational transfers on saving and investment actions. For example, Chang (1994) tested an interval of three years and found that the amount of inheritance received had a positive effect on household saving.

Regardless of the time effect, an inheritance also has to be large enough to sufficiently support asset accumulation. Therefore, due to the oversampling of low-income families in this study, their inheritances may have been small and the participants who received the inheritances may have been more likely to use them to cover debt or other expenses. That assumption is supported by Zagorsky (2012), who found that almost half of the people who received smaller

inheritances (i.e., less than $1000) spent it, compared with less than a fifth of the people who received larger inheritances (i.e., $100,000 or more).

Direct Hypothesis 4: Larger Intergenerational Transfers Will Increase Asset Accumulation

In contrast with the hypotheses derived from the asset-building theoretical framework, which suggest that larger intergenerational transfers can increase asset accumulation (Beverly et al., 2008; Sherraden, 1991), intergenerational transfers had a negative influence on asset-accumulation in 2001 and 2007 in unweighted and weighted models. This finding has some support from other studies. In one study, more than one third of participants who received an inheritance had a decline or no change in their wealth after receiving the inheritance (Zagorsky, 2012), and in another, one fifth of participants chose to spend the inheritances they received (Joulfaian, 2006). It should be noted that in this study, intergenerational transfers in 2001 had a negative influence on asset accumulation in 2001 and intergenerational transfers in 2007 had a negative influence on asset accumulation in 2007.

In the weighted model, greater intergenerational transfers in 2001 significantly predicted greater asset accumulation in 2007. This finding may illustrate the influence of intergenerational transfers on asset accumulation over time and supports the asset-building theoretical framework. In the present time, people may choose to save part of their inheritances and spend the rest, but in the long run, part of the inheritance was saved and shifted to assets. This type of saving behavior was also reported by Joulfaian (2006) and Keister (2003), who found that a larger inheritance was significantly related to more asset accumulation over time. Keister (2003) also reported that a larger inheritance was significantly associated with higher home value. That suggests that people who received a larger inheritance may have used it to purchase a more valuable house,

and people who received smaller inheritances or people who did not receive any inheritances could only purchase less valuable houses.

Another way to interpret that finding is that people who receive a larger inheritance invest the money in a tangible asset. Shapiro et al. (2013) illustrated the importance of taking into consideration the difference in inheritance use among races. White families were five times more likely to receive inheritances compared with African American families, and "each inherited dollar contributed to 91 cents of wealth for White families compared with 20 cents for African American families" (p. 5).

Direct Hypothesis 5: Greater Saving and Investment Actions Will Increase Asset Accumulation

In this study, greater saving and investment actions was significantly related to greater asset accumulation in 2001 and 2007 in the unweighted and weighted models. That finding supports Hypothesis 5. However, in the weighted model, greater saving and investment actions in 2001 significantly predicted lower asset accumulation in 2007. That finding is in opposite to the asset-building theoretical framework.

Saving and investment actions should include the amount and frequency of deposits and withdrawals (Beverly et al., 2008). However, it may be that the observed indicators of saving and investment actions were insufficient for fully capturing their important aspects. For example, the PSID does not contain variables about the frequency of deposits and withdrawals or portfolio composition, which may better account for saving and investment actions and contribute to the finding of non-significant paths between saving and investment actions and asset accumulation. Although the PSID provides some information about deposits and withdrawals, the available observed variables included only the amount of deposits to IRAs and stocks, the amount of voluntary contributions to pension accounts, the amount of withdrawals from IRAs and stocks,

and the amount of money that was cashed from pension accounts. These observed variables may not represent the actual saving and investment actions of the participants in this study. There may have been other measures of savings or withdrawals that were not available from the PSID data set, such as deposits to or withdrawals from 529 plans (i.e., an education savings account).

However, the PSID provides substantial information about liquid savings, retirement savings, home equity, and net worth, which are the main components of asset accumulation (Beverly et al., 2008; Sherraden, 1991). In addition, Sherraden (1991) noted that home equity and asset accumulation in retirement pension accounts are the two main forms of assets related to savings. The observed items in this study were selected according to the components of the theoretical asset accumulation; therefore they were expected to be a valid representation of the latent variable of asset accumulation.

Another explanation for this unexpected finding is that the time interval was too short. Sherraden (1991) discussed the positive long-term influence of savings on asset accumulation, but a six-year interval between the two waves may have been too short to detect the influence of saving and investment actions on asset accumulation. In addition, the theory does not take into consideration other life events that can influence asset accumulation. For example, those life events may include personal reasons such as a loss of a job or a birth of a new baby or macroeconomic reasons such as market fluctuations that can influence the amounts in retirement accounts, net worth, and home values. Therefore, the scope of the asset-building theoretical framework may be limited and need to be expanded. For example, in the ADD Wave 4, Grinstein-Weiss et al. (2012) did not find significant differences in homeownership, retirement savings, or net worth 10 years after the randomization of participants who received and did not receive the opportunity to open IDAs. Moreover, 18 months after randomization, the effect of the

IDA program on net worth was significantly negative, which may have been due to purchases of homes that increased liabilities and decreased the total net worth of participants (Mills, G., Patterson, R., Orr, L., & DeMarco, 2004).

Direct Hypothesis 6 and 7: Greater Asset Accumulation Will Improve Psychological Well-Being and Better Psychological Well-Being Will Increase Asset Accumulation

The health outcome of this study was the psychological distress of HHs and wives. Despite the hypothesis that greater asset accumulation would improve psychological distress, the directional paths between asset accumulation and the psychological distress of HHs and wives were in the opposite directions of those hypothesized: greater asset accumulation was significantly related to the higher psychological distress of HHs and wives in 2001 and to HHs in 2007. Although the direct path between asset accumulation and psychological distress was negative, the direct path between psychological distress and asset accumulation was positive; lower psychological distress was significantly associated with greater asset accumulation. Thus, less psychological distress may increase asset accumulation, but greater asset accumulation may increase psychological distress. The reason for that may be that people who are less distressed, meaning they have better psychological well-beings, have more energy to improve their lives through working, earning money, investing that money, and accumulating assets. However, people who already have greater assets may invest those assets in riskier investments, such as the stock market, which may result in more distress due to the increased risk of losing their money. Or greater assets may require more effort to secure them, which can increase the psychological distress of a person. It is also possible that wealth has a nonlinear relationship with psychological distress; lower wealth may relate to more psychological distress, moderate wealth may relate to less psychological distress, and high wealth may relate to more psychological distress.

Most studies have found that greater wealth is significantly associated with lower psychological distress (Carter et al., 2009; Headey & Wooden, 2004; Myer et al., 2008; Xu, 2011). However, Searle, Smith, and Cook (2006) found that people with less wealth experienced high psychological distress and that the percentage of people with greater wealth who reported low psychological distress was similar to the percentage of people with greater wealth who reported high psychological distress.

Those studies examined cross-sectional associations and not direct or reciprocal relationships, which are "superior to most other approaches" (Bowen & Guo, 2012, p. 121). In the current study, similar results were found in the separate and composite measurement models (Figure 13 and 14, respectively), which examined associations and not the reciprocal direct paths. There were positive correlations between asset accumulation and the psychological distress of HHs and wives. This indicates that less psychological distress in HHs and wives was significantly associated with greater asset accumulation. It is important to note that if this study had examined only correlations and not direct paths, the conclusions about the relationship between assets and psychological distress would have been similar to those of previous studies. However, whenever testing for correlations, it was not clear if wealth influenced participants' psychological distress or if their psychological distress influenced their wealth.

In the weighted model, greater asset accumulation in 2001 significantly predicted higher psychological distress for wives in 2007 and did not significantly predict psychological distress for HHs. However, the magnitude of the directional path between asset accumulation in 2001 and the psychological distress of wives in 2007 was extremely low, $\beta = -0.038$. Regardless, those longitudinal relationships were unexpected. Theoretically, it may be that it was not appropriate to test the asset-building theoretical framework for the entire population using

psychological distress as the outcome variable. Moreover, higher psychological distress for HHs in 2001 significantly predicted their greater asset accumulation in 2007, and less psychological distress for wives in 2001 predicted their greater asset accumulation in 2007. This difference between the influence of psychological distress for HHs and wives on asset accumulation may be related to the participants under study. Almost one third of the HHs was single females, and all the wives were females that lived with a spouse. Therefore, wives may have lived in a more secure environment, financially and emotionally, than HHs, which allowed them be less psychologically distressed over time. However, for HHs, knowing that the burden of asset accumulation was theirs as the main financial provider, as defined by the PSID, may have caused males and females to have higher psychological distress.

In summary, although statistically the data fit the asset-building theoretical framework, theoretically and practically, some important direct hypotheses were not supported. Institutional components and intergenerational transfers in 2001 did not predict saving and investment actions in 2007. Saving and investment actions in 2001 negatively predicted asset accumulation in 2007. Asset accumulation in 2001 negatively predicted the psychological distress of wives in 2007 and did not predict the psychological distress of HHs in 2007. And the psychological distress of HHs in 2001 negatively predicted asset accumulation in 2007. Potential explanations for these results were provided previously in this dissertation.

Although studies on health outcomes and wealth suggest that psychological distress is sensitive to change over time (Brown et al., 2005; Singh-Manoux et al., 2005), in the current study, psychological distress may not have been the best health outcome to be examined using the asset-building theoretical framework. The measure of psychological distress refers to general psychological distress rather than specific financial distress. It may be that a measure of distress

that represents cumulative stressors, and thus represents fuller picture of distress, might offer the chance to partition out those families with stressors that do directly relate to impoverished finances. However, a change in psychological distress may be more sensitive for low-income individuals, because they usually report higher levels of psychological distress compared with high-income individuals (Carter et al., 2009; G. Kim et al., 2011; Pirraglia et al., 2011; Xu, 2011); therefore, asset-building programs, which are usually tailored to low-income families, should examine psychological distress as a health outcome of the program as well.

Strengths and Weaknesses

This longitudinal study used data from a large, nationally representative population in the US with the availability of a wide range of measures that represent the asset-building theoretical framework and control variables. Despite these strengths, potential limitations of this study need to be mentioned. Although the entire asset-building theoretical framework was examined in this study, several components of it were not available in the PSID data set. For example, there was no variable for measuring financial literacy, one of the key indicators of the construct of individual components. Furthermore, the PSID does not include a measure describing the financial information a participant receives from institutions (e.g., banks, the government, an employer). The omission of variables that theoretically could have had an influence on the model may have increased the chance of Type II errors, meaning that the null hypothesis may have been false and the statistical findings failed to reject it. These omitted variables may have influenced the findings of this study (i.e., non-significant paths in this study may have been significant in a model that included the omitted variables).

In addition, the PSID provides high quality data, but it is based only on self-reports. That may be a threat to construct validity (Shadish et al., 2002), because using only one method to

measure variables may have opened the theoretical model under study to biased information due to the subjectivity of self-reporting. For example, participants may not remember exactly the value of their assets and they will provide an estimation of the value they think is the closest to the truth. However, collecting information regarding assets from financial institutions, such as banks, may be an objective measure to estimate value of assets.

The use of more than one method to measure variables may provide greater insight into the construct than just using a single method. It is useful to use more than one method when measuring a given construct (Shadish et al., 2002) whenever a potential bias of information may be introduced. Therefore, future research on asset building and health can address this limitation by collecting accurate data about financial information from financial institutions and objective health information from clinics or hospitals. However, that information can be collected only after the formal consent of participants and IRB approval are obtained.

By definition, the HH was male; only single females who had lived without a partner for at least a year were considered HHs. That may have caused significant differences between male and female HHs. For example, most male HHs lived in a household with a spouse who may have provided the male HH different types of support such as financial, emotional, and physical support, and female HHs were mainly single mothers who had no such support. However, the longitudinal model included a control variable that indicated whether the HH was male or female, which should statistically have handled that problem. After controlling for the gender of HHs in the model, the effect of gender on asset accumulation and psychological distress was separated out from the effects of the independent variables on psychological distress.

Another problem with the data was that information about psychological distress was available only for one member of the family unit. To create a more comprehensive model, future

studies should test the asset-building theoretical framework with psychological distress for a HH and a wife from the same family unit, because health outcomes of one family member can influence health outcomes of another family member.

The sample size in this study was large (N = 6,295 families) and was even larger with sampling weights (N = 137,063 families). Although the power of the study was essentially 100%, that large sample size may have caused most of the relationships under study to be statistically significant. However, the findings of this study were interpreted according to the magnitude of the relationships and not just according to their statistical significances. In addition, the asset-building theoretical framework is a complex model that requires control of many confounders. This study controlled for 25 confounders in the cross-sectional SEM and for 50 confounders in the longitudinal SEM. That complexity may have been illustrated in the different results between separate and composite measurement models and cross-sectional and longitudinal SEM. In the separate and composite measurement models, less psychological distress was significantly associated with greater assets, and in the cross-sectional and longitudinal SEMs, greater assets caused more psychological distress.

Finally, it should be mentioned that the timing of data collection in 2001 and subsequently, in 2007, took place in a unique period of history in the US. On September 11, 2001, a series of four terrorist attacks were launched upon the US in New York City and in the Washington, DC, metropolitan area, an event referred to as 9/11. Those attacks were the cause of death for almost 3,000 people and had a financial effect of billions of dollars on the American population (Bram, Orr, & Rapaport, 2002). Those horrible events may have influenced the psychological distress of people and their financial situations. From the financial perspective, Becker and Murphy (2001) estimated an immediate loss of 0.06% of the total productive assets

of the U.S. economy due to the 9/11 terrorist attacks and in the long run, an impact of 0.3% on the gross domestic product of the US. From the psychological well-being perspective, Silver, Holman, McIntosh, Poulin, & Gil-Rivas (2002) reported a prevalence of 17.0% for PTSD two months after the 9/11 attacks, but it decreased to 5.8% six months after the attacks. However, the PTSD prevalence among low-income minorities one year after the attack was still higher (10.2%) than the national PTSD rate, which is 6.8% for lifetime prevalence and 3.5% for 12-months prevalence (Neria et al., 2006; National Institutes of Health, n.d.). It is possible that the model tested in this study was influenced by those terror events and the effect of some of the variables was suppressed.

Future Research

Based on the findings presented, several implications for future research to test the asset-building theoretical model are outlined. To my knowledge, the study reported here is the first quantitative examination of the entire asset-building theoretical framework using the available observed variables of the PSID data set; more specifically, this study is the first to provide empirical evidence regarding the asset-building theoretical framework and psychological distress. Previous studies have examined specific components of the theory and usually tested low-income individuals rather than a representative sample (Grinstein-Weiss, Sherraden et al., 2013; Y. Kim et al., 2012; Moore et al., 2001; Ssewamala et al., 2010).

Although Sherraden (1991) stated that the theory should have applicability to a population of widely varying asset levels, it is possible that a subgroup analysis of low-income families would have provided a better fit of the same data to the model. In case that is true, the theory may need to be modified for different income levels. For example, it is possible that for middle- and upper-income families, the individual components of needs and social support are

less meaningful in changing savings than for low-income families, and intergenerational transfers may be less meaningful in changing savings and asset accumulation for low-income families who receive small or no intergenerational transfers. In addition, in a subgroup analysis, the hypotheses that were not supported by this study may have been supported. Future studies should examine the theory as a whole, using different subgroups of income levels such as low-, middle-, and upper-income families. Findings from those kinds of studies may provide empirical evidence that could illustrate the parts of the theory that are more essential for each income group. That will allow modification of the asset-building theoretical framework to be tailored to each income level and modification of asset-building programs to be tailored to low-income families.

In the current study, the HH were mainly married males, but the females were mainly single parents. Although the gender of HH and the marital status were controlled in the cross sectional and longitudinal models, there might have been large differences in the psychological distress of male HH who were married compared to female HH who were single. Future studies should conduct subgroup analysis of single parent families which may financially struggle more and have higher psychological distress than 2-parent families.

Psychological distress was used in this study as the health outcome tested with the asset-building theoretical framework. In the longitudinal model, less psychological distress caused greater asset accumulation, and greater asset accumulation caused more psychological distress. Future studies should examine this relationship in asset-building programs that provide IDAs and financial education. Receiving the opportunity to open an IDA and to receive financial education may improve psychological distress through an increase in savings and asset accumulation. For low-income individuals, simply providing the opportunity to apply for Medicaid has a positive

influence on psychological well-being. Findings from the Oregon Medicaid health experiment showed that uninsured low-income individuals, who were randomly selected to receive the opportunity to apply for Medicaid, reported a significant increase in self-reported overall happiness compared with those who were not selected to receive that opportunity (Finkelstein et al., 2011). Thus, for low-income individuals, any amounts of financial help, such as health insurance, might be enough to improve their psychological well-being.

The findings of the current study supported only part of the theorized reciprocal relationship between asset accumulation and psychological distress. That may be due to different reasons, such as omitted variables or that the asset-building theoretical framework did not apply to psychological distress. To reach any conclusion, more studies should provide evidence about the theorized relationship. Moreover, psychological distress provides information about one dimension of psychological well-being. To obtain greater insight into the psychological well-being of a person, asset-building programs should include different measures of psychological well-being.

The asset-building theoretical framework implies that asset accumulation can affect psychological well-being. This study focused on psychological distress as a health outcome, which can represent one component of a person's psychological well-being. The asset-building theoretical framework also implies that asset accumulation can affect physical health and health behaviors. Therefore, researchers who design health research should take the asset-building theoretical framework into consideration to provide a fuller picture of changes in health outcomes. It is also important that asset-building programs test the influence of IDAs and financial education interventions on health outcomes and health behaviors over time to provide a fuller picture of the change in financial status of individuals and families.

Research is needed to examine the extent to which asset-building programs are related to other health outcomes and health behaviors that are associated with greater asset accumulation, such as better general health, lower BMI, lower alcohol consumption, less smoking, and so forth (Banks et al., 2010; Boyas et al., 2009; Chung et al., 2009; Cubbin et al., 2011; Finnegan et al., 2005; Hajat et al., 2010; Headey & Wooden, 2004; Janssen et al., 2006; B. Kim & Ruhm, 2010; J. Kim, 2011; Laaksonen et al., 2004; Zagorsky 2004, 2005). Future studies that examine the influence of asset accumulation, through asset-building programs, on health outcomes and health behaviors, may produce implications for theory, future interventions, and policy development. A positive influence of asset-building programs on health outcomes might provide evidence to support the theory, encourage more health-researchers to use it when designing their studies, and expand the theory based on the evidence. From the policy perspective, the improvement of health outcomes and health behaviors may have macroeconomic impacts such as less job-loss days and less use of health utilities. In other words, asset-building programs may indirectly affect society through health outcomes and health behaviors.

The PSID is one of the few databases that includes information on asset accumulation and health outcomes. Most databases that include a wealth of information regarding asset accumulation do not include information about health outcomes or health behaviors and vice versa. Future studies that examine asset accumulation, especially asset-building programs, should examine health outcomes as well, and future studies that examine health outcomes should include specific measures of asset accumulation.

Policy Implications

Asset-building programs usually include an opportunity to open a matched savings account (e.g., IDAs or CDAs) for a specific goal (e.g., higher education, retirement,

homeownership) and financial education. Both IDAs and financial education are dimensions of the institutional components of the asset-building theoretical framework. They should promote the saving of individuals and families, which in turn will theoretically increase asset accumulation. Today, there are several asset-building policy discussions taking place. For example, myRA is supposed to improve access to retirement accounts (The White House, 2014; U.S. Department of the Treasury, 2014), R2S is supposed to encourage allocating tax refunds to savings (Grinstein-Weiss, Comer et al., 2013; Key et al., 2013), and SEED is supposed to provide access and incentives to restricted CDAs from birth (Huang et al., 2014).

The findings of the current study suggest that individual components (i.e., economic needs and social support) are more essential than institutional components (i.e., incentives, access, and asset limits) to saving and investment actions in the general population because the former had a significant positive effect on savings and the latter did not. Although the findings of this study did not support the hypothesis that an increase in institutional components would increase saving and investment actions, it can still be an important component of asset accumulation for low-income families because there is a large difference between the institutional components available to low-income families and upper-income families, with more available to the latter. Therefore, asset-building programs should provide both institutional and individual components. For example, in addition to IDAs and financial education, seed money or vouchers for helping with monthly expenses should be provided as well.

Due to the small contribution of financial education to variance of financial behaviors (Fernandes et al., 2014), asset-building programs should reallocate some of their financial education funds to help in covering regular monthly expenses. In addition, although intergenerational transfers did not predict savings over time, they did predict greater asset

accumulation. Therefore, asset-building programs may need to provide financial education that includes information on how to invest lump sums such as an inheritance.

Theoretically, it seems the asset-building theoretical framework requires modification in order to apply to specific populations (e.g., low- vs. upper-income levels, minorities vs. non-minorities). Therefore, asset-building programs should be tailored to different populations. For example, intergenerational transfers may have less influence on savings for low-income families, but financial education, which can be provided through an asset-building program, can provide information about how to invest money received as an inheritance. Although institutional components, such as financial education and matched savings accounts, may have less influence on savings for upper-income families, asset-building programs tailored to low-income families should provide them. Findings from this study suggest that financial needs and social support affect savings. Therefore, asset-building programs should put more emphasis on providing financial help to cover monthly expenses that represent the financial needs of families.

Conclusion

Studies have shown that asset-based policies can help promote savings and asset accumulation among poor individuals and families (Grinstein-Weiss et al., 2012; Huang et al., 2014; Marks et al., 2009; Loke & Sherraden, 2009; Schreiner & Sherraden, 2007; Sherraden, 2008). Asset-building programs have examined the influence of providing institutional support on savings and asset accumulation. However, those programs did not take into consideration the entire theoretical framework and only a few of them have examined health outcomes. Future research on assets and health outcomes will advance both fields: health researchers will better understand how diverse economic resources (i.e., assets in addition to income) relate to health

outcomes and health behaviors, and asset researchers will move beyond the current focus on economic and social outcomes.

This study examined the asset-building theoretical framework as it relates to the psychological distress of HHs and wives using a U.S. representative sample. The data structure in the PSID data set fit the theoretical framework after controlling for potential confounders in the cross-sectional and longitudinal analyses. Most of the directional hypotheses were supported; a few were not. It seems that the asset-building theoretical framework and asset-building programs may need modification in order to be tailored to different samples (e.g., income level, race).

In the current study, less psychological distress had mainly a positive influence on asset accumulation, but greater asset accumulation predicted a negative influence on psychological distress. Although the hypothesis about this reciprocal relationship between asset accumulation and psychological distress was only partially supported, it is important to examine the relationship in future studies before reaching a conclusion about it. To fully understand the influence of assets on health, the asset-building theoretical framework should be examined for other health outcomes and health behaviors.

REFERENCES

Allison, P. D. (1999). *Multiple regression: A primer*. Thousand Oaks, CA: Pine Forge Press.

Andrews, G., & Slade, T. (2001). Interpreting scores on the Kessler psychological distress scale (K10). *Australian and New Zealand Journal of Public Health, 25*(6), 494–497. doi:10.1111/j.1467-842X.2001.tb00310.x

Andreski, P., McGonagle, K., & Schoeni, B. (2009). An analysis of the quality of the health data in the Panel Study of Income Dynamics. *PSID Technical Series Paper* (No. 09-02).

Banks, J., Muriel, A., & Smith, J. P. (2010). Disease prevalence, disease incidence, and mortality in the United States and in England. *Demography, 47*(Suppl.), S211–31. doi:10.1353/dem.2010.0008

Barr, M. S. (2012). *No slack: The financial lives of low-income Americans*. Washington, DC: Brookings Institution Press.

Becker, G., & Murphy, K. (2001). Prosperity will rise out of the ashes. *Wall Street Journal, 29,* A22.

Berrigan, D., Dodd, K., Troiano, R. P., Krebs-Smith, S. M., & Barbash, R. B. (2003). Patterns of health behavior in U.S. adults. *Preventive Medicine, 36*(5), 615–623. doi:10.1016/S0091-7435(02)00067-1

Beverly, S. G., Moore McBride, A., & Schreiner, M. (2003). A framework of asset-accumulation stages and strategies. *Journal of Family and Economic Issues, 24*(2), 143–156. doi:10.1023/A:1023662823816

Beverly, S., & Sherraden, M. (1997). *Human capital and social work*. St. Louis, MO: Washington University in St. Louis, Center for Social Development.

Beverly, S., & Sherraden, M. (1999). Institutional determinants of saving: Implications for low-income households and public policy. *Journal of Socio-Economics 28*(4) 457–473. doi:10.1016/S1053-5357

Beverly, S., Sherraden, M., Cramer, R., Williams Shanks, T. R., Nam, Y., & Zhan, M. (2008). Determinants of asset holdings. In S. M. McKernan & M. Sherraden (Eds.), *Asset building and low-income families* (pp.89–152). Washington, DC: Urban Institute Press.

Bowen, N. K., & Guo, S. (2012). *Structural equation modeling*. New York, NY: Oxford University Press.

Boyas, J., Shobe, M. A., & Hannam, H. M. (2009). Examining the association between race, ethnicity, and health status: Do assets matter? *Journal of Evidence-Based Social Work, 6*(4), 401–420. doi:10.1080/15433710903126604

Bram, J., Orr, J., & Rapaport, C. (2002). Measuring the effects of the September 11 attack on New York City. *Federal Reserve Bank of New York Economic Policy Review, 8*(2), 5–20. Retrieved from http://newyorkfed.org/research/epr/02v08n2/0211rapa.pdf

Brown, S., Taylor, K., & Wheatley Price, S. (2005). Debt and distress: Evaluating the psychological cost of credit. *Journal of Economic Psychology, 26*(5), 642–663. doi:10.1016/j.joep.2005.01.002

Burkhauser, R. V., & Weathers, R. R. II. (2001). Access to wealth among older workers in the 1990s and how it is distributed: Data from the health and retirement study. In T. N. Shapiro & E. N. Wolfe (Eds.), *Assets for the poor: The benefits of spreading asset ownership* (pp. 74–131). New York, NY: Russell Sage Foundation.

Burkhauser, R. V., Weathers, R. R., & Schroeder, M. (2006). *A Guide to Disability Statistics from the Panel Study of Income Dynamics*. Ithaca, NY: Cornell University, Rehabilitation Research and Training Center.

Byrne, B. M., Shavelson, R. J., & Muthen, B. (1989). Testing for equivalence of factor covariance and mean strictures: The issue of partial measurement invariance. *Psychological Bulletin, 105*(3), 456–466. doi:10.1037/0033-2909.105.3.456

Carasso, A., & McKernan, S. M. (2008). Asset holding and liabilities. In S. M. McKernan & M. Sherraden (Eds.), *Asset building and low-income families* (pp. 33–66). Washington, DC: Urban Institute Press.

Carney, S., & Gale, W. G. (2003). Asset accumulation among low-income households. In T. M. Shapiro & E. N. Wolff (Eds.), *Assets for the poor: The benefits of spreading asset ownership* (pp. 165–205). New York, NY: Russell Sage Foundation.

Carter, K. N., Blakely, T., Collings, S., Imlach Gunasekara, F., & Richardson, K. (2009). What is the association between wealth and mental health? *Journal of Epidemiology and Community Health, 63*(3), 221–226. doi:10.1136/jech.2008.07

Caskey, J. P. (1997). *Beyond cash-and-carry: Financial services, and low income households in two communities*. Swarthmore, PA: Swarthmore College.

Chang, Y. R. (1994). Saving behavior of U.S. households in the 1980s: Results from the 1983 and 1986 Survey of Consumer Finance. *Financial Counseling and Planning, 5*, 45–64. Retrieved from http://6aa7f5c4a9901a3e1a1682793cd11f5a6b732d29.gripelements.com /pdf/vol-53.pdf

Chiteji, N. (2010). Time-preference, non-cognitive skills, and well-being across the life course: Do non-cognitive skills encourage healthy behavior? *The American Economic Review, 100*(2), 200–204. doi:10.1257/aer.100.2.200.

Chung, S., Domino, M. E., & Stearns, S. C. (2009). The effect of retirement on weight. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences, 64*(5), 656–665. doi:10.1093/geronb/gbn044

Cobb-Clark, D. A., & Hildebrand, V. A. (2006). The wealth and asset holdings of U.S.-born and foreign-born households: Evidence from SIPP data. *Review of Income and Wealth, 52*(1), 17–42. doi:10.1111/j.1475-4991.2006.00174.x

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). Mahwah, NJ: L. Erlbaum.

Corporation for Enterprise Development. (2011). *Building economic security in America's cities: New municipal strategies for asset building and financial empowerment.* Retrieved from http://cfed.org/assets/pdfs/BuildingEconomicSecurityInAmericasCities.pdf

Costello, E. J., Compton, S. N., Keeler, G., & Angold, A. (2003). Relationships between poverty and psychopathology: A natural experiment. *JAMA: The Journal of the American Medical Association, 290*(15), 2023–2029. doi:10.1001/jama.290.15.2023

Costello, E. J., Erkanli, A., Copeland, W., & Angold, A. (2010). Association of family income supplements in adolescence with development of psychiatric and substance use disorders in adulthood among an American Indian population. *JAMA: The Journal of the American Medical Association, 303*(19), 1954–1960. doi:10.1001/jama.2010.621

Cramer, R., Sherraden, M., & McKernan, S. M. (2008). Policy implications. In S. M. McKernan & M. Sherraden (Eds.), *Asset building and low-income families* (pp. 221–238). Washington, DC: Urban Institute Press.

Cubbin, C., Pollack, C., Flaherty, B., Hayward, M., Sania, A., Vallone, D., & Braveman, P. (2011). Assessing alternative measures of wealth in health research. *American Journal of Public Health, 101*(5), 939–947. doi:10.2105/AJPH.2010.194175

Curley, J., Ssewamala, F., Sherraden, M. (2009). Institutions and savings in low-income households. *Journal of Sociology & Social Welfare, 351*(3), 9–32.

de Groot, M., Auslander, W., Williams, J. H., Sherraden, M., & Haire-Joshu, D. (2003). Depression and poverty among African American women at risk for type 2 diabetes. *Annals of Behavioral Medicine, 25*(3),172–181. doi:10.1207/S15324796ABM2503_03

DeVellis, R. F. (2003). *Scale Development: Theory and applications* (2nd ed.). Thousand Oaks, CA: Sage.

Dew, J. (2007). Two sides of the same coin? The differing roles of assets and consumer debt in marriage. *Journal of Family and Economic Issues, 28*(1), 89–104. doi:10.1007/s10834-006-9051-6

Dimitrov, D. M. (2010). Testing for factorial invariance in the context of construct validation. *Measurement and Evaluation in Counseling and Development, 43*(2), 121–149. doi:10.1177/0748175610373459

Drapeau, A., Marchand, A., & Beaulieu-Prévost, D. (2011). Epidemiology of psychological distress. In L. L'Abate (Ed.), *Mental illnesses–understanding, prediction and control* (pp. 105–134). Rijeka, Croatia: InTech Europe.

Duffy, D. (2011). *2007 PSID income and wage imputation methodology*. Ann Arbor, MI: University of Michigan, Survey Research Center-Institute for Social Research.

Duncan, G. (1990). *Draft chapters from the 1990 revision of the PSID user guide*. Ann Arbor, MI: University of Michigan, Survey Research Center.

Duncan, G. J., Daly, M. C., McDonough, P., & Williams, D. R. (2002). Optimal indicators of socioeconomic status for health research. *American Journal of Public Health, 92*(7), 1151–1157. doi:10.2105/AJPH.92.7.1151

Fernandes, D., Lynch, Jr., J. G., & Netemeyer, R. G. (2014). Financial literacy, financial education, and downstream financial behaviors. *Management Science, 60*(8), 1861–1883. doi:10.1287/mnsc.2013.1849

Finkelstein, A., Taubman, S., Wright, B., Bernstein, M., Gruber, J., Newhouse, J. P., . . . & Baicker, K. (2011). The Oregon health insurance experiment: Evidence from the first year. *The Quarterly Journal of Economic, 127*(3), 1057–1106. doi:10.1093/qje/qjs020

Finnegan, L., Marion, L., & Cox, C. (2005). Profiles of self-rated health in midlife adults with chronic illnesses. *Nursing Research, 54*(3), 167–177. doi:10.1097/00006199-200505000-00004

Frank, L. D., Andresen, M. A., & Schmid, T. L. (2004). Obesity relationships with community design, physical activity, and time spent in cars. *American Journal of Preventive Medicine, 27*(2), 87–96. doi:10.1016/j.amepre.2004.04.011

Gale, W. G., Harris, B. H., & Levine, R. (2012). Raising household saving: Does financial education work? *Social Security Bulletin, 72*(2), 37–48.

Gale, W. G., & Potter, S. (2003). The role of intergenerational transfers in wealth accumulation. In A. H. Munnell, & A. Sunden (Eds.), *Death and dollars: The role of gifts and bequests in America* (pp. 319–353). Washington, DC: Brookings Institution.

Gale, W. G., & Scholz, J. K. (1994). Intergenerational transfers and the accumulation of wealth. *Journal of Economic Perspectives, 8*(4), 145–160. doi:10.1257/jep.8.4.145

Grinstein-Weiss, M., Comer, K., Russell, B., Key, C., Perantie, D. C., & Ariely, D. (2013). *Refund to Savings: Evidence of tax-time saving in a national randomized control trail*. St. Louis, MO: Washington University in St. Louis, Center for Social Development.

Grinstein-Weiss, M., Shanks, T. R. W., & Beverly, S. G. (2014). Family assets and child outcomes: Evidence and directions. *Future of Children*, *24*(1), 147–170. Retrieved from http://futureofchildren.org/futureofchildren/publications/docs/24_01_07.pdf

Grinstein-Weiss, M., Sherraden, M., Gale, W. G., Rohe, W. M., Schreiner, M., & Key, C. (2013). Long-term effects of individual development accounts on postsecondary education: Follow-up evidence from a randomized experiment. *Economics of Education Review, 33*, 58–68. doi:10.1016/j.econedurev.2012.12.007

Grinstein-Weiss, M., Sherraden, M. W., Rohe, W., Gale, W. G., Schreiner, M., & Key, C. (2012). *Long-term follow-up of individual development accounts: Evidence from the ADD experiment*. Chapel Hill, NC: University of North Carolina.

Grinstein-Weiss, M., Wagner, K., & Ssewamala, F. M. (2006). Saving and asset accumulation among low-income families with children in IDAs. *Children and Youth Services Review, 28*(2), 193–211. doi:10.1016/j.childyouth.2005.03.005

Grinstein-Weiss, M., Zhan, M., & Sherraden, M. (2006). Saving performance in individual development accounts: Does marital status matter? *Journal of Marriage and Family, 68*(1), 192–204. doi:10.1111/j.1741-3737.2006.00241.x

Gross, M. B., Hogarth, J. M., & Schmeiser, M. D. (2012). Use of financial services by the unbanked and underbanked and the potential for mobile financial services adoption. *Federal Reserve Bulletin, 98*(4), 1–20. Retrieved from http://www.federalreserve.gov/pubs/bulletin/2012/pdf/mobile_financial_services_201209.pdf

Hajat, A., Kaufman, J. S., Rose, K. M., Siddiqi, A., & Thomas, J. C. (2010). Do the wealthy have a health advantage? Cardiovascular disease risk factors and wealth. *Social Science & Medicine, 71*(11), 1935–1942. doi:10.1016/j.socscimed.2010.09.027

Hammen, C. (2005). Stress and depression. *Annual Review of Clinical Psychology, 1*(1), 293–319. doi:10.1146/annurev.clinpsy.1.102803.143938

Han, C. K., & Sherraden, M. (2009). Do institutions really matter for saving among low-income households? A comparative approach. *The Journal of Socio-Economics, 38*(3), 475–483. doi:10.1016/j.socec.2008.07.002

Haveman, R., & Wolff, E. N. (2004). The concept and measurement of asset poverty: Levels, trends and composition for the U. S., 1983–2001. *Journal of Economic Inequality, 2*(2), 145–169. doi:10.1007/s10888-004-4387-3

Headey, B., Marks, G., & Wooden, M. (2005). The structure and distribution of household wealth in Australia. *Australian Economic Review, 38*(2), 159–175. doi:10.1111/j.1467-8462.2005.00363.x

Headey, B., & Wooden, M. (2004). The effects of wealth and income on subjective well-being and ill-being. *Economic Record, 80*(s1), S24–S33. doi:10.1111/j.1475-4932.2004.00181.x

Heeringa, S. G., Berglund, P. A., Khan, A., Lee, S., & Gouskova, E. (2011). Technical report: PSID cross-sectional individual weights, 1997–2009. Ann Arbor, MI: University of Michigan, Survey Research Center.

House, J. S., Kessler, R. C., & Herzog, A. R. (1990). Age, socioeconomic status, and health. *The Milbank Quarterly, 68*(3), 383–411. doi:10.2307/3350111

Hoyle, R. H. (1995). The structural equation modeling approach: Basic concepts and fundamental issues. In R. H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (pp. 1–15). Thousand Oaks, CA: Sage.

Huang, J. (2011). *Asset effects for children with disabilities: Analysis of educational and health outcomes*. (Doctoral dissertation, Washington University, Paper 161). Retrieved from http://openscholarship.wustl.edu/cgi/viewcontent.cgi?article=1160&context=etd

Huang, J., Sherraden, M., & Purnell, J. Q. (2014). Impacts of Child Development Accounts on maternal depressive symptoms: Evidence from a randomized statewide policy experiment. *Social Science & Medicine*, *112*, 30–38. doi:10.1016/j.socscimed.2014.04.023

Hurd, M., Juster, F. T., & Smith, J. P. (2003). Enhancing the quality of data on income: Recent innovations from the HRS. *The Journal of Human Resources, 38*(3), 758–772. doi:10.2307/1558775

Janssen, I., Boyce, W. F., Simpson, K., & Pickett, W. (2006). Influence of individual- and area-level measures of socioeconomic status on obesity, unhealthy eating, and physical inactivity in Canadian adolescents. *The American Journal of Clinical Nutrition, 83*(1), 139–145.

Johnson, A. K., & Sherraden, M. (1992). Asset-based social welfare policy: Homeownership for the poor. *Journal of Sociology & Social Welfare, 19*(1), 65–83.

Joulfaian, D. (2006). *Inheritance and saving (Working Paper No. w12569)*. Cambridge, MA: National Bureau of Economic Research. Retrieved from http://www.nber.org/papers /w12569.pdf

Juster, F. T., Lupton, J. P., Smith, J. P., & Stafford, F. (2006). The decline in household saving and the wealth effect. *Review of Economics and Statistics, 88*(1), 20–27. doi:10.1162/rest.2006.88.1.20

Kahn, J. R., & Fazio, E. M. (2005). Economic status over the life course and racial disparities in health. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences, 60*(2), 76–84. doi:10.1093/geronb/60.Special_Issue_2.S76

Kaplan, D. (2009). Structural equation modeling: Foundations and extensions. Thousand Oaks, CA: Sage.

Keister, L. A. (2003). Religion and wealth: The role of religious affiliation and participation in early adult asset accumulation. *Social Forces, 82*(1), 175–207. doi:10.1353/sof.2003.0094

Kenny, D. A. (2014). *Measuring model fit.* Retrieved from http://davidakenny.net/cm/fit.htm

Kessler, R. C., Andrews, G., Colpe, L. J., Hiripi, E., Mroczek, D. K., Normand, S. L. T., . . . & Zaslavsky, A. M. (2002). Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychological Medicine, 32*(6), 959–976. doi:10.1017/S0033291702006074

Kessler, R. C., Barker, P. R., Colpe, L. J., Epstein, J. F., Gfroerer, J. C., Hiripi, E., . . . & Zaslavsky, A. M. (2003). Screening for serious mental illness in the general population. *Archives of General Psychiatry, 60*(2), 184–189. doi:10.1001/archpsyc.60.2.184.

Kessler, R. C., Berglund, P. A., Glantz, M. D., Koretz, D. S., Merikangas, K. R., Walters, E. E., & Zaslavsky, A. M. (2002). Estimating the prevalence and correlates of serious mental illness in community epidemiological surveys. In R. W. Manderscheid & M. J. Henderson (Eds.), *Mental Health, United States, 2002* (pp. 155–164). Rockville, MD: U.S. Department of Health and Human Services

Cramer, R., Sherraden, M., & McKernan, S. M. (2008). Policy implications. In S. M. McKernan & M. Sherraden (Eds.), *Asset building and low-income families* (pp. 221–238). Washington, DC: Urban Institute Press.

Key, C., Grinstein-Weiss, M., Tucker, J., Holub, K., & Ariely, D. (2013). *Saving behavior in response to motivational prompts: Evidence from the refund to savings experiment* (CSD Research Brief 13–12). St. Louis, MO: Washington University, Center for Social Development.

Kim, B., & Ruhm, C. J. (2010). Inheritances, health and death. *Health Economics, 21*(2), 127–144. doi:10.1002/hec.1695

Kim, G., Bryant, A. N., & Parmelee, P. (2011). Racial/ethnic differences in serious psychological distress among older adults in California. *International Journal of Geriatric Psychiatry, 27*(10), 1070–1077. doi:10.1002/gps.2825

Kim, J. (2011). Socioeconomic inequalities in self-rated health among middle-aged and older adults. *Social Work in Health Care, 50*(2), 124–142. doi:10.1080/00981389.2010.527787

Kim, Y., Lee, S., & Kim, M. (2011). *Seoul Hope Plus Savings Accounts: Asset-building program for low-income households in Seoul (Second-year collaborative research report)*. St. Louis, MO: Washington University, Center for Social Development.

Kim, Y., Lee, A., & Sherraden, M. (2012). *Seoul Hope Plus Savings Accounts: Asset-building program for low-income households in Seoul (Third-year Collaborative Research Report)*. St. Louis, MO: Washington University, Center for Social Development.

Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3rd ed.). New York, NY: Guilford Press.

Laaksonen, M., Sarlio-Lahteenkorva, S., & Lahelma, E. (2004). Multiple dimensions of socioeconomic position and obesity among employees: The Helsinki Health Study. *Obesity Research, 12*(11), 1851–1858. doi:10.1038/oby.2004.230

Lerman, R. I., & McKernan, S. M. (2008). Benefits and consequences of holding assets. In S. M. McKernan & M. Sherraden (Eds.), *Asset building and low-income families* (pp. 175–206). Washington, DC: Urban Institute Press

Liberatos, P., Link, B. G., & Kelsey, J. L. (1988). The measurement of social class in epidemiology. *Epidemiologic Reviews, 10*(1), 87–121.

Loke, V., & Sherraden, M. (2009). Building assets from birth: A global comparison of child development account policies. *International Journal of Social Welfare, 18*(2), 119–129. doi:10.1111/j.1468-2397.2008.00605.x

Lusardi, A., & Mitchell, O. S. (2007). Baby boomer retirement security: The roles of planning, financial literacy, and housing wealth. *Journal of Monetary Economics, 54*(1), 205–224. doi:10.1016/j.jmoneco.2006.12.001

Lusardi, A., & Mitchell, O. S. (2010). *How ordinary consumers make complex economic decisions: Financial literacy and retirement readiness* (Working Paper No. 15350). Cambridge, MA: National Bureau of Economic Research. Retrieved from http://www.nber.org /papers/w15350.pdf

MacCallum, R. C., Browne, M. W., & Sugawara, H. M. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological Methods, 1*(2), 130–149. doi:10.1037/1082-989X.1.2.130

Marks, E. L., Rhodes, B. B., Engelhardt, G. V., Scheffler, S., & Wallace, I. N. (2009). *Building assets: An impact evaluation of the MI SEED Children's Savings Program.* Research Triangle Park, NC: RTI International.

Mason, L. R., Nam, Y., Clancy, M., Kim, Y., & Loke, V. (2009). *Child development accounts and saving for children's future: Do financial incentives matter?* St. Louis, MO: Washington University, Center for Social Development.

McGonagle, K. A., Schoeni, R. F., Sastry N., & Freedman, V. A. (2012). The Panel Study of Income Dynamics: Overview, recent innovations, and potential for life course research. *Longitudinal and Life Course Studies, 3*(2), 268–84. doi:10.14301/llcs.v3i2.188

McKernan, S. M., Ratcliffe, C., & Shank, T. W. (2011). Is poverty incompatible with asset accumulation? In P. N. Jefferson (Ed.), *The Oxford handbook of the economics of poverty* (pp. 463–493). New York, NY: Oxford University Press.

McKernan, S. M., & Sherraden, M. W. (2008). *Asset building and low-income families*. Washington, DC: Urban Institute Press.

Mills, G., Patterson, R., Orr, L., & DeMarco, D. (2004). *Evaluation of the American Dream Demonstration, final evaluation report*. Cambridge, MA: Abt.

Mitchell, C. M., & Beals, J. (2011). The utility of the Kessler screening scale for psychological distress (K6) in two American Indian communities. *Psychological Assessment, 23*(3), 752–761. doi:10.1037/a0023288

Moore, A., Beverly, S., Schreiner, M., Sherraden, M., Lombe, M., Cho, E. Y. N., . . . & Vonderlack, R. (2001). *Saving, IDA programs, and effects of IDAs: A survey of participants*. St. Louis, MO: Washington University in St. Louis, Center for Social Development.

Muntaner, C., Eaton, W. W., Diala, C., Kessler, R. C., & Sorlie, P. D. (1998). Social class, assets, organizational control and the prevalence of common groups of psychiatric disorders. *Social Science & Medicine, 47*(12), 2043–2053. doi:10.1016/S0277-9536(98)00309-8

Muthén, L. K., & Muthén, B. O. (1998–2011). *Mplus User's Guide* (6th ed.). Los Angeles, CA: Muthén & Muthén.

Myer, L., Stein, D. J., Grimsrud, A., Seedat, S., & Williams, D. R. (2008). Social determinants of psychological distress in a nationally representative sample of South African adults. *Social Science & Medicine, 66*(8), 1828–1840. doi:10.1016/j.socscimed.2008.01.025.

Nam, Y., Huang, J., & Sherraden, M. (2008a). *Assets, poverty, and public policy: Challenges in definition and measurement*. St. Louis, MO: Washington University in St. Louis, Center for Social Development.

Nam, Y., Huang, J., & Sherraden, M. (2008b). Asset definition. In S. M. McKernan & M. Sherraden (Eds.), *Asset building and low-income families* (pp. 1–32). Washington, DC: Urban Institute Press.

Nam, Y., Ratcliffe, C., & McKernan, S. M. (2008). Effects of asset tests and IDA programs. In S. M. McKernan & M. Sherraden (Eds.), *Asset building and low-income families* (pp. 153–174). Washington, DC: Urban Institute Press.

National Institutes of Health. (n.d.). *Post-traumatic stress disorder among adults.* Retrieved from http://www.nimh.nih.gov/statistics/1ad_ptsd_adult.shtml

Neria, Y., Gross, R., Olfson, M., Gameroff, M. J., Wickramaratne, P., Das, A., . . . & Weissman, M. M. (2006). Posttraumatic stress disorder in primary care one year after the 9/11 attacks. *General Hospital Psychiatry, 28*(3), 213–222.

Oakes, J. M., & Rossi, P. H. (2003). The measurement of SES in health research: Current practice and steps toward a new approach. *Social Science & Medicine, 56*(4), 769–84. doi:10.1016/S0277-9536(02)00073-4

Oliver, M., & Shapiro, T. (1995). *Black wealth/White wealth*. New York, NY: Routledge.

Page-Adams, D., & Sherraden, M. (1997). Asset building as a community revitalization strategy. *Social Work, 42*(5), 423–434. doi:10.1093/sw/42.5.423

Panel Study of Income Dynamics. (2003). *The 1984, 1989, 1994, 1999, and 2001 PSID supplemental wealth files*. Retrieved from http://psidonline.isr.umich.edu/data/documentation/wlth.html#VI

Panel Study of Income Dynamics. (2009). *Documentation for the 2007 PSID supplemental wealth file*. Retrieved from http://psidonline.isr.umich.edu/Data/Documentation/wlth2007.pdf

Panel Study of Income Dynamics. (2012). *PSID Main interview user manual: Release 2012.* Ann Arbor, MI: University of Michigan, Institute for Social Research.

Pearlin, L. I., Schieman, S., Fazio, E. M., & Meersman, S. C. (2005). Stress, health, and the life course: Some conceptual perspectives. *Journal of Health and Social Behavior, 46*(2), 205–219. doi:10.1177/002214650504600206

Pirraglia, P. A., Hampton, J. M., Rosen, A. B., & Witt, W. P. (2011). Psychological distress and trends in healthcare expenditures and outpatient healthcare. *The American Journal of Managed Care, 17*(5), 319–328. Retrieved from http://www.ajmc.com/publications/issue/2011/2011-5-vol17-n5/AJMC_11may_Pirraglia_319to328/

Ploeg, J., Campbell, L., Denton, M. A., Joshi, A., & Davies, S. (2004). Helping to build and rebuild secure lives and futures: Financial transfers from parents to adult children and grandchildren. *Canadian Journal on Aging, 23*(1), S113–S125. doi:10.1353/cja.2005.0039

Pollack, C. E., Chideya, S., Cubbin, C., Williams, B., Dekker, M., & Braveman, P. (2007). Should health studies measure wealth?: A systematic review. *American Journal of Preventive Medicine, 33*(3), 250–264. doi:10.1016/j.amepre.2007.04.033

Rajulton, F. (2001). The fundamentals of longitudinal research: An overview. *Special Issue on Longitudinal Methodology, Canadian Studies in Population, 28*(2), 169–185.

Rank, M. R. (2008). Asset building across the life course. In S. M. McKernan & M. Sherraden (Eds.), *Asset building and low-income families* (pp. 67–88). Washington, DC: Urban Institute Press.

Ratcliffe, C., Chen, H., Williams Shanks, T. R., Nam, Y., Schreiner, M., Zhan, M., Sherraden, M. (2008). Appendix: Assessing asset data. In S. M. McKernan & M. Sherraden (Eds.), *Asset building and low-income families* (pp. 239–270). Washington, DC: Urban Institute Press.

Raudenbush, S. W., & Sampson, R. (1999). Assessing direct and indirect effects in multilevel designs with latent variables. *Sociological Methods & Research, 28*(2), 123–153. doi:10.1177/0049124199028002001

Red Bird, B., Grinstein-Weiss, M., Loibl, C., & Zhan, M. (2010). More than a penny saved: Long-term changes in behavior among savings program participants. *Journal of Consumer Affairs. 44*(1), 98–126. doi:10.1111/j.1745-6606.2010.01159.x

Robert, S. A., & House, J. S. (2000). Socioeconomic inequalities in health: Integrating individual-, community-, and societal-level theory and research. In G. L. Albrecht, R. Fitzpatrick, & S. Scrimshaw (Eds.), *The handbook of social studies in health & medicine* (pp. 115–135). London, UK: Sage.

Robert, S. A., & Reither, E. N. (2004). A multilevel analysis of race, community disadvantage, and body mass index among adults in the US. *Social Science & Medicine, 59*(12), 2421–2434. doi:10.1016/j.socscimed.2004.03.034

Rothwell, D. W., & Han, C. K. (2010). Exploring the relationship between assets and family stress among low-income families. *Interdisciplinary Journal of Applied Family Studies, 59*(4), 396–407. doi:10.1111/j.1741-3729.2010.00611.x

Rothwell, D. W., & Sultana, N. (2013). Cash-flow and savings practices of low-income households: Evidence from a follow-up study of IDA participants. *Journal of Social Service Research, 39*(2), 281–292. doi:10.1080/01488376.2012.754828

Samuels, G. M., & Ross-Sheriff, F. (2008). Identity, oppression, and power: Feminism and intersectionality theory. *Affilia, 23*(1), 5–9. doi:10.1177/0886109907310475

Scanlon, E., & Adams, D. (2009). Do assets affect well-being? Perception of youth in a matched saving program. *Journal of Social Service Research, 35*(1), 33–45. doi:10.1080/01488370802477048

Schoeni, R. (1997). Private interhousehold transfers of money and time: New empirical evidence. *Review of Income and Wealth, 43*(4), 423–448. doi:10.1111/j.1475-4991.1997.tb00234.x

Schreiner, M., & Sherraden, M. (2007). *Can the poor save?: Saving & asset building in individual development accounts*. New Brunswick, NJ: Transaction.

Schreiner, M., Sherraden, M., Clancy, M., Johnson, L., Curley, J., Grinstein-Weiss, . . . & Beverly, S. (2001). *Savings and asset accumulation in individual development accounts: Downpayments on the American Dream Policy Demonstration, a national demonstration of individual development accounts*. St. Louis, MO: Washington University in St. Louis, Center for Social Development.

Searle, B. A., Smith, S. J., & Cook, N. (2006, September). *From housing wealth to well-being: The health implications of savings, spending and debt*. Paper presented at the Sixth European Urban and Regional Studies Conference. Roskilde, Denmark.

Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Boston, MA: Houghton Mifflin.

Shah, A. K., Mullainathan, S., & Shafir, E. (2012). Some consequences of having too little. *Science, 338*(6107), 682–685. doi:10.1126/science.1222426

Shapiro, T. M. (2006). Race, homeownership and wealth. *Washington University Journal of Law & Policy, 20*(1), 53–74. Retrieved from http://openscholarship.wustl.edu/cgi /viewcontent.cgi?article=1242&context=law_journal_law_policy

Shapiro, T., Meschede, T., & Osoro, S. (2013, February). The roots of the widening racial wealth gap: Explaining the Black-White economic divide. *Research and Policy Brief,* Brandeis University, Institute on Assets and Social Policy. Retrieved from http://iasp.brandeis.edu/pdfs /Author/shapiro-thomas-m/racialwealthgapbrief.pdf

Shapiro, T. M., Oliver, M. L., & Meschede, T. (2009). *The asset security and opportunity index*. Waltham, MA: Brandeis University, Heller School for Social Policy and Management.

Sherraden, M. (1991). *Assets and the poor: A new American welfare policy*. Armonk, NY: ME Sharpe.

Sherraden, M. (2003). Asset-building policy and programs for the poor. In T. M. Shapiro & E. N. Wolff (Eds.), *Assets for the poor: The benefits of spreading asset ownership* (pp. 302–323). New York, NY: Russell Sage Foundation.

Sherraden, M. (2008). *IDAs and asset-building policy: Lessons and directions*. St. Louis, MO: Washington University in St. Louis, Center for Social Development.

Sherraden, M., Moore McBride, A., Johnson, E., Hanson, S., Ssewamala, F. M., & Shanks, T. R. (2005). *Saving in low-income households: Evidence from interviews with participants in the American Dream Demonstration*. St. Louis, MO: Washington University in St. Louis, Center for Social Development.

Sherraden, M., Schreiner, M., & Beverly, S. (2003). *Income, institutions, and saving performance in individual development accounts*. St. Louis, MO: Washington University in St. Louis, Center for Social Development.

Shewry, M. C., Smith, W. C., Woodward, M., & Tunstall-Pedoe, H. (1992). Variation in coronary risk factors by social status: Results from the Scottish heart health study. *The British Journal of General Practice: The Journal of the Royal College of General Practitioners, 42*(363), 406–410.

Shobe, M., & Page-Adams, D. (2001). Assets, future orientation, and well-being: Exploring and extending Sherraden's framework. *Journal of Sociology and Social Welfare, 28*(3), 109–127.

Shuey, K. M., & Wilson, A. E. (2008). Cumulative disadvantage and Black–White disparities in life-course health trajectories. *Research on Aging, 30*(2), 200–225. doi:10.1177/0164027507311151

Silver, R. C., Holman, E. A., McIntosh, D. N., Poulin, M., & Gil-Rivas, V. (2002). Nationwide longitudinal study of psychological responses to September 11. *JAMA, 288*(10), 1235–1244. doi:10.1001/jama.288.10.1235.

Singh-Manoux, A., Marmot, M. G., & Adler, N. E. (2005). Does subjective social status predict health and change in health status better than objective status? *Psychosomatic Medicine, 67*(6), 855–861 . doi:10.1097/01.psy.0000188434.52941.a0

Smith, J. P. & Ward, M. P. (1980). Asset accumulation and family size. *Demography, 17*(3), 243–260. doi:10.2307/2061102

Ssewamala, F. M., Han, C. K., Neilands, T. B., Ismayilova, L., & Sperber, E. (2010). Effect of economic assets on sexual risk-taking intentions among orphaned adolescents in Uganda. *American Journal of Public Health, 100*(3), 483–488. doi:10.2105/AJPH.2008.158840

Ssewamala, F. M., Neilands, T. B., Waldfogel, J., & Ismayilova, L. (2012). The impact of a comprehensive microfinance intervention on depression levels of AIDS-orphaned children in Uganda. *Journal of Adolescent Health, 50*(4), 346–352. doi:10.1016/j.jadohealth.2011.08.008.

Survey Research Center. (2013). *About CRS.* Retrieved from http://www.src.isr.umich.edu/content.aspx?id=about_src

Tanaka, T., Gjonca, E., & Gulliford, M. C. (2011). Income, wealth, and risk of diabetes among older adults: Cohort study using the English longitudinal study of ageing. *European Journal of Public Health 22*(3), 310–317. doi:10.1093/eurpub/ckr050

U.S. Department of the Treasury. (2014). *MyRA: A simple, safe, affordable retirement savings account.* Retrieved from http://www.treasurydirect.gov/readysavegrow/readysavegrow.htm

Wadsworth, M. E. J. (1997). Health inequalities in the life course perspective. *Social Science & Medicine, 44*(6), 859–869. doi:10.1016/S0277-9536(96)00187-6

Wheeler-Brooks, J. (2009). That's the thing with community: Social networks and asset development. Retrieved from https://kuscholarworks.ku.edu/bitstream/handle/1808/5675/WheelerBrooks_ku_0099D_10266_DATA_1.pdf?sequence=1

Wheeler-Brooks, J., & Scanlon, E. (2009). Perceived facilitators and barriers to saving among low-income youth. *The Journal of Socio-Economics, 38*(5), 757–763. doi:10.1016 /j.socec.2009.03.015

White House, the. (2014, January 29). *Fact sheet: Opportunity for all: Securing a dignified retirement for all Americans.* Retrieved from http://www.whitehouse.gov/the-press-office/2014/01/28/fact-sheet-opportunity-all-securing-dignified-retirement-all-americans

Wilhelm, M. O. (2003). The role of intergenerational transfers in spreading asset ownership. In T. M. Shapiro & E. N. Wolff (Eds.), *Assets for the poor: The benefits of spreading asset Ownership* (pp. 132–164). New York, NY: Russell Sage Foundation.

Williams, D. R. (1996). Race/ethnicity and socioeconomic status: Measurement and methodological issues. *International Journal of Health Services, 26*(3), 483–505. doi:10.2190/U9QT-7B7Y-HQ15-JT14

Willis, L. E. (2013). Financial education: Lessons not learned & lessons learned. *Life-Cycle Investing: Financial Education and Consumer Protection, 5*, 125–138. doi:10.2139 /ssrn.1869313

Xu, Y. (2011). Ethnic variations in the relationship between socioeconomic status and psychological distress among Latino adults. *Race and Social Problems, 3*(3), 212–224. doi:10.1007/s12552-011-9048-0

Yadama, G. N. & Sherraden, M. (1996). Effects of assets on attitudes and behaviors: Advance test of a social policy proposal. *Social Work Research, 20*(1), 3–11. doi:10.1093/swr/20.1.3

Zagorsky, J. L. (2004). Is obesity as dangerous to your wealth as to your health? *Research on Aging, 26*(1), 130–152. doi:10.1177/0164027503258519

Zagorsky, J. L. (2005). Health and wealth. The late-20th century obesity epidemic in the U.S. *Economics and Human Biology, 3*(2), 296–313. doi:10.1016/j.ehb.2005.05.003

Zhan, M., Anderson, S. G., & Scott, J. (2006). Financial knowledge of the low income population: Effects of a financial education program. *Journal of Sociology and Social Welfare, 33*(1), 53–74.