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EMERGING ADULTS' FINANCIAL WELL-BEING: WHAT RESEARCH METHODOLOGIES AND STATISTICAL TECHNIQUES ARE NEEDED?

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Introduction[1]

The expression “financial well-being” – a good and satisfactory financial state – recalls two concepts: money and happiness. These two elements together generate an ambivalent framework. Some readers could think “money can’t buy happiness” while others may think “give me 100 dollars and you will watch me smile!”

Both positions seem plausible and this generated historical philosophical debates (Csikszentmihalyi, 2000). The scientific community, too, showed interest in the relation between money and happiness, and the study of financial well-being was a big portion of this interest’s effect. With the passage of time, the study of financial well-being was subject to two main changes: from the study of the objective side of the construct, the scientific community moved to the study of the subjective side, as well as moved from the study of old people’s financial well-being to young people’s financial well-being.

Before the Easterlin paradox (1974), which suggested that happiness does not increase as a country's income rises, financial well-being was synonymous with income, as a good income was considered sufficient to make people happy. This notion of the power of income to bring happiness lost credibility over time. Reviews found that the relation between income and happiness ranges from -.02 and .38 (Diener & Oishi, 2000). These findings moved the scientific community to affirm that financial well-being could not be reduced to its objective elements (e.g., income, employment), but also its subjective aspects needed to be explored. Imagine offering a salary of 2000 dollars to two different men. One of them could be really happy for this offer, while the other could consider this amount of money not enough. The subjective evaluation that we made of our financial resources made the difference in happiness.

[1] I would like to express my gratitude to my advisors, **Margherita Lanz** and **Joyce Serido**, for helping me during the construction and realization of this work. I would also like to thank **Soyeon Shim** and **Manfred van Dulmen** for reviewing and approving it. This doctoral thesis would not be possible without their partecipation and for that I am very grateful.

Nowadays the scientific community defines financial well-being as a construct that has both an objective and a subjective side (Xiao, Tang, & Shim, 2009). This consciousness opens the door to the study of financial well-being to new disciplines. What before was considered a topic specific to economics (or more precisely "Economics of happiness"; see Stutzer & Frey, 2012) became a subject matter of psychology too.

The shift from objective to subjective was a starting point for a second shift. Indeed, when financial well-being was considered coincident with income, the relation between income and happiness was mainly studied at the country level (i.e., verifying the relation between the national average income level and the national average happiness level). However, since the importance of financial well-being's subjective dimension was recognized, financial well-being has been mainly studied at the individual level, in order to assess the subjective dimension of each individual. Specifically, most of these individual-level studies focused on populations considered critical or atypical from a financial point of view. The first trend consisted in investigating the financial well-being of old people (e.g., Bahr & Peterson, 1989; Russell, Russell, & Megaard, 1989). Their financial situation was considered critical as these people were out of the work world. Successively, the focus moved on to women facing non-normative paths, such as unwed (e.g. Lichter, Graefe, & Brown, 2003) and divorced women (e.g. Smock, Manning, & Gupta, 1999; McKelvey & McKenry, 2000). The current trend consists instead in studying young people' financial well-being. Their financial condition is nowadays considered critical as a consequence of the economic crisis of 2008 (Shim & Serido, 2010), as they were the subjects mainly hurt by the crisis (Verick, 2009).

The current PhD thesis is focused on this last trend, as it collects studies about the (objective and subjective) financial well-being of young people. Before moving towards these studies, it is necessary to clarify what it means to be a "young" person in contemporary society. For many young people today, their status is that of being *in-between* (Arnett, 2000) – they are neither adolescents nor fully adults. While previous developmental theories (e.g., Erickson, 1959) affirmed that at the end of adolescence the subject immediately became an adult, nowadays a widely held view is that it takes

longer to grow up. For this reason, Arnett (2000; 2014) proposed the expression "emerging adulthood," indicating the stage of life of 18-29 year old people. These people are not yet adult but also no longer adolescent; adulthood is emerging, but has not been fully reached.

In a 2015 Ted Talk (*Why Does it Take so Long to Grow Up Today?*), Jeffry Arnett argued that there were four revolutions taking place in the 1960s and the 1970s that generated the society that we know today, including the new life stage of emerging adulthood: the technology revolution, the sexual revolution, the women's movement, and the youth movement.

First, the technology revolution – which happened in the last 50 years – consisted in the transition from a manufacturing economy to a knowledge economy. This transformation changed the jobs offered by society that, nowadays, mainly consist in jobs based on information, technology and services. To get these new jobs, an education beyond high school is required. So now more people get more education for longer than ever before, and this makes people wait for marriage and parenthood.

The second revolution is the sexual revolution. The invention of the birth control pill in 1964, along with other effective methods of contraception, broke the link between sexuality and reproduction for the first time. And in turn, the link between sexuality and marriage became broken for the first time. Instead of entering the commitments of marriage and parenthood, people now have a longer span of a decade or more when they are becoming involved in romantic relationships, but are not yet committed to the structure of family life.

The third revolution that happened in the 1960s was the women's movement, which changed how young women thought about and planned their lives. While the main task assigned to a young woman in 1960 was to find a man, nowadays young women want to use most of their 20s for making progress in their education and then in their career. Tasks typical of adult life, such as marriage and parenthood, are postponed.

Finally, there was the youth movement. It used to be that adulthood was associated with a lot of good things, such as social status and authority. Then, during the 60s and the 70s the youth

movement proposed the idea "I hope I die before I get old." Adulthood was no longer venerated, while the veneration for youth increased. And so young people preferred to prolong their youth as long as they could and enjoy it while it lasted.

This brief historical excursus of what scientific community means by “financial well-being” and “transition to adulthood” sets the stage for this thesis’ investigation of *emerging adults’ financial well-being*. The general aim of this research work is to enrich the literature on emerging adults’ financial well-being with research methodologies and statistical techniques never previously applied in this research field. The label “research methodology” refers to research procedures or, simply put, *how* research is done. Instead, the expression “statistical techniques” refer to only one specific research step – data analysis – and consists in the techniques used to analyze collected data.

In each chapter included in this thesis I investigated emerging adults’ financial well-being applying new research methodologies (i.e., research procedures) or new statistical techniques (i.e., data analysis procedures). Specifically, the **first chapter** concerns the *scoping methodology*, a knowledge synthesis methodology proposed in 2005 by Arksey and O’Malley. It is a research procedure to collect and review studies sharing the same research topic. The specificities of this methodology consist of addressing an exploratory research question aimed at mapping key concepts, types of evidence, and gaps in research related to a defined area or field by systematic searching, selecting, and synthesizing of existing knowledge. As the development of literature on emerging adults’ financial well-being is somewhat recent, there has so far not been enough theoretical reflection on this topic. Thus, a knowledge synthesis was needed in this field in order to reflect on what was already done in different disciplines, organize all the produced information, and propose new research directions. This first study allowed identifying the main research gaps of literature on emerging adults’ financial well-being, and the studies presented in the successive chapters are a first effort to fill some of these research gaps.

The **second chapter** consists in the application of a new statistical technique: *Latent Transition Analysis*. This is a data analysis technique that allows managing both latent class variables

and longitudinal data, and indeed it can be defined as a longitudinal extension of Latent Class Analysis. First applications of this technique started at the end of the last century, but it became popular mainly thanks to the handbook of Collins and Lanza (2010) and changes in statistical software which made it a lot easier to use this technique. This technique was here used to identify subgroups of emerging adults homogeneous in their configuration of adult social markers already reached (completion of education, finding full-time career work, leaving the parental home, entry into marriage, and perceiving themselves as adults) and to investigate the relation between these emerging adults' subgroups and their financial well-being.

The **third chapter** proposes a *three-step methodology to develop and validate* new measurement instruments, based on the contemporary view of validity developed in the last fifty years (e.g., Cronbach & Meehl, 1955; Messick, 1989; Zumbo, 2009). In contrast to the traditional view of validity, the contemporary view conceives of validity as unified (there is only construct validity, which can be argued for by collecting different kinds of evidence) and contextualized (validity depends always on the place and time in which the test is applied). This change implies a new view of the validation process (i.e., research methodology) as well as new statistical techniques used to validate instrument scores. Based on this theoretical framework, I proposed a three-step procedure that I applied to develop and validate a new instrument measuring subjective financial well-being for an emerging adult target population.

Finally, the **fourth chapter** concerns the *multiple informant methodology*. This research methodology consists of collecting information about the same construct and the same unit of analysis from multiple informants. Data collected in this way are non-independent data and this requires the application of statistical techniques that control for this non-independence. Even though this methodology is mainly seen in organizational research and developmental research, its application has been recently proposed in family research (Lanz, Sorgente, & Tagliabue, 2017). I applied this methodology to collect information about family financial socialization and its impact on the child's financial well-being from mother, father and the emerging adult child.

Overall, the four studies presented in this thesis apply different research methodologies and/or statistical techniques, but share the same construct of interest (financial well-being) and the same target population (emerging adults). Each chapter is organized into three main sections: (1) description of the new methodology/technique; (2) explanation of reasons why literature on emerging adults' financial well-being needs it; (3) application of that methodology/technique to the study of emerging adults' financial well-being.

CHAPTER 1. SCOPING REVIEW

1.1. What is a scoping review?

Science is supposed to be cumulative, but scientists only rarely accumulate evidence scientifically (Chalmers, Hedges, & Cooper, 2002). This means that users of research evidence have to cope with a plethora of reports of individual studies with no systematic attempt made to present new results in the context of previous studies on the same topic (Chalmers et al., 2002). Although this need to *synthesize* research evidence has been recognized for well over two centuries, explicit methods for this form of research were not developed until the 20th century (Chalmers et al., 2002). This new trend was probably promoted by the increase in research production that began in the 1960s and continues unabated today (Cooper, Hedges, & Valentine, 2009).

Research synthesis is a scientific outcome not based primarily on new facts and findings, but on publications discussing such primary information, whereby the latter is digested, sifted, classified, simplified, and synthesized (Cooper & Hedges, 2009). The research syntheses are also called *reviews*, as to "review" consists of: "to view, inspect, or examine a second time or again" (Grant & Booth, 2009).

According to Chalmers et al. (2002), the first example of scientific research synthesis consisted of the paper published by Karl Pearson in 1904, where the author gathered data from 11 studies to review evidence on the effects of a vaccine against typhoid. At the same time, only at the end of the 20th century was knowledge synthesis recognized as a way to do research: "Systematically reviewing and integrating the literature of a field may be considered a type of research in its own right – one using a characteristic set of research techniques and methods" (Feldman, 1971, page 86). In the past two decades the use of research synthesis has spread from psychology and education through many disciplines, especially the medical sciences and social policy analysis (Cooper & Hedges, 2009).

The history of reviews is relatively recent. In recent years, the social sciences have become dominated by quantitative syntheses of controlled trials to synthesize the evidence on the effectiveness of health and social interventions. Yet the logic of systematic methods for reviewing the literature can be applied to all areas of research; therefore, there can be as much variation in systematic reviews as is found in primary research (Gough, Thomas, & Oliver, 2012).

This proliferation of *research synthesis methodologies* moved different authors to systematically list and describe these different methodologies (Grant & Booth 2009; Whittemore, Chao, Jang, Minges, & Park, 2014). An integration of these lists is reported in Table 1.1, where different research synthesis methodologies (i.e., different types of review) are reported in alphabetic order and synthetically described.

Table 1.1. List of main review types

Review type	Description
Critical review	Review that extensively researches literature and critically evaluates its quality. It goes beyond mere description to include degree of analysis or conceptual innovation and typically results in a hypothesis or model.
Integrative review	Review that synthesizes the results of research or theory using a narrative analysis. It can focus on methodology (e.g., evaluating the conceptual and operational definition of a concept), theory (e.g., evaluating different theories on the same topic) and/or research.
Literature review	Review that provides examination of recent or current literature. Can cover a wide range of subjects at various levels of completeness and comprehensiveness. May include research findings.
Mapping review/ systematic map	Review that maps out and categorize existing literature from which to commission further reviews and/or primary research by identifying gaps in research literature.
Meta-analysis of observational study	Review that synthesizes the results of homogenous observational studies using established statistical procedures.
Meta-analysis of RCT	Review that synthesizes the results of homogenous interventions evaluated by randomized clinical trials (RCT) and that statistically combines the results of these studies to provide a more precise estimate of the magnitude of effects.

Mixed studies review/mixed methods review	Review that, using a statistical approach and/or a narrative analysis, combines different approaches, for example combining quantitative with qualitative research or outcome with process studies.
Overview	Summary that attempts to survey the literature on a specific topic and describe its characteristics.
Qualitative systematic review	Review for integrating or comparing the findings from qualitative studies. It looks for "themes" or "constructs" that lie in or across individual qualitative studies.
Rapid review	Review that assess what is already known about a policy or practice issue, by using systematic review methods to search and critically appraise existing research.
RE-AIM review	Review aiming to evaluate and synthesize the Reach, Efficacy, Adoption, Implementation, and Maintenance of interventions.
Scoping review	Review that aims to map the key concepts and evidence regarding a particular phenomenon in order to identify the nature, potential size and scope of related literature.
State-of-the-art review	Review that addresses more current matters in contrast to other combined retrospective and current approaches. May offer new perspectives on issue or point out area for further research.
Systematic review	Review aiming to systematically search for, appraise and synthesis research evidence, often adhering to guidelines for the conduct of a review.
Systematic search and review	Review that combines strengths of critical review with a comprehensive search process. Typically addresses broad questions to produce "best evidence synthesis."
Systematized review	Review that includes elements of systematic review process while stopping short of systematic review. Typically conducted as postgraduate student assignment.
Umbrella review	Review compiling evidence from multiple reviews into one accessible and usable document. Focuses on broad condition or problem for which there are competing interventions and highlights reviews that address these interventions and their results.

Among these different types of review, the main differentiator is the kind of logic they are based on (Gough et al., 2012). Reviews that include homogeneous empirical data in order to determine average effect sizes or numerical counting (e.g., meta-analysis, systematic review) are based on *aggregative logic*, and their results are typically presented as numerical data and figures. In contrast, reviews that are more exploratory and examine the variation and complexity of phenomena

are based on *configuring logic* (e.g., mixed-studies review, scoping review) with results presented as conceptual models or narrative text. This distinction should not be confused with the distinction between reviews that adopt systematic procedures (rigor and transparency of procedures) and reviews that do not adopt systematic procedures (procedures used to made the synthesis are not reported; Garg, Hackam, & Tonelli, 2008).

A clear example of a review type that uses a configuring logic and that, at the same time, adopts systematic procedures is the *scoping review*, knowledge synthesis methodology proposed in 2005 by Arksey and O'Malley. The *scoping review* (or *scoping study*) is a form of knowledge synthesis that addresses an exploratory research question aimed at mapping key concepts, types of evidence, and gaps in research related to a defined area or field by systematic searching, selecting, and synthesizing of existing knowledge (Colquhoun et al. 2014). Even if the scoping methodology originated in clinical research to map knowledge related to interventions, it was successively adopted to map other phenomena of interest, such as research designs, frameworks, theories, or classifications (Peters, Godfrey, Khalil, McInerney, Parker, & Soares, 2015). In this sense, a scoping review follows a *configuring logic*, exploring and mapping complexity of phenomena. At the same time, the scoping review involves *systematic procedures*: for example, it requires the registration of a protocol before starting the research, the definition of records' inclusion/exclusion criteria, a systematic search of databases, as well as the selection and coding of records by two independent reviewers.

The union of these two properties (configuring logic and systematic procedures) is exemplified by the guidelines for conducting a scoping review, initially proposed by Arksey and O'Malley (2005) and later clarified and enhanced by further studies (e.g., Colquhoun et al. 2014; Daudt, Van Mossel, & Scott, 2013; Levac, Colquhoun, & O'Brien, 2010; Peters et al. 2015). Scoping methodology consists of five steps, plus a sixth one that is optional:

1. **Identifying the research question**. The first stage consists of identifying the question that the review aims to answer, in order to provide the roadmap for subsequent stages. Levac et al. (2010) recommended combining a broad research question with a clearly articulated scope of

inquiry. This includes defining the concept, target population, and outcomes of interest to clarify the focus of the scoping study and establish an effective search strategy.

2. **Identifying relevant studies**. The whole point of scoping the field is to be as comprehensive as possible in identifying studies (published and unpublished) suitable for answering the central research question. To achieve this, it is important to search for research evidence via different sources: electronic databases, reference lists, hand-searching of key journals, existing networks, relevant organizations and conferences.
3. **Study selection**. Studies are selected based on defined inclusion and exclusion criteria. In contrast to the systematic review, these criteria can also be devised post hoc, based on increasing familiarity with the literature. Two independent reviewers have to apply the inclusion and exclusion criteria to all the citations. If the relevance of a study is unclear from the abstract, then the full article has to be read.
4. **Charting the data**. This stage of the work involves "data extraction" from the selected studies. The expression "charting" (Ritchie & Spencer, 1994) describes a technique for synthesizing and interpreting qualitative data by sifting, charting and sorting material according to key issues and themes. Decisions have to be made about what information should be recorded from the primary studies, and it is important to consider how comparisons between different studies can be achieved. A clear data extraction chart aids the application of a common analytical framework to all the research reports and collection of standard information on each study.
5. **Collating, summarizing and reporting the results**. Unlike a systematic review, a scoping study does not seek to aggregate findings from different studies. Whilst a scoping study will need some analytic framework or thematic construction in order to present a narrative account of existing literature, there is no attempt made to present a view regarding the "weight" of evidence in relation to particular interventions or effects. This is because the scoping study

does not seek to assess quality of evidence and consequently cannot determine whether particular studies provide robust or generalizable findings.

6. **Consultation**. The last stage is the optional one. It consists of consulting experts to receive suggestions about additional references and provide insights beyond those in the literature. Furthermore, the consultation's purpose includes sharing preliminary findings with stakeholders, validating the findings, or informing future research.

Thanks to these guidelines and technical suggestions offered by experts about how to conduct a scoping review (Colquhoun et al. 2014; Daudt et al., 2013; Levac et al., 2010; Peters et al. 2015), the scoping methodology has become a new opportunity to systematically map the literature related to a complex phenomenon, organize and summarize the collected information, develop a conceptual model, identify research gaps in the existing literature and outline the future directions that research must take.

1.2. Why does literature on emerging adults' financial well-being need it?

In recent decades, financial well-being has become a new focus of research and stimulated social and political attention. Before the Easterlin paradox (1974), which suggests that happiness does not increase as a country's income rises, financial well-being was synonymous with income, as it was considered as an adequate financial factor to make people happy. Instead, nowadays the scientific community defines financial (or economic) well-being as a construct that has both an objective and a subjective side (Xiao, Tang, & Shim, 2009). The objective side is the total of the subject's material resources (e.g., income), while the subjective side is a self-report evaluation of one's financial condition (Arber, Fenn, & Meadows, 2014). However, a clear and univocal definition continues to be missing. Lack of clarity partially stems from concepts similar, or near-synonymous, to financial well-being: financial (or income) satisfaction, and financial wellness (or health). Financial satisfaction

corresponds to the subjective sub-dimension of financial well-being (Xiao et al., 2009). Financial wellness is a multidimensional concept involving financial satisfaction, objective status of financial situation, financial attitudes, and behavior (Joo, 2008). In the existing literature on the topic, there are cases where these labels (financial well-being, financial satisfaction, and financial wellness) are used synonymously (e.g., Gutter & Copur, 2011; Joo & Grable, 2004). I argue that, even if these three constructs overlap, they do not coincide. A clear definition of financial well-being still miss. At the same time, the achievement of a clear definition of financial well-being is needed in order to help people achieve financial well-being (Consumer Financial Protection Bureau [CFPB], 2015). Specifically, the complexity increases when the financial well-being of emerging adults is considered, given that their financial condition is recognized as critical (Verick, 2009). Indeed, in this case, the life challenges stemming from the specificity of their stage of life and their financial environment need to be considered (Van Campen, Serido, & Shim, 2010).

Even if emerging adults' financial well-being appears to be a complex phenomenon, studying financial well-being during this stage of life is an issue that scholars have to address for two main reasons. First, the financial well-being of emerging adults cannot be considered to be the same as that of either adolescents or adults. Adolescents (10–18 years old; Jensen & Arnett, 2012) generally are not very concerned about their own financial well-being, as social norms do not require adolescents to be economically independent from their family of origin. In contrast, it is a major concern for adults because economic independence is among the characteristics of adulthood (Arnett, 1998). For emerging adults, the matter is more complex, because they are *in-between* adolescence and adulthood (Arnett, 2004). Emerging adults can spend their years being students or student-workers, workers, or at times, being neither students nor workers (NEET, Not in Education, Employment, or Training; Bynner & Parsons, 2002). Further, they can live at or outside their parental house. Overall, their financial well-being can depend on their parents in different ways and to different degrees. This specific *in-between* condition requires an examination using methodologies and variables that can detect the specificities of the developmental phase (e.g., Does the emerging adult receive money from

parents? How do emerging adults manage the first contact with the bank?). The second reason to study financial well-being specifically during emerging adulthood is that several emerging adults have been strongly hurt by the economic crisis of 2008 (Shim & Serido, 2010), as reflected by rising unemployment rates. Consequently, present-day policymakers should be interested in factors enhancing emerging adults' financial well-being (Verick, 2009). In order to identify these factors, financial well-being and its specific characteristics during emerging adulthood have to be identified and defined.

In sum, nowadays scholars and practitioners need a clear definition of what financial well-being is, what its specific characteristics during emerging adulthood are, and which factors can enhance emerging adults' financial well-being. To find an answer to these questions, a synthesis of literature about emerging adults' financial well-being could be useful.

The answers I am looking for are scattered among different disciplines, particularly economics, psychology, and sociology and collecting records from different disciplines is required for an exhaustive and complete knowledge synthesis. A multi-disciplinary review could carry to a cross-disciplinary definition of financial well-being, identification of its components, and listing of its potential predictors (i.e., what affects financial well-being) and outcomes (i.e., what is affected by financial well-being). Such identification of predictors could allow policymakers and financial educators to detect ways to improve the financial well-being of emerging adults, whereas financial well-being's outcomes (i.e., consequences) are useful to emphasize why it is important to improve it. Specifically, knowing the consequences of financial well-being will make possible to figure out the indirect effects that can intervene in improving financial well-being.

As I am addressing broad questions – that involve collecting non-homogeneous data – and I am interested in obtaining conceptual models, a review type that adopts a configuring logic is required. I argue that, among the review types that use a configuring logic, the scoping review is a highly adequate synthesis methodology, as it allows for creating a complete and systematic map of

the literature on the considered topic, as well as detecting the research gaps in the existing literature and outlining the future directions that research on this topic must take.

1.3. How did I apply it?

The current chapter presents a scoping review that, collecting and synthetizing studies that investigated financial well-being during emerging adulthood (people aged between 18 and 29; Arnett, 2014), maps the multi-disciplinary literature related to the financial well-being of emerging adults.

Through this review, I aimed to identify the specificity of financial well-being, and clarify the boundaries of associated terms with similar and partial overlapping constructs. This clarification of the financial well-being construct is relevant for both academics and practitioners. Having a common language will help to share knowledge, as well as to develop multidisciplinary interventions to improve emerging adults' financial well-being.

The scoping review of emerging adults' financial well-being I conducted is here presented according to the 5-step proposed by Arksey and O'Malley (2005): (1) Identifying the research question; (2) Identifying relevant studies; (3) Study selection; (4) Charting the data; (5) Collating, summarizing and reporting the results. The way in which I addressed the sixth (and optional) step is reported in the discussion section.

I worked on this study's protocol during the fall of 2015 and its registration was finalized on December 7, 2015. (It is available at http://dx.doi.org/10.6084/m9.figshare.1619774).

Step 1. Identifying the research question

For mapping the literature on the financial well-being of emerging adults, the research questions were grouped into five sections: (1) publication, (2) research aim, (3) the financial well-

being construct, (4) data collection, and (5) the financial well-being relationships/associations with other variables.

Specifically, the *publication* section includes the following questions: In which databases can the publications on emerging adults' financial well-being be found? In which years have they been published? What are the types of publications (e.g., article, chapter, or report) on emerging adults' financial well-being? To which disciplines do these publications belong?

The *research aim* section consists of the following questions: What were the aims of the studies on the financial well-being of emerging adults? What research approach and design were adopted?

The third section collects information related to the *financial well-being construct*: Which term did the authors usually use to refer to the financial well-being construct? How was this construct defined? Did the authors investigate financial well-being using a developmental model to classify the participants' stage of life? Which side (objective or subjective) of this construct was usually operationalized? How was financial well-being measured?

The fourth section involves *data collection*-related information. The included questions are the following: In which year were the data collected? Who did the data refer to (i.e., unit of analysis)? What were the characteristics (sample size, age, sex, race, country) of the subjects to whom the data referred? Who reported the data (e.g., informants)? How were the data collected (e.g., instruments and administration mode)?

Finally, *financial well-being relationships*-related information was collected, in order to answer the following questions: When financial well-being was studied in relation to other variables, what was the role of financial well-being (e.g., predictor, outcome, or mediator)? What were the variables studied in relation to financial well-being? What statistical techniques were used to investigate these relationships?

Content arising from this five-section mapping was successively used to identify the definition of financial well-being, its components, predictors, and outcomes in the context of emerging adults.

Step 2. Identifying relevant studies

Inclusion Criteria

To identify the studies eligible for this scoping review, the following three inclusion criteria were adopted:

(1) The studies in question were required to have financial well-being as an empirical variable. Studies that measured financial well-being (or its synonyms: economic well-being, financial wellness, financial health, financial satisfaction, income satisfaction) were collected.

(2) The financial well-being variable measured in the studies had to refer to emerging adults, i.e. subjects aged between 18 and 29. Studies with participants' ages outside the range of 18 to 29 were also included in cases where the authors conducted separate analyses for emerging adults in a sub-group, and/or involved a longitudinal study in which the financial well-being variable was relieved during emerging adulthood in at least one wave. When the participants' age was partially not included in the age range of 18 to 29 (e.g., 25–32 years old), the mean and the standard deviation of the age was checked using the following measure: if the mean minus the standard deviation and the mean plus the standard deviation fell within the range of 18 to 29, the study was eligible. If this information was missing, the authors were contacted when possible. If age information missed but the participants belonged to a group (e.g., college students) that was likely to fit in the emerging adult population, the record was retrieved. Studies with participants who were not emerging adults but to whom the financial well-being construct was applicable (e.g., mothers who reported the financial well-being of their children aged between 18 and 29) were also eligible. The financial well-being variable was required to refer to emerging adults directly. For example, if the variable referred to the emerging adult's family of origin, the study was not included.

(3) Studies were required to have their full-text record written in English language.

The first two criteria were required to identify records pertaining to the key topic of the scoping review. English language restriction was applied to both because it is the international language of science - the number of studies being published in English is increasing over time (Research Trends, 2008) - as well as because the English language enabled reviewers to evaluate the records' eligibility.

Search Process

Since the financial well-being of emerging adults is a topic of interest for different disciplines such as economics, psychology, and sociology, three different and interdisciplinary electronic databases covering these disciplines were considered: (1) PsycINFO, which is specific to behavioral and social science research; (2) EconPapers, the world's largest collection of online economics working papers, journal articles, and software; and (3) Scopus, a highly comprehensive database covering different disciplines such as science, technology, medicine, social sciences, and arts and humanities.

The following syntax was used for the search: ("emerging adult*" OR "young adult*" OR youth) AND ("financial well*" OR "economic well*" OR "financial satisfaction" OR "income satisfaction" OR "financial health"). These syntax words were searched in the following fields: titles, abstracts, and keywords of records. When the database did not permit for a search of only these fields, all the fields of the record were checked. The EconPapers database at first generated tens of thousands of results, for which the search was restricted using the following Journal of Economic Literature (JEL) codes: Relation of Economics to other Disciplines (A12), Sociology of Economics (D14), Microeconomic Impacts of Globalization (F61), and General Welfare – Quality of Life (I31). Additional studies were obtained by hand-searching the reference lists of included studies. These also included the relevant studies that were known to the researchers prior to conducting the search that however, did not emerge as results of the search owing to search query restrictions.

The search was performed in December 2015. No date restriction was imposed. During the search process, it was important to not limit the search to peer-review literature in order to obtain a more exhaustive mapping of literature. This requirement was met partially by using databases that permitted to check for grey literature (e.g., "ProQuest Dissertations" in PsycINFO as well as the section "working paper" in EconPapers). Simultaneously, a search was performed for grey literature specifically. Two independent reviewers searched for eligible records presented at two conferences, namely, the biannual conference of the Society for the Study of Emerging Adulthood (SSEA), which is specific to studies on emerging adults as participants, and the annual conference of Association for Financial Counseling and Planning Education (AFCPE), which is exclusive to financial issues. In both cases, the search was restricted to the records published during or after 2008 (when the global economic recession occurred). Specifically, four SSEA conferences' books of abstract (2009, 2011, 2013, and 2015) and eight AFCPE proceedings (2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015) were manually searched. In the SSEA books of abstract, the words "financial," "economic," and "income satisfaction" were searched using the "Find" command. In the AFCPE proceedings, the phrases "financial well," "economic well," "financial health," "financial satisfaction," and "income satisfaction" were searched. The records that contained one or more of these words were selected and evaluated for eligibility, excluding studies in which the word was present only in the record's references list.

Step 3. Study selection

Two researchers independently screened the records obtained from the databases and conferences search to determine if they met this study's inclusion criteria. First, the abstracts were screened. When the abstract information was not sufficient to determine the record's eligibility, the full-text was examined. Any differences in the records selected by the two independent reviewers were discussed until an agreement was reached.

The selection flow and reasons for exclusion of records were documented in a Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) diagram for the scoping review process (see Figure 1.1), as suggested by Peters et al. (2015).

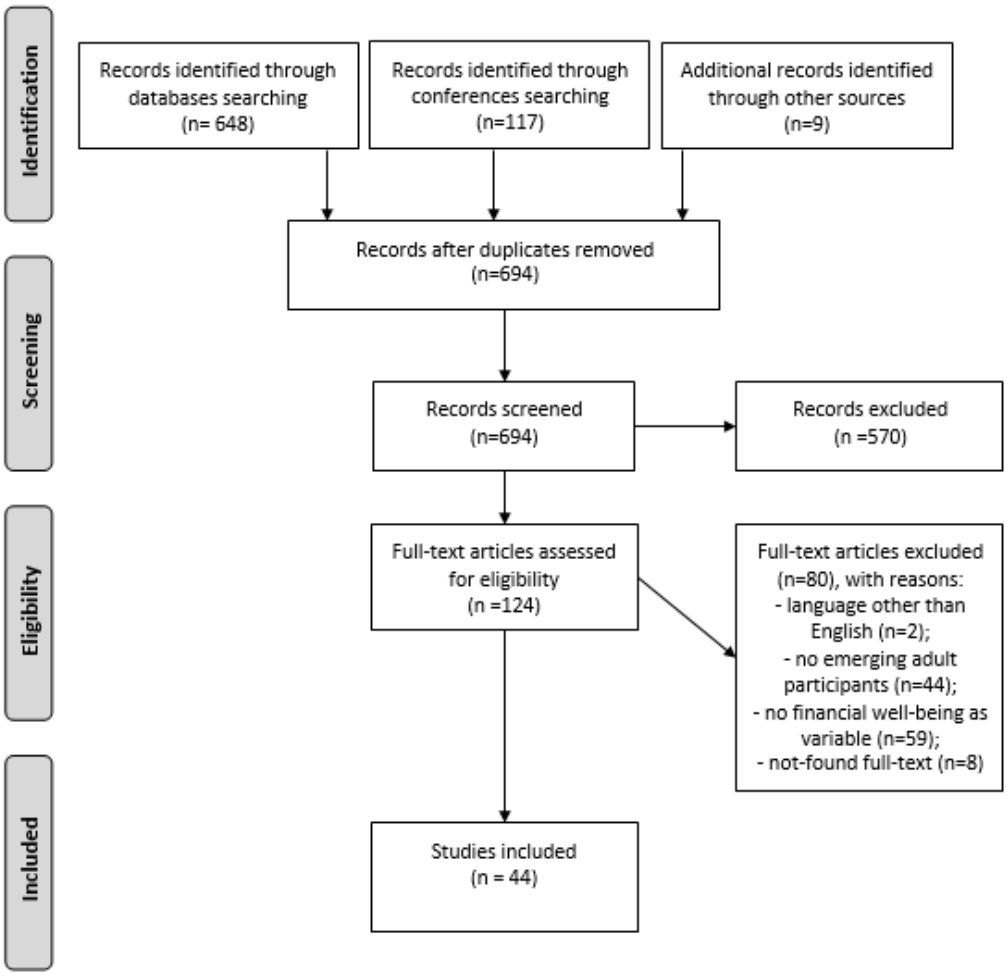

Figure 1.1. *PRISMA diagram of selection process*

A total of 648 records were obtained from the databases search (125 from Scopus, 242 from PsycINFO, and 281 from EconPapers), 117 records were obtained from the conferences search (52 from SSEA, 65 from AFCPE), and 9 other records were obtained from other sources (e.g., studies already known to researchers and/or records cited in the references list of other included records). After the duplicates were removed and the abstracts of 694 records were screened, a total of 124

records were retrieved for eligibility assessment. Only 44 out of 124 records met all the eligibility criteria. References marked with an asterisk indicate the 44 studies included in the review.

Step 4. Charting the data

The 44 selected publications were reviewed independently by two reviewers and their characteristics were documented using a standardized data extraction form. Specifically, for each mapping sections described in the first step of this review (publication, research aim, the financial well-being construct, data collection, and the financial well-being relationships/associations with other variables), extracted data were reported in a different table. The five obtained tables are reported in the next step, in order to present each table in correspondence to the exploration and elaboration of their contents.

Step 5. Collating, summarizing and reporting the results

The results of the literature mapping were reported here, following the five sections in which the research questions were grouped. At the end of this step, as "mapping outcomes" a definition of financial well-being was outlined, the components of the construct were listed, and all the variables investigated as financial well-being's predictors and outcomes were categorized.

Five-section Mapping

Publication-related information. This first mapping section grouped four research questions concerning publication issues (database in which the publication was detected, year of the publication, format of the publication, and disciplinary field of the publication). Details of this mapping can be found in Table 1.2.

Table 1.2. Publication-related information of 44 included records

Record	Database	Year	Format	Disciplinary area of publication	
				Publication's journal	Specific subject categories
Easterlin et al., 1990	S	1990	Article	Journal of Population Economics	Demographics; Economics and Econometrics
Caputo, 1998	P, S	1998	Article	Families in Society: The Journal of Contemporary Social Services	Social Sciences; Social Work
Clarkberg, 1999	S	1999	Article	Social Forces	Anthropology; History; Sociology and Political Science
Simons et al., 2002	P	2002	Article	College Student Journal	Arts and Humanities; Psychology; Social Sciences
Smeeding & Phillips, 2002	S	2002	Article	The Annals of the American Academy of Political and Social Science	NA
Norvilitis et al., 2003	M	2003	Article	Journal of Applied Social Psychology	Social Psychology
Smith, 2005	P	2005	Chapter	NA	NA
Norvilitis et al., 2006	P	2006	Article	Journal of Applied Social Psychology	Social Psychology
Reynolds et al., 2007	S	2007	Article	Archives of Pediatrics & Adolescent Medicine	NA
Shim et al., 2009	P, S	2009	Article	Journal of Applied Developmental Psychology	Developmental and Educational Psychology
Shim & Serido, 2009	M	2009	Report	NA	NA
Xiao et al., 2009	M	2009	Article	Social Indicators Research	Arts and Humanities; Developmental and Educational Psychology; Social Sciences; Sociology and Political Science
LaVeist et al., 2010	P, S	2010	Article	Journal of Family Issues	Social Sciences
Norvilitis & MacLean, 2010	P	2010	Article	Journal of Economic Psychology	Applied Psychology; Economics and Econometrics; Sociology and Political Science
Rutherford & Fox, 2010	P, S	2010	Article	Family and Consumer Sciences Research	Cultural Studies; Sociology and Political Science

Serido et al., 2010	SSEA	2010 (2009)	Article (conference paper)	Family Relations	Developmental and Educational Psychology; Education; Social Sciences; Social Work
Shim et al., 2010	M	2010	Article	Journal of youth and adolescence	Developmental and Educational Psychology; Education; Social Psychology; Social Sciences
Shim & Serido, 2010	M	2010	Report	NA	NA
Zhang & Cao, 2010	P	2010	Article	Journal of Social and Clinical Psychology	Clinical Psychology; Social Psychology
Chang et al., 2011	P	2011	Article	Journal of Positive Psychology	Psychology
Gutter & Copur, 2011	P	2011	Article	Journal of Family and Economic Issues	Economics and Econometrics; Social Psychology
Karmel & Liu, 2011	S	2011	Report	NA	NA
Salazar, 2011	P	2011	Thesis	NA	NA
Shim & Serido, 2011	M	2011	Report	NA	NA
Brown & Applegate, 2012	S	2012	Article	Journal of Holistic Nursing	Nursing
Chan et al., 2012	P	2012	Article	College Student Journal	Arts and Humanities; Psychology; Social Sciences
Shim et al., 2012	E	2012	Article	Journal of Economic Psychology	Applied Psychology; Economics and Econometrics; Sociology and Political Science
Norvilitis & Mao, 2013	M	2013	Article	International Journal of Psychology	Arts and Humanities; Psychology
Norvilitis & Mendes-Da-Silva, 2013	M	2013	Article	Journal of Business Theory and Practice	NA
Salazar, 2013	P	2013	Article	Social work	Social Work; Sociology and Political Science
Schnusenberg et al., 2013	S	2013	Article	Applied Health Economics and Health Policy	Economics and Econometrics; Health Policy
Shim et al., 2013	S	2013	Article	Journal of Retailing and Consumer Services	Marketing

Spangler, 2013	AFCPE	2013 (2013)	Thesis (poster)	[Journal of Financial Counseling and Planning]	Economics and Econometrics; Finance
Switek, 2013	E	2013	Working paper	IZA Discussion	NA
Friedline et al., 2014	S	2014	Article	Journal of Family and Economic Issues	Economics and Econometrics; Social Psychology
Shim & Serido, 2014	M	2014	Report	NA	NA
Vlaev & Elliott, 2014	P	2014	Article	Social Indicators Research	Arts and Humanities; Developmental and Educational Psychology; Social Sciences; Sociology and Political Science
Friedlmeier & Dahlstrom, 2015	SSEA	2015	Conference paper	[Emerging Adulthood Journal]	Developmental and Educational Psychology; Experimental and Cognitive Psychology; Life-span and Life-course Studies
Oman et al., 2015	P	2015	Article	American Journal of Public Health	Public Health, Environmental and Occupational Health
Negru-Subtirica et al., 2015	SSEA	2015	Conference paper	[Emerging Adulthood Journal]	Developmental and Educational Psychology; Experimental and Cognitive Psychology; Life-span and Life-course Studies
Rehman et al., 2015	S	2015	Article	Pakistan Journal of Medical Sciences	Medicine
Solis & Durband, 2015	AFCPE	2015 (2012)	Article (poster)	College Student Journal	Arts and Humanities; Psychology; Social Sciences
Tagliabue et al., 2015	SSEA	2015	Conference paper	[Emerging Adulthood Journal]	Developmental and Educational Psychology; Experimental and Cognitive Psychology; Life-span and Life-course Studies
Thompke et al., 2015	SSEA	2015	Poster	[Emerging Adulthood Journal]	Developmental and Educational Psychology; Experimental and Cognitive Psychology; Life-span and Life-course Studies

Note. S= Scopus; P= PsycINFO; NA= Not Applicable; M= Manual search; SSEA= Society for the Study of Emerging Adulthood's books of abstract; E= EconPapers; AFCPE= Association for Financial Counseling and Planning Education's proceedings.

The majority of the 44 considered studies were derived from PsycINFO database (N = 12) and Scopus database (N = 10); a total of four more studies were obtained from both databases. Only two studies from EconPapers database met the inclusion criteria. Five studies from SSEA conferences' books of abstracts and two from AFCPE annual conferences' proceedings were collected. Nine studies were collected from the manual search of the list of references and personal information of reviewers.

The 44 studies found were published during the last 25 years. The oldest study that met this review's inclusion criteria was conducted by Easterlin, Macdonald and Macunovich in 1990. Moreover, this topic as an area of research appears to have become widespread only in 2009 (see Figure 1.2), after the economic crisis of 2008.

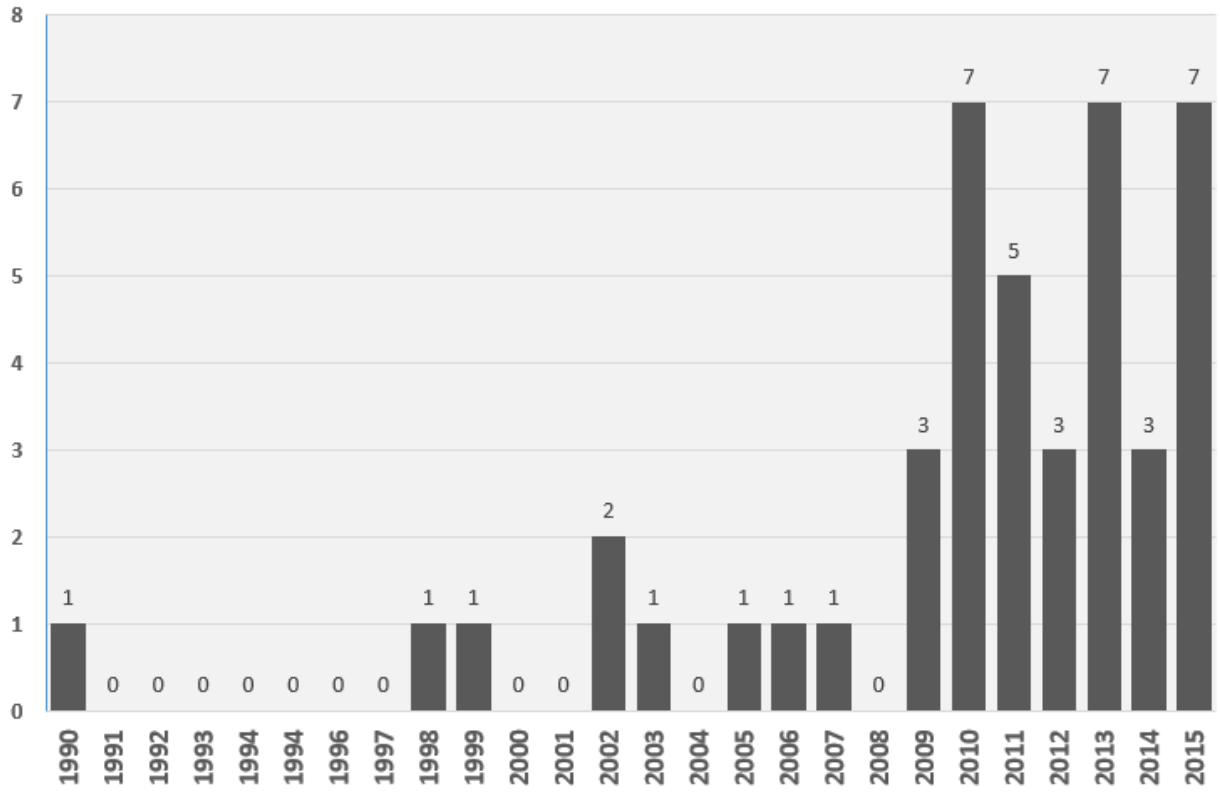

Figure 1.2. *Year of publication of records*

The 44 collected and coded[2] studies had different formats. Most of them were articles (N = 31), while some were reports (N = 5), conference papers (N = 3), and theses (N = 2). Only one chapter, poster, and working paper were collected. Since most of the included papers were articles, the publication's disciplinary field was defined according to the journals in which these studies were published. To classify each journal into a specific disciplinary field, the Scopus classification of journals was adopted. According to this classification system, each journal can be classified under more than one category. To classify the studies retrieved from conferences, the same classification as the one by which the journal was linked to the conference or to the organizing association was used. Specifically, the SSEA conference's records were classified under the Emerging Adulthood Journal and AFCPE conference's records under the Journal of Financial Counseling and Planning. The Scopus classification was applicable to 33 of 44 studies. It was not applicable to the remaining 11 as they were not published in journals (N = 10) or the study's journal was not indexed in Scopus (N = 1). The categories to which the 33 journals belong were Developmental and Educational Psychology (N = 9), Social Sciences (N = 9), Economics and Econometrics (N = 7), Arts and Humanities (N = 6), and Social Psychology (N = 6). The expected relevance of psychology, sociology, and economy disciplines for the financial well-being topic was confirmed.

Research aim-related information. Research aim is a relevant aspect as it not only provides information on the direction that the studies took within the field, but also generates two important consequences (Gelo, 2012): the choice of research approach (qualitative vs. quantitative) and research design (descriptive/correlational, quasi-experimental, experimental, review, or meta-analytic). Information related to research aim, approach, and design is detailed in Table 1.3.

[2] If there was more than one format for the same study, only the most recent was codified. For example, if a study was presented in a poster and later published in an article format, only the article was included in the review.

Table 1.3. Research aim-related information of the 44 included records

Record	Research aim	Research approach	Research design
Easterlin et al., 1990	1	Quantitative	Descriptive
Caputo, 1998	1, 2	Quantitative	Correlational
Clarkberg, 1999	2	Quantitative	Correlational
Simons et al., 2002	2	Quantitative	Correlational
Smeeding & Phillips, 2002	1	Quantitative	Descriptive
Norvilitis et al., 2003	2	Quantitative	Correlational
Smith, 2005	1	Quantitative	Descriptive
Norvilitis et al., 2006	2	Quantitative	Correlational
Reynolds et al., 2007	2	Quantitative	Correlational
Shim et al., 2009	2	Quantitative	Correlational
Shim & Serido, 2009	2	Quantitative	Correlational
Xiao et al., 2009	2	Quantitative	Correlational
LaVeist et al., 2010	4	Quantitative	Correlational
Norvilitis & MacLean, 2010	2	Quantitative	Correlational
Rutherford & Fox, 2010	3	Quantitative	Correlational
Serido et al., 2010	2	Quantitative	Correlational
Shim et al., 2010	2	Quantitative	Correlational
Shim & Serido, 2010	2	Quantitative	Correlational
Zhang & Cao, 2010	2	Quantitative	Correlational
Chang et al., 2011	2	Quantitative	Correlational
Gutter & Copur, 2011	2	Quantitative	Correlational
Karmel & Liu, 2011	2	Quantitative	Correlational
Salazar, 2011	2	Quantitative	Correlational
Shim & Serido, 2011	2	Quantitative	Correlational
Brown & Applegate, 2012	4	Quantitative	Correlational
Chan et al., 2012	2	Quantitative	Correlational
Shim et al., 2012	2	Quantitative	Correlational
Norvilitis & Mao, 2013	2	Quantitative	Correlational
Norvilitis & Mendes-Da-Silva, 2013	2	Quantitative	Correlational
Salazar, 2013	2	Quantitative	Correlational
Schnusenberg et al., 2013	2	Quantitative	Correlational
Shim et al., 2013	2	Quantitative	Correlational
Spangler, 2013	2	Quantitative	Correlational
Switek, 2013	2	Quantitative	Correlational
Friedline et al., 2014	2	Quantitative	Correlational
Shim & Serido, 2014	2	Quantitative	Correlational
Vlaev & Elliott, 2014	3	Mixed	Correlational
Friedlmeier & Dahlstrom, 2015	2	Quantitative	Correlational
Oman et al., 2015	2	Quantitative	Correlational
Negru-Subtirica et al., 2015	2	Quantitative	Correlational
Rehman et al., 2015	3	Quantitative	Correlational
Solis & Durband, 2015	2	Quantitative	Correlational
Tagliabue et al., 2015	2	Quantitative	Correlational
Thompke et al., 2015	2	Quantitative	Correlational

Note. 1= To describe financial well-being variable; 2= to verify the relationship between financial well-being and other variables; 3= to analyze the correlation between the financial well-being components; 4= others aims.

The aims of the 44 included studies were classified into the following categories: (1) to describe the financial well-being variable; (2) to verify the relationship between financial well-being and other variables (e.g., financial well-being was a predictor, outcome, or a moderator variable with respect to other variables); (3) to analyze the components of financial well-being construct (the aim was not to study the associations between financial well-being and other variables, but to analyze the correlation between the financial well-being components themselves); and (4) other aims. Most of the studies aimed to test the relationship between financial well-being and other variables (N = 36). Studies describing financial well-being (N = 4) and analyzing the correlations between financial well-being's components (N = 3) were less frequent. Caputo (1998)'s aims were labeled under both Categories 1 and 2. The remaining two studies could not be classified because financial well-being was not included specifically in their aims. In particular, LaVeist et al. (2010) used financial well-being only as a control variable, and Brown and Applegate (2012) simply inserted certain items to measure financial well-being using a holistic wellness instrument. The studies aiming to describe financial well-being were also the oldest studies included in this review. This indicates that a simple description of the phenomenon is an old direction taken by researchers.

The research approach was quantitative throughout, except for Vlaev and Elliott (2014), who applied a mixed methodology using an exploratory sequential design. Moreover, the included studies' research design, that is, the plan of action and logical structure of a study (Gelo, 2012), was descriptive or correlational. The three studies that aimed to describe the financial well-being variable adopted a descriptive design. The 36 studies that aimed to study the relationship between financial well-being and other variables as well as the 3 that examined the correlation within components of financial well-being adopted a correlational design, as none of them manipulated the variables actively. LaVeist et al. (2010) and Brown and Applegate (2012), which performed an Exploratory Factor Analysis, employed a correlational design too.

Financial well-being construct-related information. This section addressed five research questions about the manner in which authors dealt with the construct of financial well-being (label adopted to refer to financial well-being, definition of financial well-being, adaptation of financial well-being to the participants' stage of life, side of financial well-being that was operationalized (objective or subjective), measures of financial well-being that were used). Details related to these research questions are provided in Table 1.4.

The first research question was about the label used to refer to financial well-being. To search for studies investigating the emerging adults' financial well-being, the following synonyms of financial well-being were used for syntax: economic well-being, financial well-being, financial wellness, financial health, financial satisfaction, and income satisfaction. Among the 44 studies collected, the label "economic well-being" was used 7 times (15.91%) to indicate the financial well-being construct. In one of these cases, the label was "perceived economic well-being." It was found that the adjective "economic" was used in the five oldest studies reviewed in this study. Overall, the most used label was "financial well-being," adopted in 19 studies (43.19%). Two out of these used the label "perceived financial well-being." The wider concepts of "financial well-ness" and "financial health" were used thrice (6.82%) and twice (4.55%), respectively. The label "financial satisfaction" (also named "satisfaction with finances"; e.g., in Smith, 2015) was adopted 12 times (15.91%), mainly in the last 5 years.

Table 1.4. Financial well-being construct-related information of 44 included records

Record	Financial well-being label	Financial well-being definition	Theory on emerging adults	Financial well-being side	Financial well-being measure(s)
Easterlin et al., 1990	Economic well-being	Just some attributes	X	Objective	1. labor market conditions, by the income per adult equivalent 2. distribution of leaving/inequality, by “Gini coefficient"
Caputo, 1998	Economic well-being	No	X	Objective	1. income: income-to-poverty ratio
Clarkberg, 1999	Economic well-being	No	Stage of life contextualization	Objective	1. annual earnings, (continuous, in dollars) 2. high relative income (log of actual income > 1.2 of predicted income) 3. months employed at the current job and the number of prior jobs
Simons et al., 2002	Perceived economic well-being	Just some attributes	Stage of life contextualization	Subjective	One item (5-point scale)
Smeeding & Phillips, 2002	Economic well-being	Yes	X	Objective	Household income adjust for family size
Norvilitis et al., 2003	Financial well-being	No	Financial contextualization	Subjective	The Financial Well-Being Scale (Norvilitis et al. 2003): 8 items (5-point scale)
Smith, 2005	Financial satisfaction	No	Stage of life contextualization	Subjective	X
Norvilitis et al., 2006	Perceived financial well-being	No	X	Subjective	The Financial Well-Being Scale (Norvilitis et al. 2003): 8 items (5-point scale)
Reynolds et al., 2007	Economic well-being	No	X	Objective	1. education: a dichotomous variable indicating whether participants attended college 2. stable work history: defined as 4 quarters of earned income exceeding $3,000 3. full-time employment defined as 35 or more hours per week 4. public aid received and for how many months 5. participation in the Food Stamp Program, and for how many months
Shim et al., 2009	Financial well-being	Just some attributes	Explicit models: Arnett (2000) and Baltes (1987)	Both	1. level of debt: 3 items (5-point scale) 2. satisfaction with financial status: 1 item (5-point scale) from Xiao et al. (2006)

					3. financial worries and coping: 7 items (binary response scale), some of them come from the Michigan Study of Life Transitions (Eccles et al. 1998)
Shim & Serido, 2009	Financial well-being	No	Implicit model: Arnett (2000)	Subjective	Set of items (5-point scale)
Xiao et al., 2009	Financial satisfaction	Just some attributes	Financial contextualization	Subjective	One item (5-point scale)
LaVeist et al., 2010	Economic well-being	No	X	Objective	1. income= binary variable (above or below $40,000) 2. education= binary variable (high school, college)
Norvilitis & MacLean, 2010	Perceived fin. well-being	No	X	Subjective	The Financial Well-Being Scale (Norvilitis et al. 2003): 8 items (5-point scale)
Rutherford & Fox, 2010	Financial wellness	Just some attributes	Financial contextualization	Both	1. financial ratios measured by liquidity ratio (1 if liquid assets／monthly debt payments >2.5, 0 if otherwise), asset allocation ratio (1 if liquid assets／net worth >.15, 0 if otherwise), and combined ratios (1 if both liquidity and asset allocation ratios have been met, 0 if otherwise) 2. objective status measured by income (continuous, in dollars), total assets (continuous, in dollars), credit card debt (continuous, in dollars), health insurance coverage (1 if covered; 0 if otherwise), education (continuous, in years) 3.financial satisfaction measured by 1 item (3-point scale) 4. financial behavior measured by use of credit cards (1 item; 3-point scale), past payment behavior (1 item; 3-point scale), level of shopping around when making major saving and investment decisions (1 item; 3-point scale) 5. subjective perception measured by attitude toward credit (1 item; 3-point scale), spending pattern (1 item; 3-point scale), planning horizon (1 item; 4-point scale), risk tolerance (1 item; 3-point scale)
Serido et al., 2010	Financial well-being/ stress	Definition	Financial contextualization	Subjective	Three items (5-point scale) from Shim et al. (2009)
Shim et al., 2010	Financial satisfaction	Definition	Implicit model: Arnett (2000)	Subjective	Three items (5-point scale) from Shim et al. (2009)
Shim & Serido, 2010	Financial well-being	No	X	Subjective	Set of items (5-point scale)
Zhang & Cao, 2010	Financial satisfaction	No	X	Subjective	Five items (5-point scale)

Chang et al., 2011	Financial satisfaction	Just some attributes	X	Subjective	Six items (5-point scale) from Loibl and Hira (2005)
Gutter & Copur, 2011	Financial well-being	Definition	Explicit model: Arnett (2000)	Subjective	InCharge Financial Distress/Financial Well-Being (IFDFW) scale (Prawitz et al. 2006): eight items (10-point scale)
Karmel & Liu, 2011	Financial well-being	No	X	X	X
Salazar, 2011	Financial satisfaction	No	X	Subjective	One item (3-point scale + "don't know/skip")
Shim & Serido, 2011	Financial well-being	No	Implicit model: Arnett (2004)	Subjective	Set of items (5-point scale)
Brown & Applegate, 2012	Financial wellness	Just some attributes	X	Subjective	Set of items (4-point scale)
Chan et al., 2012	Financial well-being	Definition	Financial contextualization	Both	1. the Financial Well-Being Scale (Norvilitis et al. 2003): 8 items (5-point scale) 2. the "anticipated income": students were asked to estimate their income after graduation (continuous, in dollars) 3. time required repaying loans (continuous, in years)
Shim et al., 2012	Financial well-being	Just some attributes	Financial contextualization	Subjective	Three items (5-point scale) from Shim et al. (2009).
Norvilitis & Mao, 2013	Financial well-being	No	Financial contextualization	Subjective	The Financial Well-Being Scale (Norvilitis et al. 2003): eight items (5-point scale)
Norvilitis & Mendes-Da-Silva, 2013	Financial well-being	No	Financial contextualization	Subjective	The Financial Well-Being Scale (Norvilitis et al. 2003): eight items (5-point scale)
Salazar, 2013	Financial satisfaction	No	X	Subjective	One item (3-point scale)
Schnusenberg et al., 2013	Financial well-being	No	X	Subjective	Five items (non-specified response scale)
Shim et al., 2013	Financial well-being	No	Financial contextualization	Subjective	Three items (5-point scale) from Shim et al. (2009)

Spangler, 2013	Financial well-being	Definition	Explicit model: Arnett (2000)	Subjective	InCharge Financial Distress/Financial Well-Being Scale (Prawitz, et al. 2006): Eight items (10-point scale)
Switek, 2013	Financial satisfaction	No	Stage of life contextualization	Subjective	One item (5-point scale)
Friedline et al., 2014	Financial health	No	X	Objective	1. savings account ownership (1 item, binary scale response) 2. savings amount (1 item, continuous)
Shim & Serido, 2014	Financial well-being	No	X	Subjective	Set of items (5-point scale)
Vlaev & Elliott, 2014	Financial well-being and/or satisfaction	Just some attributes	Financial contextualization	Subjective	X
Friedlmeier & Dahlstrom, 2015	Financial satisfaction	No	Implicit model: Arnett (2004)	Subjective	Three items (5-point scale) from Shim et al. (2009)
Oman et al., 2015	Financial health	No	Explicit model: Arnett (2004)	Subjective	One item (5-point response scale)
Negru-Subtirica et al., 2015	Financial satisfaction	No	X	Subjective	Three items (5-point scale) from Shim et al. (2009)
Rehman et al., 2015	Financial wellness	Definition	Financial contextualization	Subjective	Five items (4-point scale) from Wellness wheel scale (Vander Bilt University, 2011)
Solis & Durband, 2015	Financial satisfaction	Just some attributes	Financial contextualization	Subjective	One item (5-point scale)
Tagliabue et al., 2015	Financial well-being	Just some attributes	Implicit model: Scabini et al. (2007)	Subjective	Nine items (4-point scale) from Sorgente et al. (2016)
Thompke et al., 2015	Financial satisfaction	No	X	Subjective	Three items (5-point scale) from Shim et al. (2009)

Note. X= content absent in the record

The subjective dimension of financial well-being (i.e., financial satisfaction) has been investigated only recently. It is possible to suppose that this focus on the subjective dimension has been stimulated by the recent interest of psychology in this research topic. The label "income satisfaction," even if used synonymously with financial well-being in literature, was never detected in the 44 included studies. Two studies used more than one label to refer to financial well-being. In Vlaev and Elliott (2014), both financial well-being and financial satisfaction were used, whereas in Serido et al. (2010), financial well-being and financial stress were used. Specifically, Serido et al. (2010) stated that in their study, financial well-being was measured through financial distress.

It is difficult to determine if these labels had different meanings across the studies. It was found that most of the studies did not define the financial well-being construct. Specifically, 26 out of 44 (59.1%) studies did not provide any theoretical definition of the financial well-being construct they measured. Only nine studies (20.45%) defined the financial well-being construct explicitly, and these definitions only overlapped partially. These definitions were linked to each other in order to outline a comprehensive financial well-being definition (see Figure 1.3).

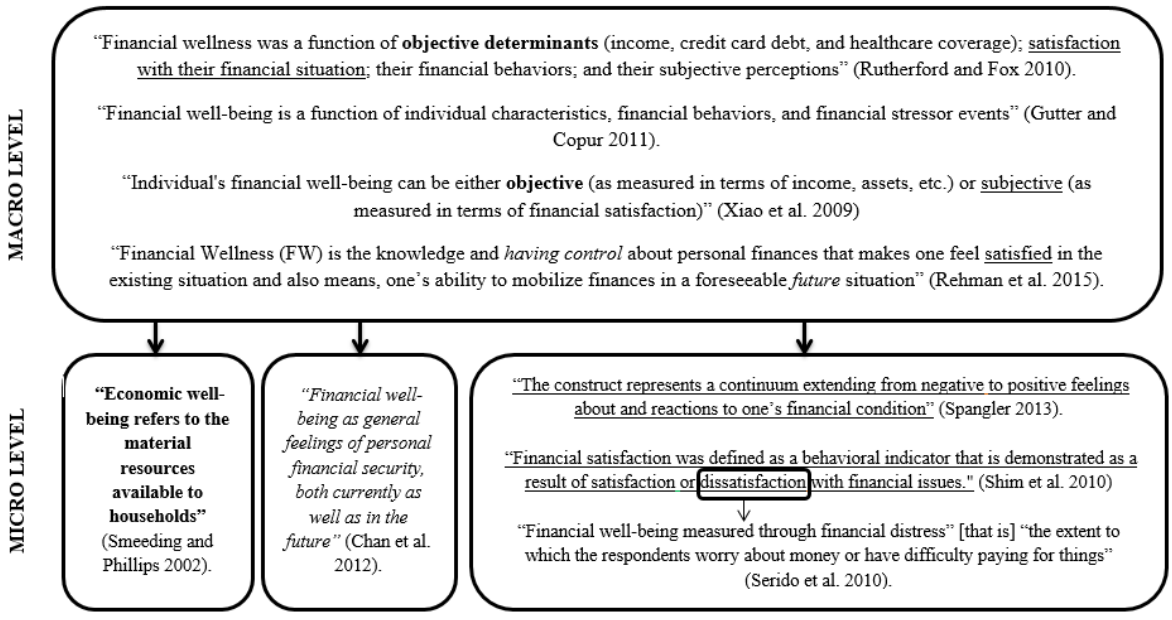

Figure 1.3. *Financial well-being definition. Italics, bold, and underlined styles are used to indicate the different micro-level definitions within the macro level*

As shown in Figure 1.3, among the financial well-being definitions detected in the included studies, it is possible to distinguish two levels, according to the extent of elements included as part of the construct. The first one (located at the top of the figure) is the macro level, where financial well-being (here, often labeled as "financial well-ness") is considered a function of a greater number of elements, namely, objective determinants, satisfaction with one's financial situation, financial behavior, subjective perception, individual characteristics, financial stressor events, financial knowledge, having control over personal finances, and ability to mobilize finances. The second level at which the financial well-being was defined is a micro level in which only one specific element is considered. For example, Smeeding and Phillips (2002) focused on the material dimension of financial well-being; Chan et al. (2012) on the control about the present and future financial situation; and Shim et al. (2010), Spangler (2013), and Serido et al. (2010) focused on the positive (satisfaction) and negative (worry) sensations that the subject feels about one's financial situation. Thus, the micro level refers only to the outcomes of a positive and healthy financial condition (e.g., material resources, financial security, presence of positive feelings and absence of negative feelings), while the macro level also includes the antecedents of these outcomes (e.g., financial stressors events, financial abilities, financial perception, and behavior).

Among the included studies, there were some papers that did not provide any definition but described some attributes of financial well-being. Part of these studies contextualized the financial well-being construct with respect to the general well-being. Specifically, certain authors simply described the financial well-being as being different from general well-being (e.g., Easterlin et al., 1990), while others described it as a sub-dimension of the general well-being (e.g., Brown & Applegate 2012). In one study (Tagliabue et al., 2015), financial well-being was considered as a sub-dimension of the wider financial well-ness construct, that is itself a sub-dimension of general well-being (Joo, 2008). The other studies that did not define financial well-being explicitly, but described some attributes include the following: (1) Simons et al. (2000), which noted financial well-being as a demographic variable; (2) Shim et al. (2009), which outlined financial well-being as a complex

process and not as a simple state/condition; and (3) Vlaev and Elliott (2014), which built a parallelism between financial and subjective well-being: financial well-being was considered analogous to the measurement of subjective well-being in the domain of healthcare.

In this mapping section on the financial well-being construct, the two independent reviewers also verified if the construct was conceptualized taking into consideration the stage of life of the participants. None of the detected definitions contained a reference specific for emerging adults' condition. Consequently, the reviewers verified whether the authors investigated the financial well-being construct with recognition of the specific characteristics of their participants' stage of life. Across the 44 studies, two ways in which the participants' stage of life had been taken into account were identified. In the first method, authors did not refer to a specific developmental model to define the participants' stage of life. They only contextualized the phase in which the participants were living, specifying certain general characteristics of this stage (*stage of life contextualization*) or youth financial condition (*financial contextualization*). In the second method, authors defined the stage of life of their participants referring to a developmental model in an explicit (*explicit developmental model*) or an implicit (*implicit developmental model*) manner. Specifically, the "stage of life contextualization" was detected 4 times (e.g., Clarkberg (1999) defined young adulthood as the prime period of union formation), whereas "financial contextualization" was detected 12 times (e.g., Rutherford and Fox (2010) affirmed that young adults usually have little experience with managing money). The "implicit developmental model" (e.g., Shim and Serido (2009) used Arnett's theory as reference) and "explicit developmental model" (e.g., Spangler (2013) affirmed explicitly the use of Arnett's conception of emerging adulthood) were detected five and four times, respectively. Finally, 19 studies did not refer to the participants' stage of life in any way. Across studies that used a developmental model, three different theories were cited: Arnett's theory of emerging adulthood (2000, 2004), Baltes' theory of lifespan development (1987), and Scabini et al.'s intergenerational approach to the transition to adulthood (2007). The theories of Baltes and Scabini et al. were cited

only once in Shim et al. (2009) and Tagliabue et al. (2015), respectively. The most used developmental model was the Arnett theory, with eight records.

The financial well-being definitions of the included studies often highlighted both the objective (material resources) and the subjective (financial satisfaction and negative and positive feelings) financial well-being side. Instead, when the financial well-being construct was operationalized, usually only one of the two sides was considered. Only three studies (6.82%) operationalized the financial well-being construct using both subjective and objective indicators. A greater number of studies (75%) considered only the subjective side in the operationalization of the financial well-being construct, while seven studies (15.91%) considered only the objective one. In one study (Karmel & Liu, 2011), no information on financial well-being operationalization was mentioned, because of which the study was not classifiable.

The different financial well-being sides that the researcher considered (objective vs. subjective) in its operationalization affected the measurement of financial well-being. The financial well-being objective side was measured in 10 studies. It was usually measured as personal income (e.g., "annual earning," "income per adult equivalent," and "income-to-poverty ratio") or as debts (e.g., credit card debt, educational-loan, and other personal debt). In some cases, the income was considered in addition to the information on the emerging adult's socio-economic status (such as education, income inequality, and job stability). Finally, other detected ways to measure the emerging adults' objective financial well-being were the presence of a checking or savings account under their name and the amount of dollars saved in it (Friedline et al., 2014). Additionally, in Rutherford and Fox (2010), the total assets (continuous, in dollars), the health insurance coverage (1 if covered; 0 if otherwise), the liquidity ratio (1 if liquid assets ⁄ monthly debt payments >2.5, 0 if otherwise), the asset allocation ratio (1 if liquid assets ⁄ net worth >.15, 0 if otherwise), and the combined ratio (1 if both liquidity and asset allocation ratios have been met, 0 if otherwise) had been used.

The subjective side of financial well-being was found to have been measured in a more homogeneous manner across the studies included in the review. It was always relieved by instruments

or item(s) asking the participants to subjectively evaluate their financial well-being. Such measures were found in 36 of 44 studies (81.82%), which were classified into 3 groups, namely, (1) studies that used a validate instrument; (2) studies that used item(s) taken from previous studies; and (3) studies that used item(s) created as ad hoc for the study[3].

In eight studies (18.18%), two different validate instruments were used to estimate the financial well-being construct. The first instrument was the Financial Well-Being Scale (Norvilitis et al., 2003) that was adopted in six studies. This scale comprised eight items evaluated on a five-point response scale. These items load two different factors, such as current financial concern and future expectations. Examples for the first and second factors are "I am confident in my abilities to handle credit cards" and "I will be able to handle my money in the years to come," respectively. The second validate instrument used to measure subjective financial well-being was the InCharge Financial Distress/Financial Well-Being Scale (Prawitz et al., 2006) adopted in Gutter and Copur (2011) and Spangler (2013). This scale comprised eight items, each evaluated on a ten-point response scale. Sample items are "How frequently do you find yourself getting by financially, living paycheck to paycheck?" and "How do you feel about your current financial situation?"

The second group of studies had item(s) taken from previous studies. Eleven studies belonged to this group. Seven of them obtained their items (i.e., three items measured on a five-point scale) from Shim et al. (2009).

Finally, most of the studies (N = 16) that used subjective financial well-being's measures built ad hoc item(s) or used item(s) for which no reference was attributed. In eight of these studies, a single item was used to estimate the financial well-being construct, often when it was referred to as financial satisfaction (N = 6).

The only case in which a subjective measure did not consist of item(s) evaluated on a Likert-type scale was Chan et al. (2012), where researchers asked participants to estimate the income they

[3] This group also includes the studies that do not provide information about the origin of the items, as it is likely that authors created the items they reported.

expected to receive after graduation (continuous variable, in dollars). This variable, labeled as "anticipated income," was here coded as a subjective measure because it was purely the respondents' idea and not a fact.

Summarizing, the variables used as indicators of the objective side of financial well-being were income (annual earning, income weighted for family size, income weighted for respondent's personal and family characteristics), debt (credit card debt, educational loans, and other personal debt), education, job (hours worked, stability), total assets, health insurance coverage, financial ratios (liquidity ratio, asset allocation ratio, and combined ratio) and owning a saving account. For the subjective side, validated instruments and non-validated scales of one or more items evaluated on a Likert-type point scale were used.

Data collection-related information. The fourth mapping section reports information concerning data collection in the 44 included studies (year in which data were collected, to whom data refer and their characteristics, who reported the data and how data were collected). The information is summarized in Table 1.5, where each column contains a specific question.

For each study, the year in which the variable financial well-being was retrieved from the participants was recorded. The oldest data on emerging adults' financial well-being were found in Easterlin et al. (1990), with data collection from 1965 to 1988. The most recent data were collected in 2014 (Tagliabue et al., 2015). Twelve studies collected financial well-being variable more than once (these were longitudinal studies instead of cross-sectional studies that collect data only once). Among them, only Smith (2005) collected these data on financial well-being from different participants at each time point. Finally, in Reynolds et al. (2007), LaVeist et al. (2010), Friedline et al. (2014), and Oman et al. (2015), even if data were collected more than once, the financial well-being variable was retrieved only once.

Table 1.5. Data collection-related information of 44 included records

Record	Year	Unit of analysis	Participants' characteristics					Informant(s)	Instrument and mode
			Sample size	Age	% Women	Race	Country		
Easterlin et al., 1990	Each 5 years from 1965 to 1988	Family (weighted individual income)	X	20-29	0% (only men)	X	USA	Emerging adult	Survey
Caputo, 1998	1985	Family (family income)	603	everyone around 28	52.75%	White (70.52%), Black, Hispanic	USA	Emerging adult	Interview
Clarkberg, 1999	Each year from 1972 to 1986	Individual	12841	From 18 (in 1972) to 32 (in 1986)	X	Black, other (86%)	USA	Emerging adult	Survey
Simons et al., 2002	X	Individual	172	19-35 (M=21.24; SD= 2.01)	77.1%	X	TR	Emerging adult	Survey
Smeeding & Phillips, 2002	1989 in FR; 1991 in NL; 1994 in USA and DE; 1995 in UK, IT,CH	Family (weighted individual income)	X	18-32	X	X	FR, NL, USA, DE, UK, IT, CH	Emerging adult	NS
Norvilitis et al., 2003	2000	Individual	227	"college students"	70,25%	Caucasian (76.2%), African American, Hispanic, Asian, Native American, other	USA	Emerging adult	Paper and pencil questionnaire
Smith, 2005	Thrice: 1973 - 1985 – 1997	individual	4584 (in 1973), 4437 (in 1985), 5716 (in 1997)	6 different age range. Only the range18-24 was considered	45% (in 1973); 52.4% (in 1985) and 50% (in 1997)	Black, other (86-88%)	USA	Emerging adult	NS

Norvilitis et al., 2006	X	Individual	448	18-26 or older	75.7 %	White (87.7%), African American, Hispanic, Asian, Native American	USA	Emerging adult	Paper and pencil questionnaire
Reynolds et al., 2007	Between 2002 and 2004	Individual	1389	between ages 22 and 24 years	X	Black (93%), Hispanic	USA	Emerging adult	Survey
Shim et al., 2009	2006	Individual	781	18-24	65%	White (64%), African American/Black, Asian, Hispanic/ Latino, Native American, other	USA	Emerging adult	Online questionnaire
Shim & Serido, 2009	2008	Individual	2098	"first-year college students"	61.9%	White (67%), Native American, African American, Asian/ Pacific Islander, Hispanic/ Latino, other	USA	Emerging adult	Online or paper and pencil survey
Xiao et al., 2009	2007	Individual	620	“Undergraduated students”	65%	White (64%), Hispanics, Asian, other	USA	Emerging adult	Online or paper and pencil survey
LaVeist et al., 2010	Between 1992 and 1994	Individual	2200	27-33	49.91%	African American (100%)	USA	Emerging adult	NS
Norvilitis & MacLean, 2010	X	individual	173	19-26 (M=23.08; SD=3.58)	77.5%	Caucasian (73.4%), African American, Hispanic, Asian, Native American, other or biracial	USA	Emerging adult	Paper and pencil questionnaire
Rutherford & Fox, 2010	2007	Individual	458	18-30 (M=25.67, SD=3.09)	X (not specified)	White (60.68%), Black, Hispanic, other	USA	Emerging adult	NS
Serido et al., 2010	2008	Individual	2098	“first-year college students”	61.9 %	White (67.4%), Hispanic, Asian/ Asian American/ Pacific Islander, Black, Native	USA	Emerging adult	Online or paper and pencil survey

						American, other/ missing			
Shim et al., 2010	2008	Individual	2098	“first-year college students”	61.9%	White (67.4%), Hispanic, Asian/ Asian American/Pacific Islander, Black, Native American, Other/missing	USA	Emerging adult	Online or paper and pencil survey
Shim & Serido, 2010	Twice: 2008 and 2009	Individual	748	"second-year college students"	65.4%	White (69.6%), Native American, African American, Asian/ Pacific Islander, Hispanic	USA	Emerging adult	Online survey
Zhang & Cao, 2010	During 2005/2006 academic year	Individual	319	18-29 (M=20.9; SD=1.5)	45%	X	CN	Emerging adult	Paper and pencil questionnaire
Chang et al., 2011	X	Individual	338	18-44 (M=19.30; SD=1.9)	67.46%	European American (65.4%), African American, Asian American, Hispanic American, Native American	USA	Emerging adult	Paper and pencil questionnaire
Gutter & Copur, 2011	2008	Individual	15797	18 and over (M=21.3)	65.8%	White (83.3%), other	USA	Emerging adult	Online survey
Karmel & Liu, 2011	2006	Individual	3913	25	53.72%	X	AUS	Emerging adult	NS
Salazar, 2011	2006	Individual	944	21-31 (M=25.6; SD=2.7)	73.9%	White (44.6%), Black, Native American, Asian, Hispanic/Latino, other, mixed race	USA	Emerging adult	Online survey

Shim & Serido, 2011	Twice: 2008 and 2010	Individual	1508	"fourth-year college students"	63%	White (71.4%); Latino; Asian; Black, Native American	USA	Emerging adult	Online survey
Brown & Applegate, 2012	During 2008/2009 academic year	Individual	2090	17-27and over	59.78%	European American (60.01%), African American, Asian American, Hispanic American, Native American, Middle east American, other	USA	Emerging adult	Online questionnaire
Chan et al., 2012	X	Individual	802	18-30 (M=21.1, SD=2.32)	66.5%	X	CN	Emerging adult	Online survey
Shim et al., 2012	Twice: 2008 and 2009	Individual	748		65.4%	X	USA	Emerging adult	Online or paper and pencil survey
Norvilitis & Mao, 2013	X	Individual	410 (207 from USA, 203 from CN)	“college students”	USA sample: 74%F; CN: 70% F	In USA: Caucasian (69%), African American, Hispanic, Asian American, native American. In CN: Han (100%)	USA – CN	Emerging adult	Paper and pencil questionnaire
Norvilitis & Mendes-Da-Silva, 2013	X	Individual	1257 (443 from USA and 814 from BR)	“college students”	USA sample: 79%F; BR: 54% F	In USA: White (67%), African American, Hispanic, Asian American, native American. In BR: White (76%), Hispanic, Asian, African descent, native Brazilian	USA - BR	Emerging adult	Paper and pencil questionnaire
Salazar, 2013	2010 per foster care alumni; 2006 per general population	Individual	1089	21-31	76% within forest care alumni; 52.5% within general	White (44.1% for foster care and 78.9% for general population), Black, other	USA	Emerging adult	Online survey

				population sub-group.					
Schnusenberg et al., 2013	2010	Individual	612 (200 from CN; 189 from DE; 223 from USA)	M=22	57%	X	CN, DE, USA	Emerging adult	Online or paper and pencil survey
Shim et al., 2013	Twice: 2008 and 2009	Individual	681	"second-year college students"	65.4%	X	USA	Emerging adult	Online or paper and pencil survey
Spangler, 2013	2013	Individual	323 students - 84 mothers	18-25 (M=20.84; SD =1.26)	75.2%	White (60.4%), Hispanic or Latino, Black or African American, Asian	USA	Emerging adult and, when possible, the mother	Online survey
Switek, 2013	Thrice: 1999, 2003 and 2009	Individual	1385	4 age intervals. Only the ranges 22-26 and 26-30/32 were considered	58.07% for 22-26; 59.04% for 26-30/32	X	CH	Emerging adult	Survey
Friedline et al., 2014	2009	Individual	435	M=22.79; DS=1.08	53%	White (82%); Black	USA	Emerging adult	Survey
Shim & Serido, 2014	Thrice: 2008, 2010, 2013	Individual	1010	23-26	“two-thirds of respondents were women”	White (67.5%), Latino, Asian, Black, Native American	USA	Emerging adult	Online survey
Vlaev & Elliott, 2014	2008	individual	334	18-29	57.78%	X	UK	Emerging adult	Online survey
Friedlmeier & Dahlstrom, 2015	X	Individual	360		72%	predominantly white	USA	Emerging adult	NS
Oman et al., 2015	During 2007/2008	Individual	651	18-22 (M=19.2; SD= 1.1)	55%	non-Hispanic White (41%), non-Hispanic Black, Hispanic, other	USA	EA and one parent	Online survey

Negru-Subtirica et al., 2015	X	Individual	149 dyads children - parents	M=20.7; SD=1.9	80%	X	RO	EA and one parent(83% mother)	NS
Rehman et al., 2015	2011	Individual	800	18-23 years	81,8% in public college; 64.9% in private one	“Exclusion of foreign students”	PK	Emerging adult	Paper and pencil questionnaire
Solis & Durband, 2015	2006	Individual	1498	"undergraduate students"	57.1%	White (74%), Hispanic, Black, Other	USA	Emerging adult	Online survey
Tagliabue et al., 2015	2014	Individual	224	20-30 (M=24.44; SD=2.57)	73.4%	X	IT	Emerging adult	Online survey
Thompke et al., 2015	X	Individual	359	16-28 (M=20.04; SD=1.89)	71.9%	Caucasian (85%), Other	USA	Emerging adult	Paper and pencil survey

Note. X= content absent in the record; NS= Not Specified. The age ranges has different meaning according the kind of considered dataset: when the data collection was done in just one wave, the age range consists in the different ages that subject had at that time points, while when data were collected in more than one wave, range age reports how age changed across time points. In the race column the race categories used to classify the sample was reported. When detectable, also the percentage of the most frequent racial group in that sample was reported.

For each study, also the unit of analysis to which the financial well-being variable referred was recorded. The term "unit of analysis" indicates the entity (object, person, dyad, group, social artifact, space, time, or event) to which the measured construct refers (Babbie, 2001; Pedon, 2009; Yurdusev, 1993). In most of the cases, the unit of the analysis was the individual because financial well-being referred to the emerging adults considered as a single person. In three cases instead, the unit of the analysis was the emerging adult's family because the emerging adult was considered as a leader of the household.

Specifically, in Caputo (1998), the financial well-being variable was the family income, while in Easterlin et al. (1990) as well as in Smeeding and Phillips (2002), the personal income was weighted for the number of family members.

Regardless of the unit of analysis considered, included studies' authors reported emerging adults' characteristics (sample size, age, sex, race, and country). Across the 44 included studies, the sample size varied greatly, from 149 emerging adults in Negru-Subtirica et al. (2015) to 15,797 in Gutter and Copur (2011). For each of these samples, the range, mean, and standard deviation of the participants' age were examined. Where available, this information was reported in Table 1.5. In 11 studies, no age information was reported. Additionally, information about gender was sometimes missing. For studies that did report this information, female participants were always greater in number than males, except for Smith (2005), LaVeist et al. (2010), Zhang and Cao (2010), and Easterlin et al. (1990). In three of the latter four cases, the samples were almost distributed equally by gender. In Easterlin et al. (1990), the oldest included record that had data collected from 1965 to 1988, the sample comprised only of men. Finally, to describe the samples of the 44 included studies, information on the participants' race and country were collected. Since financial issues were linked to race/ethnicity historically (e.g., white was richer; De La Cruz-Viesca et al., 2016), 31 of 44 (70.45%) included studies specified the race composition of the sample. In 27 of these 31 (87.09%) studies, most of the participants were white. Regarding country information, 31 of 44 (70.45%) studies were conducted in the U.S. using North Americans as sample. Only four studies on emerging

adults' financial well-being were cross-cultural, namely, Schnusenberg et al. (2013) (China, Germany, and the U.S.), Smeeding and Phillips (2002) (France, The Netherlands, U.S., Germany, United Kingdom, Italy, and Sweden), Norvilitis and Mao (2013) (China and the US), and Norvilitis and Mendes-Da-Silva (2013) (Brazil and the US). In conclusion, the most available data on emerging adults' financial well-being concerned white American women.

The two independent reviewers also identified who reported the data (i.e., the informant) about emerging adults' financial well-being. A researcher could select one or more informants, and the informant(s) need not necessarily coincide with the unit of analysis. For example, the financial well-being of emerging adults can also be reported by their parents or partner. Most of the 44 included studies collected data only from emerging adults, but in 3 studies, data were also collected from the parents (i.e., Negru-Subtirica et al. 2015; Oman et al. 2015; Spangler 2013). Negru-Subtirica et al. (2015) asked the parents to evaluate their own financial well-being and their child's financial behavior, while in Spangler (2013) the mothers reported variables that concern their past lives, and parents reported the household income in Oman et al. (2015).

Finally, in this section the instruments and mode used to collect data were mapped. In general, data collection instruments are classified into three broad categories, namely, self-completed questionnaires, interviews, and observation (Phellas et al., 2011). Furthermore, each instrument can be administered through different modes. For example, the interview can be face-to-face or delivered through a telephone, and the questionnaire can be a paper-and-pencil or an online one. Among the 44 included studies, 7 provided no information on the process of data collection. Among the remaining studies, 37 specified the instrument used to collect data and only 30 studies included the administrating mode (e.g., online, paper-and-pencil, face-to-face). Overall, only Caputo (1998) stated to have adopted the interview as an instrument. All other studies used questionnaires (or survey) to collect data, using the Internet (N = 14), paper-and-pencil (N = 9), or both (N = 7) as modes of collection. Among the 44 included studies, the online mode was first described as being used in 2009 in a study by Shim et al. and nowadays it is the common mode of data collection.

Financial well-being relationship-related information. This mapping focused on the association of financial well-being with other variables. Specifically, it investigated the theoretical[4] role (e.g., outcome, predictor) that the researcher(s) assigned to financial well-being in relation to the other variables, as well as the other variables involved in these associations and the statistical techniques adopted to inspect these associations between variables. Note that this section concerns only the relationships involving the financial well-being variable and not all the associations investigated in the 44 included studies. Details for each study were reported in Table 1.6.

As regards the role of financial well-being, in most of the studies (N = 28; 63.64%), financial well-being was investigated as the outcome. Instead, in three studies (6.82%), the financial well-being variable was a predictor (i.e. it influenced other variables), whereas in three other studies (6.82%), it was considered as a predictor and an outcome at the same time. For example, in Shim et al. (2013), financial well-being was conceptualized as affected by financial crisis, and at the same time, as affecting the level of trust in banks and financial institutions. Both in Zhang and Cao (2010) and Switek (2013), the financial well-being variable, labeled as "financial satisfaction," was considered a mediator of association between predictors — money and role transitions (in the two papers) — and subjective well-being. In LaVeist et al. (2010), financial well-being was used as a covariate in the multivariate analysis that tested the effects of parent's marital status during childhood on the psychological well-being in young adulthood. Finally, in four studies, the financial well-being variable assumed no specific role. In these studies, the correlation analysis (Norvilitis et al., 2003; Norvilitis et al., 2010) or factor analysis (Brown & Applegate, 2012; Rehman et al., 2015) were used.

Across these various roles, financial well-being was investigated in relation to different variables. The variables directly related to financial well-being were reviewed. Across the 44 studies, 115 different variables were detected and listed in Table 1.6.

[4] None of the included studies manipulated the variable actively, thus cause-effect relationships involving emerging adults' financial well-being were never tested. Consequently, in this section, terms such as "predictor," "outcome," and "relationship" do not intend to recall an evidence-based cause-effect relationship. They are used to reflect the theoretical hypotheses that drove the researchers.

Table 1.6. Financial well-being relationship-related information of 44 included records

Record	Financial well-bring role	Variables in relation with Financial well-being	Statistical analysis
Easterlin et al., 1990	NA	NA	Only descriptive analysis
Caputo, 1998	Outcome	Demographic variables (education, age, marital status, hours worked, sex, race or ethnicity) and psychological variables (locus of control, self-esteem)	Multiple regression analysis
Clarkberg, 1999	Predictor	Transition from singlehood to cohabitation/marriage	Multinomial probit method
Simons et al., 2002	Predictor	Satisfaction with life	Correlation and regression
Smeeding & Phillips, 2002	NA	NA	Only descriptive analysis
Norvilitis et al., 2003	NA	debt-to-income ratio, attitude towards debt, money attitude scale, life satisfaction, Depression Anxiety Stress scale, locus of control, functional impulsivity, dysfunctional impulsivity	Correlation
Smith, 2005	NA	NA (comparing financial well-being among different age and cohorts)	Only descriptive analysis
Norvilitis et al., 2006	Outcome	Level of credit card debt	Multiple regression
Reynolds et al., 2007	Outcome	3 characteristics of the "preventive intervention on the health and well-being": preschool participation (for 1 or 2 years [n=888] vs 0 years [n=480]), school age participation (for 1-3 years [n=778] vs 0 years [n=590]), extended program participation (preschool starting at age 3 or 4 years and continuing to second or third grade [n=522] VS all other children, who had 0 to 4 years of participation [n=846]).	Multiple, probit, and negative binomial regression
Shim et al., 2009	Both	As financial well-being predictors: parent socialization, education socialization, gender personal values, class, student income, parent income, subjective norm, perceived behavioral control, financial knowledge, financial attitudes, financial behavior intention, satisfaction with financial status, debt, financial coping (extreme, economizing), overall life satisfaction, academic success, physical health, depressed mood; As financial well-being outcomes: overall satisfaction, academic success, physical health, depressed mood.	Correlation and SEM
Shim & Serido, 2009	Outcome	Demographic variables (gender, race, residential status) and risky financial behavior	NS

Xiao et al., 2009	Both	As financial well-being predictors: financial behavior (expenses track, balance control, saving); financial status defined as level of debt (education loan, credit card debt and other debts); As financial well-being outcome: life satisfaction	SEM
LaVeist et al., 2010	Covariate	NA	Logistic regression (where financial well-being is a covariate)
Norvilitis & MacLean, 2010	NA	Parental (parent instruction, parent facilitation, parent worries, parent reticence, parent bailout), credit card (credit card problems, credit card disinhibition, credit card debt), and personal (financial delay of gratification, financial knowledge) variables	Only correlation
Rutherford & Fox, 2010	Outcome	Objective status (income, credit card debt, assets, health insurance, education), financial satisfaction, financial behavior (credit card use, past payment behavior, shopping for investment), and subjective perceptions (attitude towards credit, spending patterns, planning horizon, risk tolerance) and control variables (age, race/ethnicity, marital status)	Logistic regression
Serido et al., 2010	Outcome	Financial parenting (social status, communications, expectations) and future-oriented financial coping behavior (proactive, preventive)	SEM
Shim et al., 2010	Outcome	Parental SES; Parental financial behavior; Parental direct teaching ; High school work experience; High school financial education; Adopting parental role modeling; Financial knowledge; Parental subjective norms; Perceived behavioral control; Financial attitude; Financial relationship with parents; Financial relationship with parents; Healthy financial behaviors	Correlation and SEM
Shim & Serido, 2010	Outcome	Two studies implying financial well-being: 1) times/waves (before and after economic crisis); 2) financial coping behavior (proactive and preventive and reactive)	NS for the first result and SEM for the second
Zhang & Cao, 2010	Mediator	Financial well-being is the mediator between money e subjective well-being; correlation with demographic variables (gender, age, relationship status) and face consciousness	Regression
Chang et al., 2011	Outcome	general optimism, financial optimism	Correlations and hierarchical regression
Gutter & Copur, 2011	Outcome	demographic variables (gender, race, marital status, school rank), financial characteristics (financial aid, amount of debt, monthly income, amount of student loans), financial education, financial disposition (materialism, no financial risk, future orientation, compulsive buying, self-efficacy), financial behavior	T-test, ANOVA, correlation and ordinary least squares regression analysis

Karmel & Liu, 2011	Outcome	Pathways generated by completion of high school (yes/no) and post high school activity (nothing, VET, universitary study)	Regression
Salazar, 2011	Outcome	Groups by foster care history and education (foster care alumni college graduates, general population college graduates, and general population non-graduates)	Chi-square
Shim & Serido, 2011	Outcome	Two studies implying financial well-being: 1) times/waves (wave 1 VS wave 2); 2) financial behavior	NS for the first result and SEM for the second
Brown & Applegate, 2012	NA	NA	Explorative factor analysis
Chan et al., 2012	Outcome	number of credit cards, credit card use, loans, cash used in advance	Correlation
Shim et al., 2012	Outcome	financial behavior; past financial well-being; perceived impact of economic crisis	SEM e multigroup analysis
Norvilitis & Mao, 2013	Outcome	1) Country (USA VS CN); 2) income and self-confidence; 3) attitude towards debt, delay of gratification, social comparison, financial social comparison, parental financial teaching, parental financial worries, credit card positive attitude, credit card trouble attitudes	1) MANOVA; 2) Correlation; 3) regression
Norvilitis & Mendes-Da-Silva, 2013	Outcome	1) Country (USA VS BR); 2) income; 3) gender, year in school, attitude towards debt, financial self-confidence, credit card positive attitude, credit card negative attitudes, social comparison, financial social comparison, positive financial parenting, negative financial parenting, delay of gratification, debt-to-income ratio, student loans	1) ANCOVA; 2) Correlation; 3) regression
Salazar, 2013	Outcome	foster care history	Logistic regression
Schnusenberg et al., 2013	Predictor	attitude toward social health insurance	Regression (ordinary least square)
Shim et al., 2013	Both	As financial well-being predictor: time (before and after financial crisis) As financial well-being outcome: level of trust in bank and institution	Repeated measures ANOVA, multiple discriminant analysis
Spangler, 2013	Outcome	budgeting behavior; financial delay of gratification; maternal attachment; relative financial responsibility	Bivariate correlations
Switek, 2013	Mediator	Financial well-being is the mediator between life transition (school-to-work transition, changes in partnership status, and the parenting transition) and life satisfaction	OLS regression
Friedline et al., 2014	Outcome	Net worth accumulation trajectories during childhood/adolescence (from 1999 to 2009); having a savings account during childhood/adolescence (in 2002); control variables (race, gender, optimism for future, employed at 2005, ever enrolled in college at 2005)	Regression model

Shim & Serido, 2014	Outcome	Times (wave 1, wave 2, wave 3); employment status; debt.	NS
Vlaev & Elliott, 2014	Outcome	Financial control, debt to income, income, comfort with being in debt, external pressure affecting borrowing, other items measuring financial attitudes separately tested (“I adjust the amount of money I spend on non-essentials when my life changes”, “I think it is easy to get into debt because banks and shops make it too easy to get credit”, “I think it is better to live your life and enjoy it rather than worry about money”, “I think it’s important to save up for things I/we want”, "I think of my money in terms of ‘‘pots’’ put aside for different things")	Regression
Friedlmeier & Dahlstrom, 2015	Outcome	Three studies: 1) Parental SES; Parenting Quality (responsiveness, autonomy support, and behavioral control) and Knowledge about children’s spending; Parents’ Financial Behaviors; Parent Direct Financial Teaching; 2) financial behavior, financial control, financial knowledge, life satisfaction; 3) Working Experience High School, Financial Education High School, Working experience during college	1) Regression; 2) Correlation; 3) t-test, ANOVA
Oman et al., 2015	Outcome	14 youth assets: 4 assets operated at the individual level (religiosity, responsible choices, educational aspirations for the future, and good health practices), 4 at the family level (family communication, relationship with mother, relationship with father, and parental monitoring), and 6 at the community level (non-parental adult role models, community involvement, peer role models, use of time for sports or other group activity, use of time for religion, and school connectedness)	Regression
Negru-Subtirica et al., 2015	Outcome	Perceived SES (reported by parent); Dyadic (parent-child) representations of financial success; Parent’s financial satisfaction; Child-reported healthy financial behavior; Parent-reported healthy financial behavior of child; Child-reported financial relations with parents; Parent-reported financial relations with child	Regression
Rehman et al., 2015	NA	NA	Factor Analysis
Solis & Durband, 2015	Outcome	4 types of financial support: student loan, family financial support, scholarship, grants	Logistic regression
Tagliabue et al., 2015	Outcome	Individual predictor (proactive coping, preventive coping, optimism) and relational predictor (mother support, father support, financial support), employment status (to be student, worker or student-worker)	SEM
Thompke et al., 2015	Outcome	Working experience during high school, working experience during college, financial education during high school, length of employment	ANOVA and T-test

Note. NA= Not Applicable; NS= Not Specified; SEM= Structural Equation Model; ANOVA= Analysis of variance.

To simplify the presentation of these variables, they were classified into 11 categories (10 for the financial well-being's predictors and 1 for the outcomes), and the frequency (f) with which they were investigated across the included studies was reported. The ten categories of financial well-being's predictors are as follows: socio-demographic variables such as gender and age (f = 44); particular events that occurred in emerging adults' life such as economic crisis (f = 6); general characteristics of emerging adults such as their personality or their personal resources (f =16); and general characteristics of their family (f = 6) or community (f = 5). The most investigated categories were the ones in which the individual-level financial aspects were located, such as subject's financial information (f = 9), financial cognition (f = 30), and financial behaviors (f = 23), as well as components of financial well-being itself (f = 34). The family of origin-level financial aspects were also investigated as predictor (f = 28). Moreover, the relationship between financial well-being and outcome variables such as life satisfaction or physical health was analyzed 11 instances.

As regards the statistical analysis used in the studies, Shim and Serido (2009, 2010, 2011, 2014) did not specify any or a part of the analysis implying financial well-being. These four studies were reports and not scientific publications. As such, the nature of their publication justified the lack of details on statistical analysis. In the other included studies, the most used technique was regression analysis (N = 22). Correlation was applied in 12 studies, followed by the Structural Equation Model (SEM) in 8 studies. The T-test and/or different kinds of ANOVA were applied only in six studies. The least used analyses were factor analysis (two studies), chi-square (Salazar, 2011), and multiple discriminant analysis (Shim et al., 2013). Certain studies analyzed the financial well-being using more than one technique.

Mapping Outcomes

The mapping of literature on emerging adults' financial well-being made it possible to organize and summarize information that helped clarify certain fundamental issues on financial well-being that the literature did not address adequately. Specifically, I outlined a definition of financial well-being, listed the components of the construct, and categorized all the variables investigated as financial well-being's predictors and outcomes.

Financial well-being's definition. The information collected through this literature mapping made possible to identify a cross-disciplinary definition of financial well-being, and consequently to detect the boundaries and links it has with similar constructs.

Financial well-being is a good and positive financial condition that has an objective and a subjective side. The former (usually referred as "economic well-being"[5]) consists of the material resources that an individual possesses when the balance between entry (e.g., income) and exit (e.g., debt) is considered, and those he/she already owns (e.g., assets, a saving account, a health insurance, job benefits, education). The latter, or subjective financial well-being, consists of an individual's subjective experience with respect to his/her financial condition and the manner in which he/she evaluates such condition. Thus, I detected two theoretical dimensions of subjective financial well-being, and here I propose to refer them as experience and evaluation. The *experience* consists of the individual's perception of his/her own financial condition. It does not require an explicit judgment/evaluation of the person, but only consists of one's perception/description of an experienced situation. For example, the individual can perceive that at times, he/she has no money

[5] The label "economic well-being" was used 7 times across the 44 included studies. In six out of these seven studies, the label referred to the objective side of financial well-being. In the only case in which it was used to refer to the subjective side, this was specified using the adjective "perceived" (i.e., perceived economic well-being).

to buy the things that he/she needs, or that he/she cannot engage in certain activities with friends owing to lack of money, but he/she is not reporting how these situations affect him/her. Instead, the *evaluation* consists of a judgment that an individual conducts of their own financial experience. This evaluation is emotional when it concerns the positive (e.g., security, control) or negative (e.g., worry, distress) feelings caused by personal financial experiences of the individual. In this sense, financial well-being consists of the presence of positive and the absence of negative feelings. Instead, the subjective evaluation of one's financial experience is cognitive when it consists of the degree of satisfaction or dissatisfaction that one has for his/her financial condition at that moment. The subjective financial well-being, both as an experience and an evaluation, is linked to one's past and future. For example, the experience of not having enough money to buy things can depend on the past experience of having more money. The feeling of worry over one's own financial condition can depend on the financial uncertainty of the future.

This definition allows to delineate the boundaries between financial well-being and similar constructs. First, it is possible to state that financial satisfaction and financial well-being are erroneously used as synonymous; the first concept is a dimension of the second one. Furthermore, the expression "income satisfaction" is a specific type of financial satisfaction. It indicates financial satisfaction when referring only to one's income and not to one's general financial situation. Finally, the relationship between financial well-being and financial well-ness can be conceptualized as hierarchical; financial well-being is a dimension of financial wellness.

"Financial well-ness" (or financial health) is a healthy and functional financial process. Specifically, financial wellness is a process that works as a function of financial skills, such as the ability to interpret, compute, develop independent judgments, and take financial actions resulting from those processes; these skills are usually referred as "financial literacy." The outcome of this

financial literary process is a positive financial condition, referred to as "financial well-being." Both financial literacy and financial well-being are dimensions of financial well-ness. Furthermore, financial wellness is a process (e.g., certain financial attitudes generate certain financial behaviors that generate certain financial well-being (Shim et al., 2009)), whereas financial well-being, as an outcome of financial well-ness, is a state.

In the definition of financial well-being constructed across this study's 44 records, no specificities for emerging adulthood were detected. These specificities were included when financial well-being was operationalized. For example, to take into account the different occupational statuses that an emerging adult can have, it is not sufficient to operationalize the objective side of financial well-being measuring the income. It is not necessary that all emerging adults have to be workers. Income should be substituted with the general concept of "money" which, for example, in Zhang and Cao (2010) was operationalized according to four categories: money from family, internship, college (e.g., scholarship), and other sources.

Financial well-being's components. As clarified by the definition of financial well-being, this construct has two components:

(1) Objective financial well-being, often named as "economic well-being," consists of the objective determinants of financial well-being. Three different aspects of this objective dimension were detected, namely, the entries (e.g., income, financial aids), the exits (e.g. debt, expenses), and whatever the individual already owns (e.g., assets, a saving account, a health insurance, job benefits, and education).

(2) Subjective financial well-being, consists of the experiences of an individual based on one's financial situation (e.g., to have enough money to do what he/she needs) and its consequently emotional (positive/negative feelings) and cognitive (financial satisfaction) evaluation.

Furthermore, the hierarchical relationship between financial well-being and financial well-ness allows considering financial well-being as a component of financial wellness itself. Overall, financial wellness has two components, namely, financial literacy and financial well-being (see Figure 1.4).

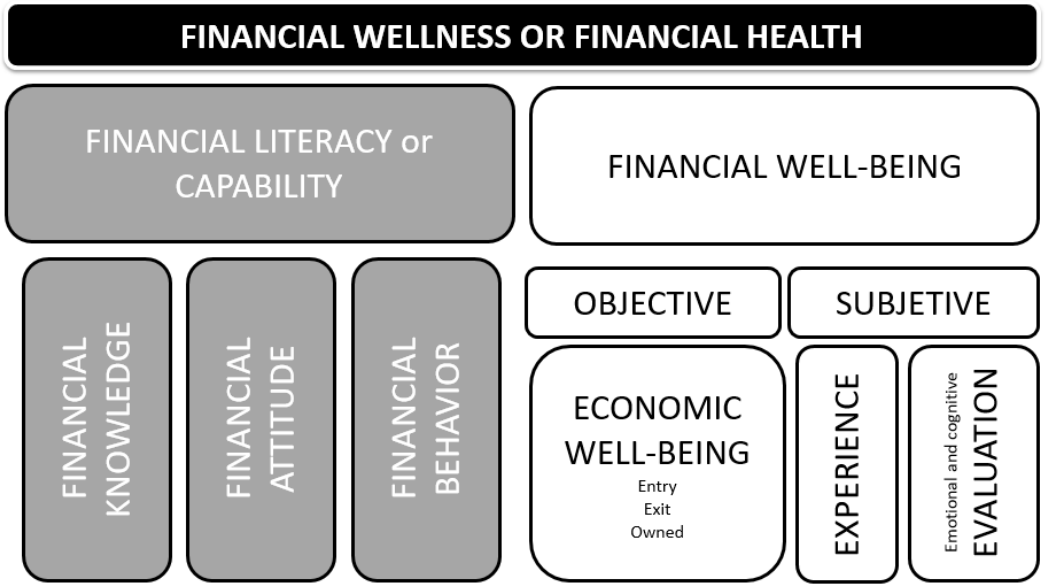

Figure 1.4. *Financial well-being's components and its relationship with financial well-ness*

Financial literacy (or capability) is composed itself of three sub-components, as follows:

(1) Financial knowledge, that consists of the information and preparation on financial matters that an individual possesses.

(2) Financial attitudes, that consist of the expression of favor or disfavor toward a financial matter. An example is evaluating the credit as a good or a bad idea (*attitude towards credit*;

Rutherford & Fox, 2010). In a more general way, the expression "financial attitudes" indicates certain personal dispositions of the person with respect to financial issues, for example, the level of comfort with being in debt.

(3) Financial behavior, that consists of the behavior of the individual in terms of managing his/her money (e.g., the *action of saving money* in Shim et al. (2009) or the *ability to mobilize finances* in Rehman et al. (2015)). At times, in this behavioral dimension, actions do not necessarily consist of money management; those to resolve/avoid/react to financial stressors form a part as well. These actions are usually called "financial coping behaviors" (e.g., Serido et al., 2010; Shim & Serido, 2010).

Overall, a healthy and functional financial condition consists of two components (see Figure 1.4): financial literacy and financial well-being. The former is composed of three other sub-components, while the latter has two other sub-components. The last two sub-components (objective and subjective financial well-being) are sufficient to refer to the financial well-being, but when the antecedents of financial well-being also need to be considered, financial wellness can be an appropriate construct. Financial wellness is a process, and its dimensions are connected over time. In order to obtain a high level of financial well-being is necessary to exhibit a healthy financial behavior, which is a consequence of specific financial attitudes and knowledge. This study found no specificities of the emerging adulthood stage of life in the structure of financial well-being components.

Financial well-being's predictors and outcomes. Across the 44 papers reviewed, many variables were studied in relation to financial well-being. I coded the variables into 11 categories based on the similarities and differences among the constructs they measured: 10 categories on the

financial well-being's predictors and one category on financial well-being's outcomes. Indeed, outcomes of emerging adults' financial well-being were rarely investigated. Specifically, the list of variables considered as financial well-being's outcomes is short and consists of the overall subjective well-being (e.g., life satisfaction and positive/negative feelings) or only its cognitive sub-dimension (i.e., life satisfaction), the depressed mood (e.g., to be "depressed," "unhappy"), the academic success (e.g., a student's grade-point average), and the physical health (see Figure 1.5).

The list of variables considered as financial well-being's predictors is instead longer, they were grouped into 10 categories and organized along two axes (see Figure 1.5).

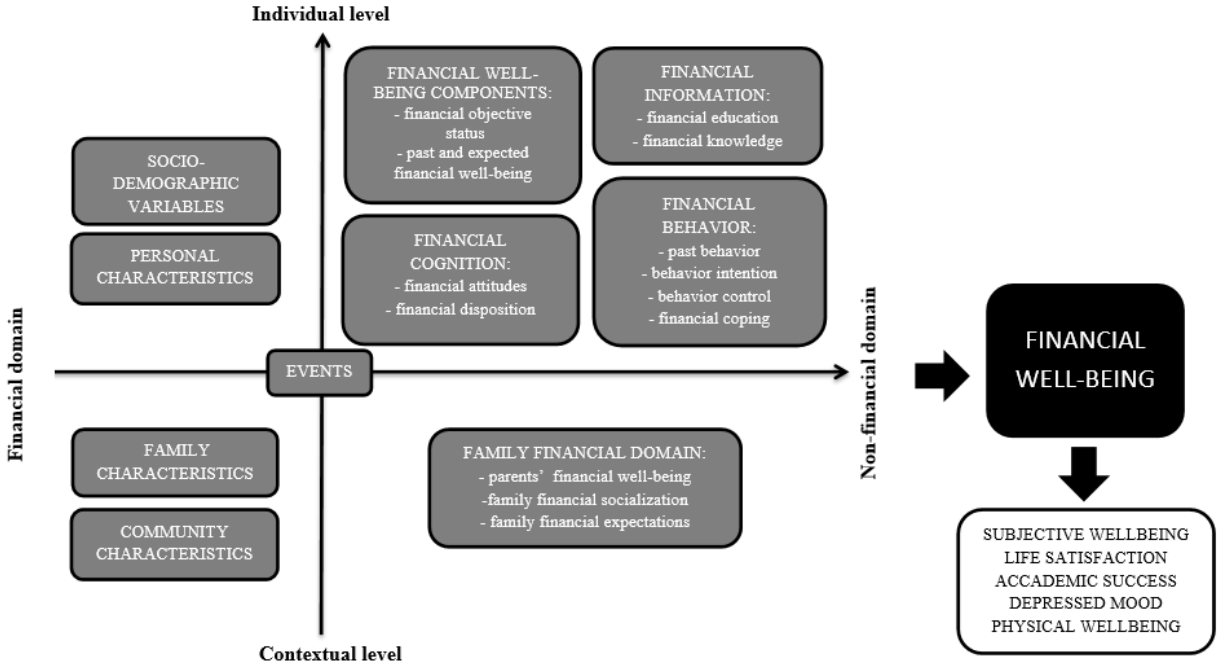

Figure 1.5. *Predictors and outcomes of financial well-being*

The vertical axis distinguishes between predictors that concern only the emerging adults (individual level) and predictors that concern the emerging adults' context, for example, their

family or community (contextual level). The horizontal axis distinguishes between predictors that concern financial issues (financial domain) and predictors that concern non-financial issues (non-financial domain). Crossing these two axes, four quadrants were obtained. The ten categories of financial well-being's predictors were classified into these four quadrants as shown below.

Individual level and non-financial domain. Two categories of financial well-being's predictors were located in this quadrant. The first category consists of the *socio-demographic variables* that described the emerging adults, such as gender, age, cohort (defined as the epoch to which the emerging adults belong, when authors compared the financial well-being of emerging adults belonging to different historic periods), race, country in which the emerging adult lives, residential status (whether the emerging adult lives in their country/state of origin or not), and relationship/marital status (e.g., single, married, cohabiting). Moreover, variables that concerned school and work such as education (e.g., the highest education level reached) and information about past job experiences (employment in the past during high school/college, length of employment, hours worked) or the current one (employment status, federal work-study) were collected. Finally, the emerging adult's pathways (e.g., decision to work or to study after high school), and life transitions (e.g., the parenting transition) were also located in this category of socio-demographic variables.

The second category belonging to the "individual level X non-financial domain quadrant" consists of the *personal characteristics* and includes aspects of the emerging adults' personality and disposition (e.g., locus of control, optimism, self-esteem, face consciousness, future orientation, delay of gratification, impulsivity, and social comparison) as well as their assets. The expression "personal assets" refers to different individual resources (e.g., religiosity, responsible

choices, educational aspirations for the future, and good health practices) that can help emerging adults in their transition to adulthood (Oman et al., 2015).

Finally, some personal life *events* should be located in this quadrant, such as having a foster care history, or having taken part in a preventive intervention on health and well-being, as they were investigated as financial well-being predictors in the included studies. At the same time, across the included studies, it is possible to detect as financial well-being's predictors some events that are neither individual neither non-financial. For example, the predictors "economic crisis of 2008" is an event experienced by participants in Shim et al. 2013, but this event should belong to the "contextual level and financial domain" quadrant. This is the reason why the category event was located at the intersection of the two axes (see Figure 1.5). According to the type of considered event, the category "event" can belong to each of the four quadrants.

Contextual level and non-financial domain. In this second quadrant, two categories of financial well-being's predictors, namely, family and community characteristics were found. *Family characteristics*, even if not related to the financial domain, that affect the child's financial well-being are the variables that assess the parent-child relationship, such as maternal attachment, support in mother-child relationship, support in father-child relationship, and parenting quality (responsiveness, autonomy support, and behavioral control) as well as family communication. Additionally, the *community characteristics* were considered as predictors of financial well-being. Specifically, non-parental adult role models, community involvement, peer role models, use of time for sports or other group activity, use of time for religion, and school connectedness were investigated in relation to financial well-being.

Individual level and financial domain. The "individual level X financial domain" quadrant contains the highest number of financial well-being predictors, given that financial well-being was

itself a variable that concerns the individual level and the financial domain. Specifically, four categories of predictors are located in this quadrant: financial well-being's components, financial information, financial cognition, and financial behavior.

The first category of predictors was named *financial well-being's components*, because it consists of the variables defined as components of the construct in the previous paragraph. These components are also reported in the financial well-being predictors list because researchers often conceptualized them thus (e.g., the objective financial well-being as predictor of the subjective one). I agree that a reciprocal influence between financial well-being components can be hypothesized, but I argue that, from a theoretical point of view, these variables are more appropriately financial well-being's components than predictors, as sometimes stated by the same authors who tested relationships between them (e.g., Shim et al., 2009). Even more accurately, components of financial well-being are sometimes studied in relationship to financial well-being when measured in different time points with respect to the present financial well-being (e.g., "past subjective financial well-being" and the "anticipated income").

The second category of predictors located in this quadrant consists of the *financial information* (education and knowledge) that the emerging adults have on financial matters. Using the expression "financial information," I refer to financial knowledge (i.e., how much preparation that the emerging adults have about financial matter) and financial education (i.e., if the emerging adults took part in courses or programs aiming at enhancing his/her financial knowledge). Financial knowledge can be subjective or objective. It is subjective in cases where it is the subject evaluates the knowledge s/he has about financial matters. It is objective when it is assessed through a test about financial notions, such as "If you expect to carry a balance on your credit card, the APR is the most important thing to look at when comparing credit card offers?"

The third category belonging to the intersection "individual level X financial domain" is *financial cognition*, which contains all the predictors related to the way in which the subject mentally approaches financial matters. Specifically, I collected in this category the predictors that across the included studies were referred as financial attitudes and financial disposition. The attitude consists of an evaluation of an object to assess its positive or negative valence. Thus, "financial attitude" is an expression of favor or disfavor toward a financial matter. For example, across the 44 included studies, the emerging adults' attitude toward credit (e.g., Rutherford & Fox, 2010), target financial behavior (e.g., Shim et al., 2010), money (e.g., Norvilitis et al., 2003), debt (e.g., Norvilitis & Mao, 2013), credit card (e.g., Norvilitis & Mendes-Da-Silva, 2013), and social health insurance (e.g., Schnusenberg et al., 2013) were evaluated. Instead, the expression "financial disposition" referred to certain personality characteristics that defined how individuals tend to think of financial matters, such as financial optimism, comfort with being in debt, risk tolerance, materialism, and so on. The boundary between financial attitude and disposition is really thin. For example, in Gutter and Copur (2011), "risk tolerance" is defined as both an attitude and a disposition.

The last category of predictors concerning the individual level and the financial domain is *financial behavior*, in which I collected information on the past financial behavior, the financial behavior intention, the financial behavior control, and the financial coping. Financial behavior (or practice) can be defined as any human behavior that is relevant to money management (Gutter & Copur, 2011). For instance, budgeting, saving, credit usage behaviors, and compulsive buying are examples of financial behaviors. In general, financial behaviors can be risky (such as maxing out credit cards or using payday loans) or healthy (such as tracking monthly expenses, or spending within budget) for the financial well-being of emerging adults. The financial behavior that is

commonly tested as financial well-being's predictor is the financial behavior that individuals have exhibited and/or usually exhibit, and that I named as "past financial behavior." Instead, the expression "financial behavior intention" indicates the evaluation of emerging adults' intention to exhibit a specific financial behavior in the next months, whereas the expression "financial behavior control" indicates the individuals' evaluation of how easy or difficult it is for them to exhibit that behavior. Finally, financial coping strategies also belong to the financial behavior category. The term "financial coping" refers to behavior exhibited to resolve/avoid/react to financial stressors. In Serido et al. (2010) and Shim and Serido (2010), three types of financial coping were listed, namely, reactive (e.g., using one credit card to pay off another), preventive (e.g., paying off credit card balances each month), and proactive (e.g., saving money). Instead, Shim et al. (2009) and Shim and Serido (2009) distinguished two types of coping, namely, a more normative "economizing" coping response to financial hardship that includes relatively minor adjustments to daily life (e.g., cutting back on eating out) and an "extreme" measure involving desperate financial changes (e.g., relying on payday loans).

Contextual level and financial domain. Only one category of predictors is located in the "contextual level and financial domain quadrant": the *family financial domain*. Across the 44 included studies, the impact of the family financial domain on the emerging adults' financial well-being was investigated through three different types of predictors. First, the parental financial condition, including both the objective (e.g., parental socio-economic status) and the subjective (e.g., parents' financial satisfaction and financial worries) sides of their financial well-being was tested as a potential predictor of child's financial well-being. Second, variables concerning the financial socialization that the child received from the parents were investigated as predictors of the child's financial well-being. For example, parents can socialize with the child about financial

matters in different ways, such as “parent facilitation” (i.e., parental assistance in handling money), “financial reticence” (if parents avoid addressing financial matters with their child), “financial relation” (i.e., how much the financial issues affect the parent-child relationship), “parents financial support” (i.e., the economic help that parents provide to a child), and “parent financial behavior” (i.e., how parents acts as financial model for the child). Finally, the financial expectations that family members have of each other were investigated as predictors of financial well-being. For example, Serido et al. (2010) investigated the parents’ expectation about the child’s financial behaviors, while Norvilitis and MacLean (2010) studied children’s expectations of being helped by parents if they found themselves in debt.

1.4. Discussion

The economic crisis of 2008 that affected the youth the most increased the attention that media, as well as the academy, paid to the financial well-being of emerging adults. Indeed many studies investigating the financial well-being of young adults that have been published after 2008. At the same time, this recent development has so far not provided enough space to the theoretical reflection on this topic. Consequently, to have a complete view of this construct (and its specificities during emerging adulthood), it was necessary to also collect what was done before 2008 as well as the new materials published after the economic crisis, organize all the produced information, and propose new research directions. The scoping methodology was considered an adequate mean to reach these aims.

This scoping review is the first attempt to summarize all the scientific works on emerging adults’ financial well-being and produce a shared language and knowledge. This construct, rarely defined in the studies in which it was investigated as discussed, was often treated as a construct

with an obvious meaning. Instead, this systematic synthesis of literature reveals that financial well-being is a construct that requires recognizing both its components (i.e., objective and subjective financial well-being) and the elements that compose them (income, debt, and assets for the objective as well as experience and evaluation for the subjective financial well-being). Furthermore, financial well-being is one dimension of the wider concept of financial wellness. This hierarchical structure allowed assigning a specific definition to diverse labels (financial well-being, financial wellness, financial health, financial satisfaction, income satisfaction) often adopted in ways that are inconsistent with each other. Specifically, *financial wellness (of health)* is a dynamic financial process that has *financial well-being* as an outcome. This outcome has an objective and a subjective side. The subjective financial well-being consists of the experience of one's financial condition and its evaluation. When this evaluation is cognitive – instead of emotional – it is defined *financial satisfaction*. Furthermore, when this cognitive evaluation is not referred to ones' general financial condition, but only to ones' income, it can be referred as *income satisfaction*.

I believe that the main findings of this review are recognizing the complexity of the financial well-being construct as well as its strong link with the non-financial domain. The list of variables studied in relation to financial well-being revealed that many predictors of financial well-being are unexpectedly not related to the financial domain (e.g., parents' emotional support, religiousness, life events, and so on), and the consequences generated by an increase/decrease of financial well-being affect subjective and physical well-being. As shown, the current review is valuable because it maps the literature on the financial well-being of emerging adults, and generates a wider view of the construct, recognizing both its multidimensionality and its

relationship with domains different from financial ones. However, this review has some limitations, which are discussed below.

Limitations

I identify three main limitations. The first limitation is due to the three inclusion criteria that were used to select the records. The inclusion criterion related to the financial well-being construct is based on the searching of labels (i.e., financial wellness, financial well-being, financial satisfaction, financial health, income satisfaction) that refer to a positive paradigm of the construct. Specifically, the two independent reviewers searched only for labels that recalled a positive condition of well-being and satisfaction, ignoring labels such as financial distress, financial concerns, and financial worry. In fact, in literature, the relationship between this positive side (e.g., financial well-being) and the negative one (e.g., financial stress) is not clear. Some scholars consider these two frameworks to be interrelated (e.g., Serido et al., 2010), while others considered them as totally separated constructs (e.g., Archuleta et al., 2013; Joo & Grable, 2004). The inclusion criterion related to the participants' age was probably too flexible (e.g., even if the age range of participants did not exactly fit the range of 18 to 29, the mean and the standard deviation were used as criterion). This choice was made in order to not exclude a large number of records, but at the same time, studies with participants with age different from 18-29 are included in this review. Finally, the richness of the included records was strongly affected by the inclusion criterion that required English-language full texts. It is quite probable that relevant studies on emerging adults' financial well-being were published in languages other than English, and their contribution is not reported in this review.

The second limitation is due to the knowledge synthesis methodology I selected. The scoping methodology indeed primarily aims to synthesize and map existing knowledge. The focus is on what was done and not on the obtained results. Consequently, the current review did not include any information on the results that each included study attained (e.g., significance and effect size of the investigated relationships).

Finally, the third limitation of this study. The interpretation of collected information and the posed research questions are inevitably affected by my personal point of view as psychologist. When an inter-disciplinary topic is treated, an inter-disciplinary research team is desirable.

At the same time, my aim was not to finalize the literature on the financial well-being of emerging adults, but to create a starting point, a shared base, from which cross-disciplinary exchange and enrichment could originate. The current mapping of literature can provide information on what was done in disciplines different from one's own and discipline-specific vocabulary. Furthermore, the mappings' outcomes (financial well-being's definition, components, and predictors and outcomes) offer a shared framework to conceptualize financial well-being. In order to further reinforce this exchange and reflection, I intended to also realize the scoping review's optional final stage: the *consulting stage*. It entails consulting experts for suggestions on additional references and providing insights beyond those in the literature. The consultation's purpose includes sharing preliminary findings with stakeholders, validating the findings, or informing future research. With this objective, I have sent a copy of this review to authors of each included contribution, in order to share this information with authors potentially interested in this theme. I am confident that this information sharing and connection will help emerging adults' financial well-being literature.

Conclusions

The current systematic review summed up the scientific literature related to emerging adults' financial well-being in order to build a systematic understanding of financial well-being and its specific characteristics and influences during emerging adulthood. The information extracted from the 44 included studies was mapped along five sections, in which I reported the information related to (1) publication of the included studies, (2) research aim, (3) the financial well-being construct, (4) data collection, and (5) the financial well-being relationships with other variables.

This five-section mapping enabled the bases to produce three outcomes: the definition of financial well-being, the components of financial well-being, and the list of its predictors and outcomes. These three products are an important contribution for scholars, practitioners, and policymakers interested in emerging adults' financial well-being.

The content here reported is a useful framework to read what has so far been done on financial well-being. Specifically, the definition of financial well-being as well as components resulted to be non-specific for the emerging adulthood stage of life; thus it pertains to all academics interested in financial well-being, without any distinction for the stage of life to which their target belongs. At the same time, to conduct this review specifically with studies in which the emerging adults were the target population allowed to recognize and emphasize that the financial dimension is no longer a taboo for researchers on adolescence and emerging adulthood and that the existing body of work has significant scope for growth. The main research gaps are described below.

The relationship between all the financial well-being components as well as the relationship between financial well-being, financial wellness, and general well-being needs to be investigated. Even if certain studies investigated the different financial well-being and financial wellness

components at the same time (e.g., Rutherford & Fox, 2010; Shim et al., 2009), no study includes all the identified components. Therefore, their relationships during emerging adulthood have never been completely tested. Additionally, the relationship that financial well-being has with the general well-being and its other sub-dimensions (e.g., psychological, subjective, and physical well-being) is not clear.

In studying the relationship among financial well-being's components and, above all, in studying financial well-being's relationship with other variables, a longitudinal design could be very useful. Often, collected correlational studies theorized financial well-being as an outcome or predictor of other variables, but only rarely was this hypothesis statistically validated. As Little, Card, Preacher, and McConnell (2009) pointed out, when experimental design are not applicable, longitudinal studies are needed to make qualified inferences regarding the cause – effect relations among constructs.

Even if all studies identified by the researchers had used a quantitative approach, studying the emerging adults' financial well-being using a qualitative approach is possible and also relevant. Financial well-being can be investigated efficiently using a qualitative approach, as shown by a recent research in which authors performed different interviews to investigate the financial well-being of working-age adults and older consumers (CFPB, 2015). This should be undertaken for emerging adults to understand their subjective perspectives and experiences contextually (and eventually, critically).

Multiple informant research investigating the emerging adults' financial well-being could offer a new prospective on the topic, particularly if the new informants are the emerging adults' parents. Parents are often relevant actors for their child's financial well-being, given that they are their main financial socialization factors, and because they often give money to the children and

offer them their house. The multiple informant approach was rarely applied in this field and never performed by collecting information from both the mother and father. This reflection on multiple informant methodology also allows to emphasize the important role played by parents for emerging adults. Emerging adults deal with the transition to adulthood, a progressive process during which they leave the adolescent roles and take up the adult ones. In doing so, emerging adults become progressively more independent from parents, also in the financial domain. It is important to study how the parents offer this progressive independence to their child and how they promote their financial autonomy.

As already said, specific references to emerging adulthood were not detected in the definition of financial well-being, while they were found with respect to the way in which the financial well-being was measured (e.g., student loans, financial aid, parental economic support). The importance of recognizing the specificities of emerging adults' financial well-being when the construct is measured reminds of the need for a validate instrument measuring specifically their financial well-being. The Norvilitis scale is the only instrument specific for emerging adults, but it is applicable only to students (e.g., an item on student loan), whereas it is important to create an instrument applicable to emerging adults, regardless of their occupational status. It could be useful to investigate the differences between students and emerging adult workers in terms of their financial well-being. Additionally, a new instrument should include items referring to all the different financial well-being sub-dimensions to verify if they are different not only theoretically but also empirically as separate factors.

Finally, the last research gap I identified consists of the scarcity of cross-cultural studies. It is important to replicate studies already conducted in different countries, with different races, and use samples that are more representative of the whole emerging adult population. In this way,

it can be tested whether the financial well-being phenomenon and its related processes are universal or have different characteristics and dynamics across different countries. Cross-cultural studies could fit this aim well.

The studies presented in the following chapters of the current thesis aim to fill some of these research gaps (e.g., adopting a longitudinal design, validating new instrument, applying multiple informant methodology, and investigating parental financial socialization). I do not consider the next studies as sufficient to fill these gaps, but as a starting point to explore new opportunities for the emerging adults' financial well-being literature.

CHAPTER 2. LATENT TRANSITION ANALYSIS

2.1. What is Latent Transition Analysis?

Latent Transition Analysis (LTA) is a data analysis technique that allows managing both latent class variables and longitudinal data. Indeed, it is defined as a longitudinal extension of Latent Class Analysis (LCA). Consequently, before presenting LTA it is necessary to clarify what LCA is.

Latent Class Analysis (LCA, Lazarsfeld & Henry, 1968; McCutcheon, 1987) is a statistical approach that is used to classify individuals into homogeneous sub-groups (Geiser, 2010). Specifically, LCA is defined as a "mixture model," that is, a probabilistic model for representing the presence of subpopulations within an overall population. This analysis technique expresses the overall distribution of one or more variables as a composite (i.e., mixture) of a finite number of component distributions, usually simpler and more tractable in form than the overall distribution (Masyn, 2013). These components (i.e., sub-groups) are not directly observed – that is, individual membership is unobserved or latent. So, rather than expressing the overall population distribution as a mixture of *known* groups, mixture models express the overall population distribution as a mixture of *unknown* groups or components. The peculiarity of LCA among the other mixture models (e.g., Latent Profile Analysis) is that LCA uses exclusively categorical indicator variables.

Thus, LCA allows one to obtain latent variables starting from observed categorical variables. This is possible also with the more familiar latent variable factor models. But LCA is different from factor models for two main reasons (Masyn, 2013). First, LCA – as a mixture model – produces *categorical* latent variables (i.e. classification), whereas factor models produce

continuous latent variables (i.e. factors). Second, LCA is a *person-centered* approach, while factor models are a *variable-centered* approach. Person-centered approaches describe similarities and differences among individuals with respect to how variables relate to each other and are based on the assumption that the population is heterogeneous with respect to the relationships between variables. Instead, variable-centered approaches describe associations among variables and are based on the assumption that the population is homogeneous with respect to the relationships between variables (Laursen & Hoff, 2006).

In sum, using LCA means assuming that the population is heterogeneous with respect to the relationships between some categorical indicators, and organizes this heterogeneity by classifying the subjects in a mixture of unknown homogeneous groups.

When the categorical indicators on which latent class variables are based are collected at more time points (longitudinal design), there are two approaches to analyzing these data by means of LCA (Collins & Lanza, 2010): Repeated-Measures LCA (RMLCA) and Latent Transition Analysis (LTA). The first approach is suitable when the researcher wants to identify latent classes characterized by different patterns of change over time. The second approach is a variation of the latent class model that is designed to model both the prevalence of latent class membership at each time point and the incidence of transitions over time in latent class membership. In other words, the RMLCA requires one to perform only one LCA with all the time points' indicators included in the same analysis. Instead, LTA performs one LCA for each time point (using only the indicators belonging to that time point) and describes the transition that participants made from one class to another across times. Consequently, the outcome of RMLCA is the individuals' class membership at the only latent class variable, while the outcomes of LTA are both the class membership at each

time point and the individuals' *transition* from one class to another over time (Petras, Masyn, & Ialongo, 2011). This new opportunity to measure transitions over time made me interested to LTA.

Statistically, the LTA consists of a longitudinal autoregressive model, where the latent class variable at time 1 is auto-regressed on the latent class variable at time 2, the latent class variable at time 2 is auto-regressed on the latent class variable at time 3, and so on[6].

In sum, the LTA model combines cross-sectional measurement of categorical latent variables (i.e., LCA) and longitudinal description of change in the categories of the latent variable over time (i.e., transitions). Furthermore, a LTA model allows testing the relation of latent class variables as well as transitions with predictors and/or outcomes. This kind of model is referred as a "conditional LTA model".

To test a conditional LTA model, 5 steps of analysis are required (Nylund, 2007):

Step 0: Study Descriptive Statistics

The application of the LTA model begins by exploring the variables used in the analysis. This descriptive exploration should be executed for each variable used at each time point in the analysis. Statistics can be compared within each time point as well as across all time points to note general trends.

Step 1: Study Measurement Model Alternatives for Each Time Point

The use of multiple measures at each time point in the LTA model necessitates the selection of a measurement model that is independently explored at each time point (i.e., one LCA for each time point). To perform an LCA means fitting several possible measurement models (i.e., model with different number of sub-groups/classes) and then comparing fit information on each model to determine which model is most appropriate for the given application. To select the appropriate

[6] For the sake of simplicity, in the text that follows I refer to LTA considering only two time points.

measurement model (i.e., the appropriate number of classes to describe the heterogeneity in the sample) researchers have to assess the statistical model (absolute and relative) fit information, as well as the interpretability and appropriateness of the solution for the larger longitudinal study.

Step 2: Explore Transitions Based on Cross-Sectional Results

After the "best" LCA solution has been selected for each time point, cross-sectional results can be used to describe change. Specifically, individuals can be assigned, at each time point, to their most likely latent class using modal class assignment. The class membership of each time can be crossed by cross-tabulations in order to get a preliminary idea of the type of movement occurring in the sample.

Also, during this step, formal measurement invariance testing takes place to verify if the obtained measurement model is invariant across time. Specifically, the full invariant model (i.e., same item-response probabilities – correspondence between the observed indicators and the latent classes – across time points) is compared with the baseline model (i.e., item-response probabilities free to be different across time points) by the chi-square difference test based on loglikelihood values (Johnson & Wichern, 2002). Full Measurement Invariance is not a necessary condition for the analysis' steps. At the same time, measurement invariance generates conceptual and practical advantages (for more details, see Collins & Lanza, 2010).

Step 3: Explore Specification of the Latent Transition Model without Covariates

This step is the first one involving a formal longitudinal model. The autoregressive path from the latent class variable at time 1 to the latent class variable at time 2 has to be added to the model. Results of this autoregressive path are expressed by transition probabilities that consist of the probability of transitioning from a particular latent status at time *t* to another latent status at time

t+1. In other words, they correspond to the subjects' probabilities of belonging to a specific class at time 2, given their class membership at time 1 (Collins & Lanza, 2010).

In performing this third step, researcher can also require some transition probability specifications (e.g., set to zero transitions that are not expected by theory).

Step 4: Include Covariates in the LTA Model

Once the LTA model has been specified, covariates are included in the model. Covariates can be observed or latent. Observed covariates are variables already present in the database, while latent covariates are included in the model in the form of a higher-order latent class variable (for example, a mover-stayer latent variable, which is a higher-order latent covariate that can explore the stability of class membership over time).

Step 5: Include Distal Outcomes and Advanced Modeling Extensions

After a final model with covariates is selected, it is possible to include distal outcomes in the model. Specifically, distal outcomes are variables measured after the period in which the other variables of the longitudinal model were collected (Nylund, 2007).

Despite its length and complexity, Latent Transition Analysis is a useful approach to applied research. It has been used above all in research about addictive behavior, including smoking behavior (Martin, Velicer, & Fava, 1996), substance use behavior (Chung, Park, & Lanza, 2005), and caffeine use (Collins, Graham, Rousculp, & Hansen, 1997). Social science research, too, has adopted LTA to study complex phenomena such as family intervention (Connell et al., 2008) and peer victimization (Nylund, 2007).

2.2. Why does literature on emerging adults' financial well-being need it?

LTA is a great opportunity for literature on emerging adults' financial well-being and, in general, for all the literature about emerging adulthood. Indeed, emerging adults are subjects in *transition* towards adulthood. The tracking of the transition emerging adults make as well as the investigation of the relationship that this transition has with other variables (e.g., financial well-being) can generate new relevant knowledges.

Emerging adults are expected to *transition* from the social roles of adolescence to those of adulthood. Starting in the 1970s, sociologists and social historians suggested that becoming an adult in contemporary society could be conceptualized as a process of achieving five social role transitions: completion of education, finding full-time career work, leaving the parental home, entry into marriage, and becoming a parent (Billari & Liefbroer, 2010; Mouw, 2005; Settersten, 2012).

Although the sequence in achieving these roles may vary, completing most, if not all, of these role transitions is often considered the standard for reaching adult status. Consequently, I refer to the "transition to adulthood" as the entire process extending from adolescence to adulthood during which the emerging adult has to reach different adult roles. This process is no more a short span of time made up of precise steps, but a long transition characterized by numerous micro-transitions (Scabini, Marta, & Lanz, 2007). This variation in timing and achievement of these adult roles makes the measurement of this overall transitional process difficult. Specifically, it is possible to identify two main difficulties in measuring the transition to adulthood as research object: (1) to take in consideration all the different role transitions at the same time; (2) to measure not only the

static information (e.g., the adult roles achieved in a specific moment) but also the transitional process (e.g., how the adult roles' achievement happens over time).

As consequence of the first difficulty, much of the research on the transition to adulthood focuses only on a single social role, e.g., education (e.g., Crocetti et al., 2015), leaving the parental home (e.g., Zupančič, Komidar, & Levpušček, 2014), parenthood (e.g., Knoester & Eggebeen, 2006), or marriage (Jourard & Lasakow, 1958). Considering one transition at time means to not take in account how these different aspects of the transition to adulthood weave together in people's lives. Just as the concept of adulthood cannot be represented considering only one adult role transition at time, in the same way adulthood cannot be reduced to the number of the role transitions already achieved. The achievement of completed education and an independent living arrangement (two adult roles achieved) cannot be considered as equivalent to the achievement of the marriage and the parenthood transitions (two adult roles achieved). I argue that it is necessary to consider both the specific achieved adult role transitions as well as the different configurations that these roles can create together. In the last decade, some studies (e.g., Eliason, Mortimer, & Vuolo, 2015; Schoon, Chen, Kneale, & Jager, 2012) tried to measures the different *adult role configurations* present in a population by adopting a person-oriented approach (in most of these cases, Latent Class Analysis). As already said, the LCA approach assumes that the population (e.g., emerging adults) is heterogeneous with respect to the relationships between specific categorical indicators (e.g., adult roles), and then organizes this heterogeneity by classifying the subjects into homogeneous groups. In this case, each subgroup is identified by a specific *configuration* of the five adult roles (e.g., one configuration can represent emerging adults that have completed education, have left parental house, have a stable job, are not married and have no child). Role configurations identified though LCA are data-driven and not theory-driven: the

sample is not classified according all the possible role configurations (i.e., theory driven), but only the configurations that best describe the sample are taken into consideration (i.e., it is data driven).

In sum, by detecting different adulthood configurations in the sample, it is possible differentiate the participants in terms of both their *level* of adulthood (i.e., number of adult role already reached) and their *profile* of adulthood (e.g., two adulthood configurations can have the same number of adult roles reached, but these roles can be different in the two configurations). Consequently, in this manuscript the expression "adulthood configuration" was used to refer to different combinations of reached adult roles that characterized the emerging adult in a specific moment.

Specifically, the studies that applied LCA to American (Eliason et al., 2015; Fomby & Bosick, 2013; Maggs, Jager, Patrick, & Schulenberg, 2012; Oesterle, Hawkins, Hill, & Bailey, 2010; Osgood et al., 2005; Sandefur, Eggerling-Boeck, & Park, 2005) and Northern Europe (Salmela-Aro, Kiuru, Nurmi, & Eerola, 2011; Salmela-Aro, Taanila, Ek, & Chen, 2012; Schoon et al., 2012; Robette, 2010) emerging adults obtained from 4 to 7 different *adulthood configurations* (i.e., different combinations of reached adult roles).

Even if these studies represent great progress in the comprehension of the transition to adulthood and overcome the first difficulty met in studying the transition to adulthood, they reveal only the different adulthood configurations that emerging adults have in a specific moment of their life (i.e., static information). They measured adulthood configurations but not the change of these configurations over time. As said, "adulthood" is a goal that emerging adults reach only after a long process. To measure adulthood configurations is important but not sufficient to describe emerging adults' pathway towards adulthood. The achievement of full adulthood is obtained by a

transitional process, and consequently it is important to measure the way in which people transition from one adulthood configuration to another long this process.

This is the reason why I think that LTA is a great tool for research on emerging adulthood. LTA can track the *transition* that the subjects made from a combination of adult roles (i.e., adulthood configuration) at time 1 to another combination (i.e., adulthood configuration) at time 2, offering dynamic information (VS static information). Furthermore, a conditional LTA model also allows checking if this transition affects or is affected by other variables (e.g., financial well-being).

2.3. How did I apply it?

The literature about emerging adults' financial well-being should investigate the subjects' (subjective and objective) financial well-being during their *transition* to adulthood. As seen, during this period many changes happen to subjects about their adulthood configuration. Consequently, researchers are interested in understanding how these configurations and their changes (i.e., transition from a configuration to another) relate to subjects' financial well-being.

Actually, two studies have already investigated the relation between emerging adults' adult role transitions and their financial well-being. Specifically, in 1999 Marin Clarkberg tested the impact that objective financial well-being has on the transition to cohabitation and or marriage. She found that those who had higher income were more likely to cohabit or marry than those had lower income. In contrast, in 2013 Malgorzata Switek studied the same relationship, but in the opposite direction: the role transition was hypothesized to be affecting financial well-being. Specifically, three social role transitions were investigated as predictors of emerging adults' financial satisfaction (i.e., subjective financial well-being). The role transitions analyzed were the

school-to-work transition (completed education), changes in partnership status (marriage and divorce), and the parenting transition. Findings showed that transitions most common to the younger age intervals (marriage, the school-to-work transition, and parenting younger children) were accompanied by positive changes in the financial satisfaction. Conversely, transitions more common after the age of 30 (divorce and parenting older children) were accompanied by lower financial satisfaction.

These two studies are important because they show that there is a relation between transitions towards adulthood and financial well-being. At the same time, these two studies shared two main limitations. First, both studies are *correlational*, so they do not allow identifying the real direction of the causal relationship between role transitions and financial well-being. The two studies also addressed two different hypotheses: Marin Clarkberg sees financial well-being as a predictor of role transitions, while Malgorzata Switek defines role transitions as predictors of financial well-being. However, their cross-sectional data do not allow testing causal hypothesis. The second shared limitation is that both studies measure the transition to adulthood *reducing too much its complexity*. Specifically, both Clarkberg (1999) and Switek (2013) consider one role transition at time, not considering that these role transitions weave together in people's lives generating different adulthood configurations.

Consequently, I decided to investigate the relationship between transition to adulthood and financial well-being overcoming these literature's limitations. First, I set up a *longitudinal* study where data on transition to adulthood and financial well-being were collected at two time points. In this way, I could assess the direction of the causal relationship between transition to adulthood and financial well-being and/or if this casual relation is reciprocal. Second, I tried to capture *the complexity* of the research object "transition to adulthood" considering all the role transitions

implied as well as the changes emerging adults make over time. The complexity of the transition to adulthood was measured through an LTA model that allowed measurement of the adulthood configuration at each time point (LCA) and tracked how subjects changed their configuration over time (transition probabilities).

Previous studies (e.g., Eliason et al., 2015; Schoon et al., 2012) that measured role transitions' combinations applying the LCA, used the "big five" social transitions (completion of education, finding full-time career work, leaving the parental home, entry into marriage, and becoming a parent) that are objective adulthood markers. I argue that objective transitions to adulthood are not enough. The delay in achieving the big five adult transitions, combined with the changes in achieving this sequence, have resulted in recent research focusing on subjective sense of "adultness" as a way to measure progress toward adult status in order to understand what determine this sense of "adultness" and the relationship with the objective markers. For example, recent qualitative studies document the ambivalence contemporary youth experience about their subjective sense of acquisition of adult identity, given the absence of clear "rites of passage" and the highly individualized character of the transition to adulthood (Aronson, 2007; Hartmann & Swartz, 2007; Silva, 2012). Consequently, the current study extends the conceptualization of adulthood (including also the subjective acquisition of adult identity) and respectively the transition towards adulthood is seen as a process during which the emerging adult has to reach different observable social role transitions (completion of education, finding full-time career work, leaving the parental home, entry into marriage, and becoming a parent) as well as the subjective sense of adult status (self-perception of being adult).

Current study's aim

In sum, the current study aimed to *test the reciprocal causal relationship* between emerging adults' adulthood configuration[7] and financial well-being[8].

An accepted way to verify which is the real direction of relationship between two variables and/or if both directions are plausible (i.e., reciprocal causal relationship) is to measure the variables of interest multiple times in the same subjects. As Little, Card, Preacher, and McConnell (2009) pointed out, longitudinal study allows the researcher to make qualified inferences regarding the cause – effect relations among constructs.

Specifically, this kind of research design requires the predictor at least at time 1 and the outcome at least at time 2. In the current study, the variables of interest (adulthood configuration, *AC*, and subjective financial well-being, *SFWB*) were collected at both time 1 and 2. In this way it was possible to verify if AC1 (adulthood configuration at time 1) affected SFWB2 (subjective financial well-being at time 2) controlling for the level of SFWB at time 1. Vice versa, it was possible to test if SFWB1 (subjective financial well-being at time 1) affected AC2 (adulthood configuration at time 2) controlling for the level of AC at time 1. This longitudinal model with two variables measured at two times is called a "cross-lagged panel design" (Kenny, 2005). This design

[7] Some of the analysis I used in this study allowed investigating the predictors of the adulthood configuration that a subject had at time 2, considering also the adulthood profile s/he had a time 1. In this way, the outcome was not the simply adulthood configuration at time 2 (static information), but actually the "*transition* to adulthood" (dynamic information).
[8] In the current study, I am primarily interested in subjective financial well-being. At the same time, I am aware that a higher level of objective financial well-being produces a higher level of subjective financial well-being (Shim, Xiao, Barber, & Lyons, 2009) as well as a smoother transition to adulthood (Clarkberg, 1999). Consequently, I investigated the relationship between subjective financial well-being and the adulthood configuration, controlling for objective financial well-being.

also implies autoregressive paths. So AC1 was considered as a predictor of AC2, and SFWB1 was considered as a predictor of SFWB2 (see Figure 2.1).

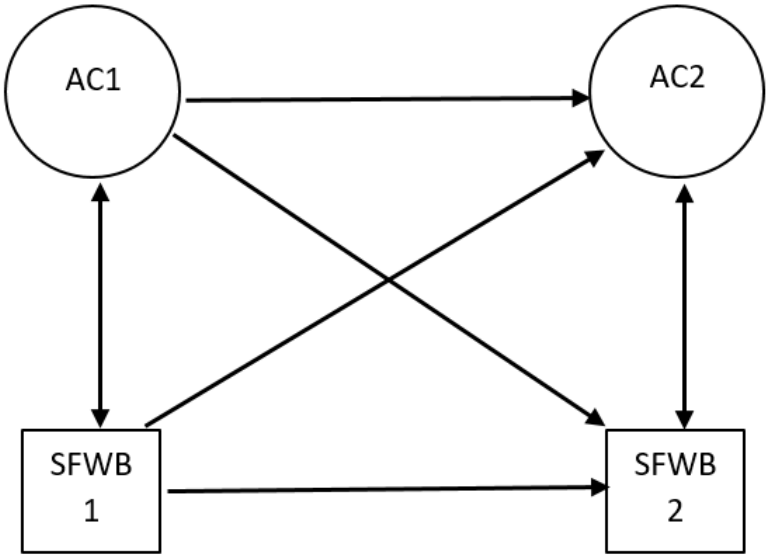

Figure 2.1. *Cross-lagged model to test the causal reciprocal relation between Adulthood Configurations (AC) and the Subjective Financial Well-Being (SFWB)*

Before drawing conclusions about the relationship between AC and SFWB, an alternative explanation had to be controlled. The relation between AC and SFWB might not be due to AC causing SFWB and/or vice versa, but rather to the mutual reliance of AC and SFWB on the same third variable. According to Little et al. (2009), the most authoritative rebuttal to the third variable problem is to actually measure and include the third variable in one's model. I expected mutual reliance of AC and SFWB on the objective dimension of financial well-being. Indeed, objective financial well-being can prompt someone to undertake a role transition (Clarkberg, 1999) and can make him/her feel higher level of financial satisfaction (Shim, Xiao, Barber, & Lyons, 2009).

Objective financial well-being is not determined only by the material resources that emerging adults obtain (e.g., personal income) but also from the resources they lose (i.e., debt). Researchers

point out that debts affect the emerging adults' subjective financial well-being more than income (Xiao, Tang, & Shim, 2009) and for this reason I decided to use emerging adults' debt, at both time points, as a control variable. Note that I distinguished between two different kinds of debt (student loan, *SL*, vs. other kinds of debt, *OD*) because the literature suggests that American young adults typically perceive them differently. Student loans are perceived as investments that support long-term achievements (Dwyer, McCloud, & Hodson, 2012). Consequently, student loans and the other kinds of debt were separately considered as control variables at both times. To control the dependence between these third variables across times, autoregressive paths had to be included also for the control variables.

Note that the third variable problem can never be fully ruled out, as there are a potentially infinite number of third variables. At the same time, analysis of panel models, in which the most theoretically viable third variable causes are controlled, allows to build a strong case for causality (Little et al., 2009).

Current study's hypotheses

The just presented cross-lagged panel model implies different relationships, about which I had the following hypotheses (see Figure 2.2):

H1: subjective financial well-being at time 1 (SFWB1) will predict adulthood configurations at time 2 (AC2);

H2: adulthood configurations at time 1 (AC1) will predict subjective financial well-being at time 2 (SFWB);

H3: adulthood configurations at time 1 (AC1) will predict adulthood configurations at time 2 (AC2);

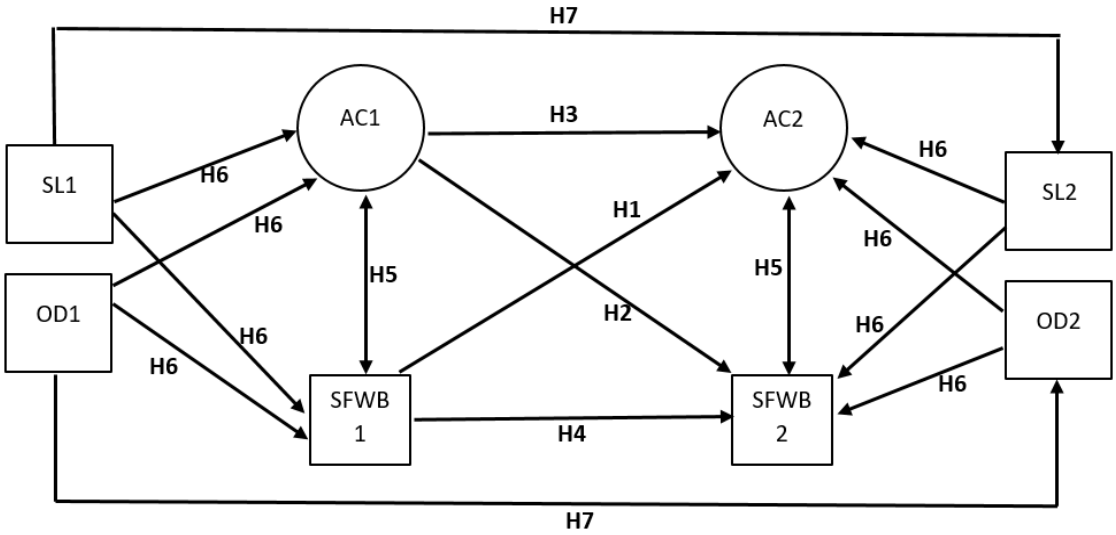

Figure 2.2. *Hypotheses to test*
AC= Adulthood Configuration; SFWB= Subjective Financial Well-being; SL= Student Loan; OD= Other kinds of Debt. The two time points are indicated by 1 and 2.

H4: subjective financial well-being at time 1 (SFWB1) will predict subjective financial well-being at time 2 (SFWB2);

H5: subjective financial well-being (SFWB) and adulthood configuration (AC) will have a significant relationship within each time point;

H6: the presence of debt (both student loan, SL, and other kinds, OD) will be significantly related to both adulthood configuration (AC) and subjective financial well-being (SFWB) within the same time point;

H7: the presence of debt (both student loan, SL, and other kinds, OD) at time 1 will predict the presence of debt at time 2.

If both H1 and H2 are verified, the causal relationship between adulthood configurations and subjective financial well-being can be considered reciprocal.

Methods

Participants

Participants for the present study are drawn from the Arizona Pathways to Life Success (APLUS), a longitudinal study launched in 2008 to examine the associations between young adults' financial behaviors and subsequent well-being (Shim et al., 2009). Five waves of data have been collected to date: Wave 1 baseline data, collected in spring 2008 (all participants were freshmen); Wave 1.5 economic impact data (i.e., aiming to reveal the effect of the 2008 economic crisis), collected in spring 2009; Wave 2 data, collected in fall 2010; Wave 3 data, collected in spring-summer 2013; and Wave 4, collected in summer 2016. Modest financial incentives were provided to encourage participation in all the waves.

The present study relied on data from Wave 2 and Wave 3, as this is when the data about adult social roles were collected. A total of 1,511 participants completed the Wave 2 survey collected in the fall semester of 2010, resulting in a 72% return rate. The majority of the participants were still students (97.6%, n=1475); 1.9% (n=28) had already graduated and 0.5% (n=8) did not graduate and were no longer enrolled in college. Third wave data were collected in the summer of 2013, providing 977 usable surveys, resulting in a 65% return rate. The majority of the participants had completed their undergraduate degree (88.2%, n=862); 32.4% (n=289) were enrolled in graduate school.

Because the focus of this study was to assess participants' progress in achieving adult milestones from wave 2 to wave 3 (referred in the current study as time 1 and time 2), only those participants who completed both waves of the survey (N=967) were potential subjects for the current study. However, it was not possible to retain all those subjects because of the decision to

conduct Latent Class Analysis (LCA). LCA employs a full information maximum likelihood (FIML) method to handle missing data on indicators of class membership. Consequently, people with missing data for all the six LCA indicators (i.e., six role transitions within the same wave) could not be included in the analysis: six subjects were removed from the sample for this reason. Furthermore, FIML cannot accommodate additional missingness on predictors of the latent class variable; therefore, an additional 40 observations missing covariates of interest (e.g., financial well-being) were also excluded (Collins & Lanza, 2010; Garnett et al., 2014).

On the remaining 920-subject sample, univariate outliers were checked by examining the z scores of all the continuous variables. Age was the only variable for which absolute values of the z scores exceeding 3.29 were found (Tabachnick & Fidell, 2013). Age at time 1 ranged from 20 to 43, but only seven subjects (i.e., outliers) were aged over 25 (26-43 years old) so they were removed from the sample. The final analytic sample consisted of 913 subjects, aged 20-25 (M=21.34; SD=.56) at time 1 (in 2010) and, consequently 23-28 at time 2 (in 2013). Overall, subjects' age fit the emerging adulthood stage of life (18-29 years old; Jensen & Arnett, 2012). The majority were female (64.9%) and in-state students (75.4%). The family socioeconomic status (SES) of the sample included 42.5% from lower SES families, 31% from middle SES families, and 26.4% from higher SES families.

This final analytic sample consists of 94.42% of participants who took part in both Wave 2 and Wave 3. Comparing subjects excluded from the analyses to subjects included, no significant differences were found by race/ethnicity ($\chi^2(6)=4.334$; p=.632), gender ($\chi^2(1)=1.254$; p=.263), residence ($\chi^2(2)=5.208$; p=.074), parental socio-economic status ($\chi^2(2)=1.093$: p=.579), or GPA ($\chi^2(4)=8.772$; p=.067). Of course, the age was significantly different across the two groups. This difference was due to the deletion of outliers for the age variable. When these outliers were

removed from the comparison sample, no more significant differences were detected (t (949) = .508; p=.612).

Instruments

Adulthood Configurations. At both time 1 and time 2, the "transition to adulthood" was operationalized in a static way describing the subjects' configuration of adult roles (i.e., adulthood configuration). There were six role transitions used at each time point as indicators of the latent class variable (i.e., variable that classifies people into subgroups homogeneous for their configuration): five objective roles and one subjective role. All the variables measuring these six role transitions were recoded as dummy markers (where 0 indicated that the adult role was not yet reached, while 1 indicated it was already reached).

Completed education (E). The first adult role consisted of the end of the education. In other words, this variable separated people who finished their education from people who did not. The moment at which a young adult closes his/her educational path is usually a turning point in his/her life (Eccles, Templeton, Barber, & Stone, 2003). It does not matter if s/he is finishing high school, college or a master's degree. What matter is not seeing his/her-self as a student any more. This is the reason why I differentiated subjects who completely finished their education (E=1) from who were still enrolled as a bachelor's or master's degree student (E=0).

Financial self-sufficiency (F). The second adult role consisted of being financially self-sufficient, i.e., no longer receiving financial support from parents (Hill, van der Geest, & Blokland, 2017). This dummy variable classified people who were financially dependent on their parents/relatives (F=0) from people who were totally independent (F=1). Note that most of the previous studies on the transition to adulthood use the "work transition" (i.e., become a worker)

instead of the "financial independence" transition to identify this adult role. I preferred to use financial self-sufficiency as a marker of adult role because American emerging adults think that, in order to be a real adult, total financial independence from parents is necessary (Arnett, 1998). To start a job is not sufficient, as nowadays young people have a greater range of employment experiences before reaching financial self-sufficiency (Settersten, 2012).

Live apart from parents (or relatives)' home (L). To leave the parents' house is something really relevant for the transition to adulthood according the emerging adults themselves (Arnett, 1997). It is the first occasion they have to completely take care of themselves. They are totally responsible for themselves. Consequently, I distinguished who lived with parents or adult relatives (L=0) and who did not (L=1).

Mature romantic relationship (M). Being able to be committed in a stable and mature romantic relationship is also a marker of adulthood (Settersten, 2012). Marriage is no longer the only indicator of a stable and mature relationship (Aleccia, 2013; Settersten, 2012). I preferred to consider cohabitation as sufficient to define having achieved this adult role, in order to best fit the new trends in emerging adulthood. Consequently, this variable distinguished between people who live with their partner (cohabitation or marriage; M=1) from those who did not (M=0).

Parenthood (P). The last objective adult role is parenthood. Both at time 1 and 2 I distinguished people who had at least one child (P=1) from people who did not (P=0).

Self-perception of being an adult (S). Finally, the last adult role is the subjective one. I distinguished emerging adults who considered themselves as totally or in most ways adults (S=1) from people who did not consider themselves adults at all or only in some ways (S=0).

Subjective financial well-being. At both time 1 and 2, subjective financial well-being was measured by three items (I am satisfied with my current financial status; I have difficulty paying

for things; I am constantly worried about money) evaluated on a 5-point scale (from 1= Strongly Disagree to 5= Strongly Agree). Specifically, the subjective financial well-being indicator was the score of the factor composed of these three items. The "subjective financial well-being" factor score can be considered an adequate measure at both waves, as the factor's percentage of explained variance was 73.31% and 73.88%, respectively at time 1 and 2. Furthermore, this factor's internal consistency (Cronbach Alpha) reached more than adequate levels: .817 and .823 respectively at time 1 and 2.

Objective financial well-being. The emerging adult's objective financial status was operationalized using two measures of debt: student loan and other kinds of debt. The variable "student loan" distinguished people who incurred debt to pay their tuition (student loan=1) from people who did not (student loan=0). The variable "other debt" distinguished people who had credit card debt, and/or mortgage debt, and/or other personal debts other than student loans (other debts=1) from people who did not (other debts=0).

Data Analysis

To verify this study's hypotheses, a cross-lagged model including two latent variables obtained by Latent Class Analysis (to identify adulthood configurations) was needed. This model is actually a *conditional LTA model* because: (1) the cross-lagged model requires an autoregressive path between the latent class variable at time 1 and the latent class variable at time 2 and the LTA exactly consists in this longitudinal autoregressive model among two latent variables obtained by LCA; (2) this autoregressive path is included in a model with other covariates so the LTA model is defined conditional.

As already explained, to apply a conditional LTA model, five analysis steps are required (Nylund, 2007). Here the way in which these steps[9] were realized in the current study was reported.

Step 0: Study Descriptive Statistics. Descriptive exploration of each variable included in the model was done using SPSS software (IBM Corp., 2011).However, the, analyses presented in next steps were all performed using Mplus software (Muthén & Muthén, 1998-2014).

Step 1: Study Measurement Model Alternatives for Each Time Point. Separately for each time point, LCA was performed to identify subject subgroups homogeneous for their adulthood configuration. To perform a LCA means fitting several possible measurement models (i.e., latent class variables with different number of classes, *k*) and then comparing fit information on each model to determine which model is most appropriate for the given application. The selection of the best measurement model was based on the models' (absolute and relative) fit information as well as on models' interpretability (classification diagnostics).

As measures of **absolute model fit** the Likelihood Ratio Chi square goodness-of-fit (χ^2_{LRT}) and the standardized residuals for each response pattern were consulted. For the Likelihood Ratio Test, the null hypothesis is that the proposed LCA model adequately fits the data. A significant p-value indicates a lack of adequate model fit (Agresti, 2002). Consequently, for the absolute fit, the best model should be the model with the fewest number of classes that did not reject the null hypothesis (p-value >.05). Standardized residuals are constructed using the same information that goes into the overall goodness-of-fit test statistic (the model-estimated response pattern frequencies and the observed frequencies), so it can be used as a measure of absolute model fit.

[9] I performed only 4 out of 5 steps. The last step (Step 5: Include Distal Outcomes) consists in including distal outcomes in the model. I did not perform this last step because I did not have any distal outcome in the model. Even if this model required to test the subjective financial well-being at time 2 (SFWB2) as outcome of latent class at time 1, SFWB2 cannot be considered as a distal outcome. Indeed, distal outcomes are variables measured after the period considered by the longitudinal model (Nylund, 2007). In the current case, they should be variables measured after 2013 (i.e., after time 2), but this is not the case. Furthermore, in the model the "outcome" subjective financial well-being at time 2 (SFWB2) is also a covariate of the latent class variable at time 2 (AC2). For these two reasons, the variable SFWB2 was included in the model during step 4 as covariate.

Specifically, the absolute fit was considered good when the number of standardized residuals with large values (i.e., > |3|) did not exceed 5% (Masyn, 2013).

As a measure of **relative model fit,** both statistical tests and descriptive measures were used. The statistical tests adopted were the adjusted Lo-Mendell-Rubin likelihood ratio test (adjusted LMR-LRT; Lo, Mendell, & Rubin, 2001) and the parametric bootstrapped likelihood ratio test (BLRT; McLachlan & Peel, 2000). They both compare a (*k*-1)-class model with a *k*-class model, and a statistically significant p-value suggests the *k*-class model fits the data significantly better than a model with one less class. Conversely, if it is not significant, the *k*-class model is as good as the (*k*-1)-class model, so the (*k*-1) class model has to be preferred according the parsimony criterion.

As descriptive measures of relative model fit, I referred to two Information Criteria (IC) and two of their derivatives. Specifically, the Akaike Information Criterion (AIC; Akaike, 1987) and the Bayesian Information Criterion (BIC; Schwarz, 1978) were adopted. Smaller IC indicate better fit. Furthermore, the Schwarz Information Criterion (SIC; Schwarz, 1978) – which corresponds to -0.5*BIC – is the base for the equation of two other descriptive measures of relative model fit: the approximate Bayes Factor (BF) and the approximate Correct Model Probability (cmP) that have been both popularized by Nagin (1999). The BF compares two models at a time (*k* and *k*+1 model). The best model is the most parsimonious *k*-class model with BF>3. Instead, the cmP compares all models under consideration. In this case, any model with cmP >.10 could be considered a candidate model, but usually the best model is the one with the highest value of cmP.

After having selected the best models according to model fit, the **diagnosis of the classification** can be made with these most plausible measurement models in order to evaluate their interpretability (Masyn, 2013). The most common diagnostic of the classification is relative

Entropy (E_k). E is equal to 0 when posterior classification is no better than random guessing, and equal to 1 when there is perfect posterior classification for all individuals in the sample. Entropy values higher than .70 are desirable (Ramaswamy, DeSarbo, Reibstein, & Robinson, 1993). Another way to evaluate the classification consists of comparing the model-estimated proportion for class k, called class proportion (π_k) with the modal class assignment proportion ($mcaP_k$). Classification results can be considered good when, for each class, the $mcaP_k$ is included in the 95% CI of the π_k (Masyn, 2013). The average posterior probability ($avePP_k$) corresponds to the average of the posterior probabilities related to class k for all the subjects whose maximum posterior class probability is for that class (i.e., individuals modally assigned to class k). An $avePP_k$ value of .70 or higher suggests well-separated classes (Nagin, 2005). Finally, the odds of correct classification (OCC_k) is a class specific diagnostic that measures the certainty of classification of individuals. Generally, an OCC_k above 5 is considered desirable (Nagin, 2005).

This evaluation process was done separately for each time point, but the selection of the most appropriate measurement model for each time point was done after the evaluation of both times' LCA, in order to consider their appropriateness for the larger longitudinal study (Nylund, 2007).

Step 2: Explore Transitions Based on Cross-Sectional Results. Before building the longitudinal model (i.e., LTA model), the cross-sectional LCA models were used to: (1) explore transitions from time 1 classes to time 2 classes and (2) to test measurement invariance across times.

To get a preliminary judgment of the type of movement occurring in the sample, individuals were assigned to their most likely latent class (i.e., adulthood configuration) using modal class assignment, and their changes over time were explored by cross-tabulation.

To verify if the measurement model was invariant across time, the full invariant model (i.e., same item-response probabilities across two times) was compared with the baseline model (i.e., item-response probabilities free to be different across two times) using the chi-square difference test based on loglikelihood values (Johnson & Wichern, 2002). When full invariance could not be assumed, the partial invariance was tested.

Step 3: Explore Specification of the Latent Transition Model without Covariates. This step is the first one involving a formal LTA model. The autoregressive path from "adulthood configuration" at time 1 to "adulthood configuration" at time 2 was added to the model.

The longitudinal LTA solution was describe by three estimates: item-response probabilities, latent status membership probabilities, and transition probabilities (Collins & Lanza, 2010).

The item-response probabilities reflect the correspondence between the observed indicators of the latent variable and latent class membership at each time point (Collins & Lanza, 2010). These item-response probabilities were expected to be very similar to the ones found before adding the auto-regressive path.

The latent status membership probabilities reflect the proportion of individuals belonging to a specific class at a specific time point (Collins & Lanza, 2010).

The transition probabilities instead reflect the probability of transitioning from a particular latent status at time t to another latent status at time t+1. In other words, they correspond to the probabilities of membership in the latent statuses at time 2, given latent status membership at time 1 (Collins & Lanza, 2010).

Finally, constraints were imposed on some transition probabilities in order to test if transitions that go in a direction that is opposite from the transition to adulthood were significantly present in

the sample. Specifically, transitions in which subjects lose adult roles (e.g., they moved back in with their parents) were constrained to be equal to zero.

Step 4: Include Covariates in the LTA Model. Once the LTA model was specified, covariates were included in the model. The current model had six covariates: subjective financial well-being at time 1 and time 2, student loan at both time 1 and 2, and other kinds of debt at both time 1 and 2. This is the step in which I tested my hypotheses. Specifically, to test H1 I applied the procedure, proposed by Muthén and Asparouhov (2011), to verify how a continuous covariate affects transition probabilities. This procedure (named parameterization 2) consists of estimating the impact of the continuous variable (subjective financial well-being at time 1) on the latent class at time 2 separately for each time 1 class. In this way, the researcher can verify how the transition probabilities matrix changes when the value of the covariate changes. Specifically, I estimated the latent transition probabilities related to two specific values of the covariate (i.e., subjective financial well-being): its mean and its standard deviation, as suggested by Muthén and Asparouhov (2011).[10]

The second hypothesis (H2) required investigation of the latent class variable's impact on a continuous outcome. As suggested by Nylund (2007), a different mean of the subjective financial well-being at time 2 was estimated for each class of time 1. Using the Wald Test, these means were compared to determine if there was a significant difference across classes in terms of the outcome (Nylund, 2007).

[10] This procedure allows for testing the impact that financial well-being at time 1 has on the *transition* the subjects made between time 1 and time 2 and not simply on the adulthood profile of the subject at time 2. In other words, the impact of financial well-being at time 1 on the latent class variable at time 2, which takes into consideration also the profile of the subject at time 1.

All the other hypotheses were tested, including a regression path in the overall model. As Mplus does not estimate correlations that involve a latent class variable, a regression path was required to also test H5 (even if this hypothesis consisted in a covariation and not in a regression).

The model fit of the conditional model (i.e., model with the covariates) was compared to the unconditional model (i.e., model without the covariates). There is not one commonly accepted way to assess overall model fit for LTA models (Nylund, 2007). The frequency table chi-square statistics (either Pearson or Likelihood Ratio-based) is not recommended for the LTA model (McLachlan & Peel, 2000). An alternative way to assess relative model fit consists of using residuals. Specifically, a response pattern standardized residual that is larger than 1.96 in absolute value is considered a significant residual at the 5% level. The number of significant residuals in the most frequent response patterns (e.g., the 10 most frequent response patterns) were used to compare model fit. The model with a lower percentage of significant residuals should be considered the better fitting model (Nylund, 2007).

Results

Step 0. Descriptive analysis

The descriptive analysis of the variables included in the model is presented in Table 2.1 (dummy variables) and Table 2.2 (continuous variables).

Table 2.1. Percentage of people classified as 1 (= yes) instead of 0 (= no)

	Time 1	Time 2
Completed education (E)	1.1%	62.8%
Financial self-sufficiency (F)	21.8%	39.2%
Live apart from parents (L)	83.5%	80.4%
Mature romantic relationship (M)	11.1%	28.2%
Parenthood (P)	0.8%	2.8%
Self-perception of reaching adulthood (S)	53.9%	64.9%
Student loan (SL)	29.0%	39.3%
Other debts (OD)	37.2%	51.2%

Table 2.2. Descriptive statistics of subjective financial well-being (SFWB)

	N	Minimum	Maximum	Mean	SD	Skewness	Kurtosis
SFWB at time 1	913	-1.91	1.71	0	.91	-.23	-.74
SFWB at time 2	903	-1.95	1.50	0	.91	-.31	-.71

The first section of Table 2.1 shows the percentage of participants who have reached the adult roles at time 1 and 2. As expected, the number of people who have reached these roles increased over time. The only role that does not become more frequent over time is "live apart from parents," which slightly decreased at time 2. This was expected, considering the many college students in the U.S. who come back home after finishing college (Paul, 2001).

The percentage of subjects who reached the "parenthood" transition is very near to zero at both time points. American emerging adults on average become parents when they are 26.3 for females (U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2016) and 27 for males (Stykes, 2011), while the current sample has a mean age of

21[11] at time 1 (and 24 at time 2). Furthermore, the sample consists only in highly educated subjects; national statistics found that the more education subjects have, the later they tend to marry and have children (Pew Research Center, 2010). Thus, the low percentages for parenthood were not unexpected. I decided to do not use this variable as indicator of the latent class variable (i.e., role transitions' combination) because, since it is a sort of constant across the sample, it will be not useful to distinguish across different subgroups (i.e., adulthood configurations).

The second section of Table 2.1 shows how percentages of people with debt (student loan and other debts) are higher in 2013 than 2010. Also this increase was expected because young adults tend to accumulate debt during their transition towards adulthood for expenses like tuition at post-secondary institutions or homes (Friedline & Song, 2013).

Finally, in Table 2.2 details about the factor scores (obtained by Principal Axis Factoring) of the subjective financial well-being scale are reported for both time points.

Step 1. Study Measurement Model Alternatives for Each Time Point

Latent Class Analysis at time 1

Five indicators of adulthood (completed education, financial self-sufficiency, living apart from parents, mature romantic relationship, and self-perception of being adult) were used to describe heterogeneity in the adulthood configuration at time 1. Five different measurement models were compared on their absolute and relative fit (Table 2.3).

[11] Specifically, mean age for male (N=320) and female (N=592) is respectively 21.42 (SD=0,57) and 21.29 (SD=0.55)

Table 2.3. Absolute and relative fit indices for measurement models at time 1

Model	LL	SCF	χ^2_{LRT} (p value)	Stdres	LMR (p value)	BLRT	AIC	BIC	BF	cmP
1-class	-1880.86	1	113.43 (<.001)	20.59%			3771.73	3795.81	.00002	.00002
2-class	-1849.38	1.13	50.47 (<.001)	8.82%	61.453 (.004)	0	3720.77	3773.75	1269.28	.99
3-class	-1836.08	1.03	23.86 (.04)	2.94%	25.973 (.003)	0	3706.16	3788.05	4462446.17	.0008
4-class	-1830.94	1.02	13.59 (.09)	2.94%	10.032 (.075)	.666	3707.88	3818.67	12828856.96	0
5-class	-1826.86	1.003	5.42 (.07)	0.00%	7.972 (.028)	.286	3711.72	3851.40		0

Note. LL= Log likelihood; SCF= Scaling Correction Factor of the robust maximum likelihood estimator; χ^2_{LRT}= Likelihood Ratio Chi square goodness-of-fit; stdres= standardized residuals; LMR-LRT= Lo–Mendell–Rubin likelihood ratio test; BLRT= Bootstrapped Likelihood Ratio Test; AIC= Akaike's Information Criteria; BIC= Bayesian Information Criteria; BF= Bayesian Factor; cmP= approximate correct model Probability.

These indices suggested that the 2- and 3-class models were the most plausible. The only index that suggested a different measurement solution was the χ^2_{LRT}, which suggests the 4-class model as the most appropriate. At the same time, the χ^2_{LRT} is not always reliable because it follows the chi-square distribution only under fairly restrictive conditions (Geiser, 2013). Furthermore, the 4-class model was not preferable, as one of its class was too small (only six members; Masyn, 2013). Consequently, only the 2-class and the 3-class models were retrieved and compared using the classification diagnostics (see Table 2.4).

Table 2.4. Classification diagnostics for the 2-class and 3-class models at time 1

2-class	E_k= .644				
	Class *k*	π_k (95% CI)	$mcaP_k$	$AvePP_k$	OCC_k
	class 1	.155 (.075-.458)	.136	.71	13.28
	class 2	.845 (.541-.924)	.864	.93	2.51
3-class	E_k= .703				
	Class *k*	π_k(95% CI)	$mcaP_k$	$AvePP_k$	OCC_k
	class 1	.222 (.163-.517)	.164	.96	81.97
	class 2	.665 (.417-.737)	.692	.90	4.69
	class 3	.112 (.074-.185)	.143	.69	17.81

Note. E_k= relative Entropy; π_k= class proportion; $mcaP_k$= modal class assignment Proportion; $AvePP_k$ = average Posterior Probability; OCC_k= Odd of Correct Classification.

Other diagnostics being equal, the 3-class solution has higher (i.e., better) Entropy and OCC_k. Specifically (see Figure 2.3), this 3-class solution identified the following adulthood configurations. The first configuration (n=150) had a very *low* degree of adulthood: most of the participants have not reached any of adult roles. Regardless of this, some of this class's members (37%) perceived themselves as adults. A second configuration (n=632) had, on

average, a *medium* degree of adulthood: most of the adult role were not reached, but all the subgroup's individuals lived apart from parents (L=1). Half of the members (53%) perceived themselves as adults. Finally, the third configuration (n=131) had the *highest* level of adulthood as (expect for completed education, E) adult roles were mostly reached. In that group, 92% of the members had a full sense of adultness.

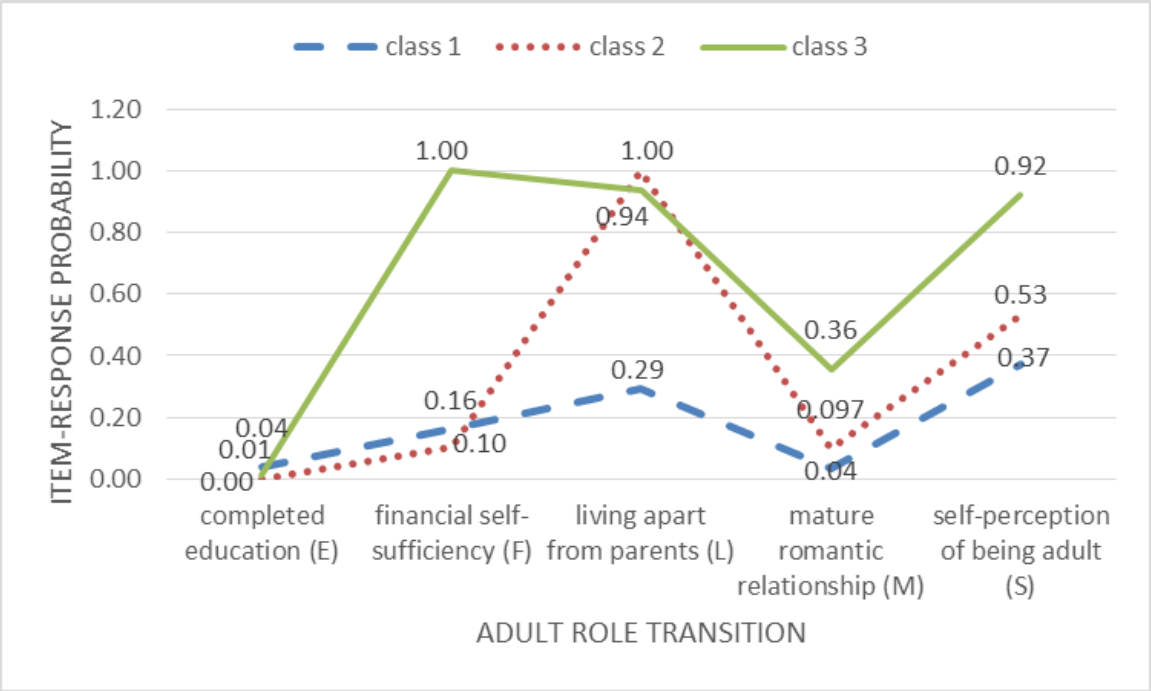

Figure 2.3. *The 3-class measurement model at time 1*

Latent Class Analysis at time 2

The same analysis procedure used for time 1 data was replicated with time 2 data in order to identify the most plausible measurement model at time 2.

The absolute and the relative fit indices of five measurement models were compared (see Table 2.5).

Table 2.5. Absolute and relative fit indices for measurement models at time 2

Model	LL	SCF	χ^2_{LRT} (p value)	Stdres	LMR (p value)	BLRT	AIC	BIC	BF	cmP
1-class	-2754.44	1	297.7 (<.001)	26.92%			5518.88	5542.96	0	<.001
2-class	-2637.65	1.08	64.13 (<.001)	7.69%	228.002 (<.001)	<.001	5297.30	5350.29	0	.004
3-class	-2611.81	1.04	12.45 (.57)	5.77%	50.44 (<.001)	<.001	5257.63	5339.51	23050721.81	.99
4-class	-2.608.32	1.002	5.45 (.71)	5.77%	6.83 (.13)	.33	5262.63	5373.42	161369551.21	<.001
5-class	-2606.76	1.11	2.35 (.31)	5.77%	3.03 (.78)	1	5271.53	5411.21		<.001

Note. LL= Log likelihood; SCF= Scaling Correction Factor of the robust maximum likelihood estimator; χ^2_{LRT}= Likelihood Ratio Chi square goodness-of-fit; stdres= standardized residuals; LMR-LRT= Lo–Mendell–Rubin likelihood ratio test; BLRT= Bootstrapped Likelihood Ratio Test; AIC= Akaike's Information Criteria; BIC= Bayesian Information Criteria; BF= Bayesian Factor; cmP= approximate correct model Probability.

All the indices referred to the 3-class model as the most plausible model. Consequently, this was the only model retrieved for time 2. The classification diagnostics (see Table 2.6) show that this measurement model has sufficient class separation and homogeneity. Indeed, even if the relative entropy is slightly lower than the usual cut-off (.70), all the other diagnostics indicate that this model is adequate.

Table 2.6. Classification diagnostics for the 3-class model at time 2

E_k= .671				
Class *k*	π_k(95% CI)	$mcaP_k$	$AvePP_k$	OCC_k
class 1	.253 (.174-.354)	.194	.99	224.17
class 2	.286 (.127-.418)	.385	.69	5.50
class 3	.462 (.356-.553)	.421	.94	17.03

Note. E_k= relative Entropy; π_k= class proportion; $mcaP_k$= modal class assignment Proportion; $AvePP_k$ = average Posterior Probability; OCC_k= Odd of Correct Classification.

The three configurations of adulthood identified at time 2 had the following characteristics (see Figure 2.4): the first subgroup (n=177) had reached only the completed education role (E=.73) even though half of the members perceived themselves to be adults (S=.48). The second subgroup (n=352) had reached only the "living apart from parents" role (L=1) and more than half of participants perceived themselves to be adults (S=.58). The third subgroup (n=384) had achieved most adult roles, included the subjective one (S=.78).

At both time points, the best way to describe the sample's heterogeneity with respect to the adulthood indicators consisted of dividing the sample in three classes.

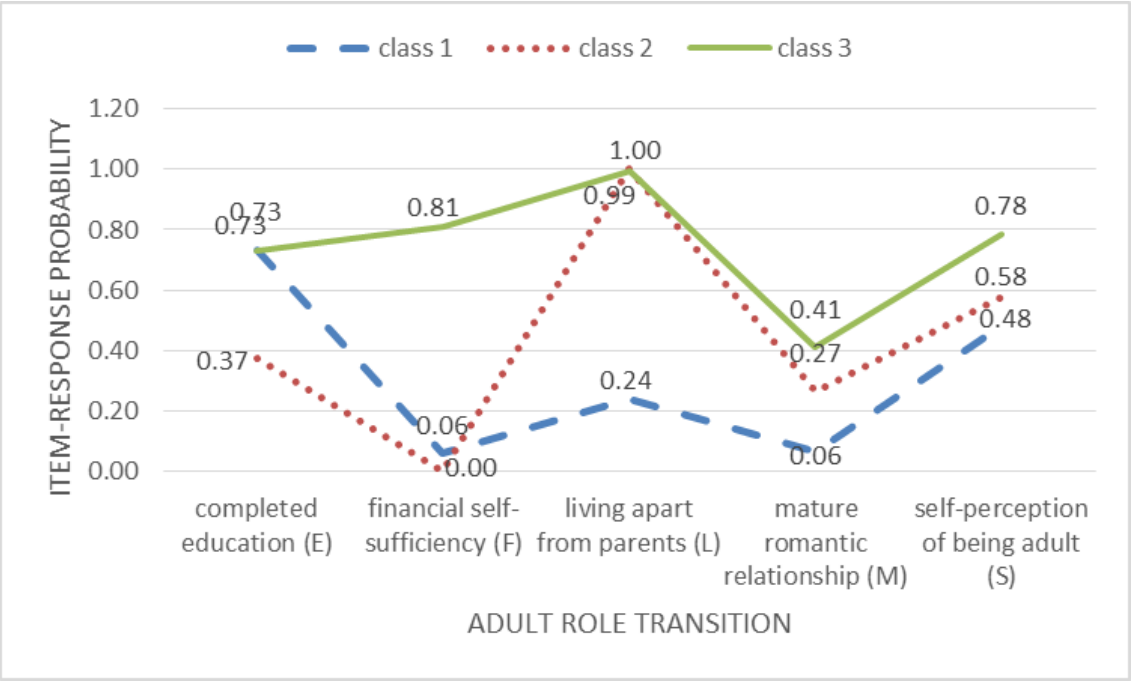

Figure 2.4. *The 3-class measurement model at time 2*

Step 2: Explore Transitions Based on Cross-Sectional Results

Cross-tabulations of class membership at two time points

After the measurement model (i.e., 3-class model) was selected at both time points, classes were ordered from the one with the fewest reached adult roles to the one with most reached adult roles, and individuals were assigned to their most likely latent class using modal class assignment. Cross-tabulation of class membership changes over time (see Table 2.7) suggests that individuals remain stable or make movement towards more adult configurations (i.e., class at the right of the diagonal).

Table 2.7. Change over time using cross-sectional results

	Time 2			
Time 1	Class 1	Class 2	Class 3	
Class 1	52 (34.7%)	50 (33.3%)	48 (32.0%)	150 (100%)
Class 2	108 (17.1%)	269 (42.6%)	255 (40.3%)	632 (100%)
Class 3	17 (13.0%)	33 (25.2%)	81 (61.8%)	131 (100%)

Note. Row percentages are reported.

Actually, it is improper to affirm that subjects "remain" in the same class, because we do not know if class corresponds across time. To be sure that meaning of the class at time 1 remains the same at time 2, the measurement invariance has to be tested.

Measurement invariance

Measurement invariance assumes the equality of the parameters of the measurement model. In LTA, the measurement parameters are the item-response probabilities estimated for each class at the different time points (Nylund, 2007).

As shown in Table 2.8, it is not possible to assume full measurement invariance, because the full invariant model is significantly different from the baseline model, i.e., the model where all parameters were free ($p<.001$).

Table 2.8. The chi-square difference test based on loglikelihood values

	LL	SCF	d	Δ	df	*p*-value
Baseline model	-4447.89	1.036	34			
Full invariance	-4501.66	1.017	19	101.429	15	<.001
Partial invariance	-4457.18	1.017	23	17.274	11	.100

Note. LL = model log likelihood; SCF = scaling correction factor of the robust maximum likelihood estimator; d = number of free parameters; Δ = difference test value; df = degree of freedom of the difference test.

I had to release four parameters before obtaining a model statistically equal to the baseline ($p>.05$). Specifically, for the first class, the item-response probabilities of "completed education" and "financial self-sufficiency" indicators were free to be different across the two times. For the second class and the third class, respectively, the threshold of "mature romantic relationship" and "completed education" were released.

The item-response probability plots of the partial invariant solution are reported in Figure 2.5.

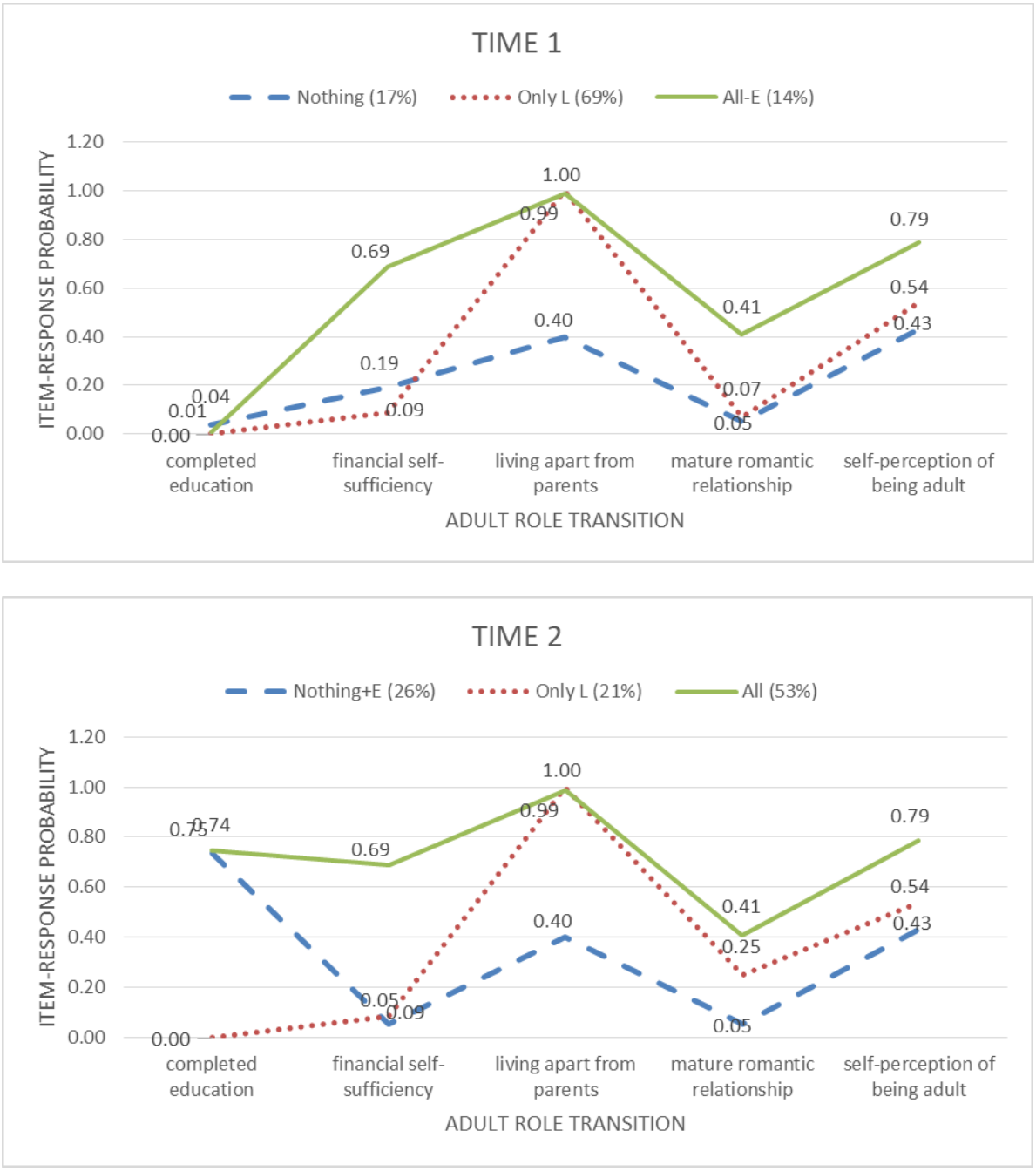

Figure 2.5. *Item probability plots for partial invariant 3-class model across time 1 and 2*

The first adulthood configuration at both time points corresponded to the class with the lower level of item-response probabilities. Specifically, at time 1 none of the adult roles was endorsed and the class was renamed "Nothing". At time 2, this class had a similar configuration, except for the "completed education" (E) indicators that were highly endorsed. This class was renamed "Nothing+E" as its members had reached none adult role except for one.

The second configuration at both times was characterized by the full achievement of only "living apart from parents." The non-invariant indicator (i.e., "mature romantic relationship") did not make the difference when the two configurations were interpreted because the percentage of members who had a mature romantic relationship remains low at both times. Consequently, at both times the second class is renamed "only L," where L stands for "living apart from parents."

Finally, the third configuration was composed by the subjects who endorsed all (or almost all) the adulthood indicators. At time 2 this class was renamed "All" because all the adult roles were highly endorsed, or at least were endorsed more than in the other classes. The same class at time 1 was renamed "All-E" because the "completed education" indicator (E) was not yet endorsed.

Step 3: Explore Specification of the Latent Transition Model without Covariates

Maintaining the constraints for the invariant parameters across the two time points, the LTA model was estimated. The item-response probabilities for each class at each time point (see Table 2.9) were very similar to the ones obtained in the previous model (see Figure 2.5). This means that the measurement model remained stable even if the auto-regressive path was added.

Table 2.9. Item-response probabilities for the LTA model

Time	Classes	E	F	L	M	S
1	Nothing	.031	.184	.432	.042	.422
	Only L	0	.091	1	.060	.536
	All-E	.013	.669	.974	.425	.794
2	Nothing+E	.727	.044	.432	.042	.422
	Only L	0	.091	1	.223	.536
	All	.729	.669	.974	.425	.794

Note. E = completed education; F = financial self-sufficiency; L = living apart from parents' home; M = mature romantic relationship; S = self-perception of being adult

The latent status membership probabilities were reported in Table 2.10. As expected according to LCA solutions, most of the emerging adults belonged to the second class ("Only L") at time 1 and to the third class ("All") at time 2, showing an average movement towards a more adult configuration over time.

Table 2.10. Latent status membership probabilities

Time	Class	N	Latent status prevalence
1	Nothing	161	.176
	Only L	592	. 648
	All-E	160	.175
2	Nothing+E	250	.274
	Only L	164	.180
	All	499	.546

The best way to describe the movement that participants made across times is the transition probabilities. As shown in Table 2.11, the values in the top-right diagonal (i.e., percentage of people who moves toward more adult configurations) are higher than the values of the bottom-left diagonal (i.e., percentage of people who moves toward less adult configurations).

Table 2.11. Transition probabilities

	Time 2		
Time 1	Nothing+E	Only L	All
Nothing	.569	.094	.337
Only L	.293	.195	.512
All-E	0	.014	.986

High probabilities were detected also for emerging adults who "remained" in the same class (above all the first and the third class). These two classes are not fully invariant across times. In both cases, class at time 2 is characterized by the endorsement of the first indicator (completed education)

that misses in the same class at time 1. Consequently, the participants who "remained" in class 1 or class 3 actually completed their education in the period from 2010 to 2013.

To test if the percentage of people who moved back into less adult configuration was similar to zero, the transitions towards less adult configuration (e.g., from class 2 to class 1) were constrained equal to zero. This model resulted in the following transition probabilities (see Table 2.12).

Table 2.12. Restricted model's transition probabilities

	Time 2		
Time 1	Nothing+E	Only L	All
Nothing	.760	.028	.213
Only L	0	.274	.726
All-E	0	0	1

This constrained model was compared with the free model, using the chi-square difference test based on loglikelihood values. These two models were significantly different [$\chi^2(3) = 39.214$; p<.0001]. The transitions towards less adult configuration cannot be considered equal to zero. Consequently, in the next step these constraints on the transition probabilities were released.

Step 4: Include Covariates in the LTA Model

To test all my hypotheses, six different covariates were added into the latent transitional model obtaining a conditional LTA model (see Figure 2.2). The results here reported were tested running only one model, but presented separately for each hypothesis.

<u>H1: subjective financial well-being at time 1 (SFWB1) will predict adulthood configurations at time 2 (AC2)</u>

I verified how the transition probabilities matrix changes, when the value of the covariate changes of one standard deviation (See Table 2.13).

Table 2.13. Changes in the transition probabilities when SFWB1 changes

SFWB1=0		Nothing+E	Only L	All
	Nothing	.625	.159	.216
	Only L	.344	.278	.379
	All-E	0	.001	.999
SFWB1=.9136				
	Nothing	.570	.259	.171
	Only L	.305	.390	.305
	All-E	0	0	1.000
Difference				
	Nothing	-5.5%	1.0%	-4.5%
	Only L	-3.9%	11.2%	-7.4%
	All-E	0%	-0.1%	0.1%

The first matrix represents the transition probabilities estimated when subjective financial well-being is exactly at its mean value (i.e., zero). The second matrix instead represents the transition probabilities estimated when subjective financial well-being is exactly one standard deviation (i.e., .9136) above the mean. The third matrix reports (in percentage) how the transition probabilities matrix changes when subjective financial well-being increases. This matrix showed how, in the present sample, for people who belonged at class 1 and class 2 at time 1, the probabilities of belonging to class 2 at time 2 increased, when subjective financial well-being increased. This means that having high subjective financial well-being increases the probability of enrolling in a master degree program living apart from parents. Indeed, at time 2 the class "only L" is the only one in which people are still students. While 90.4% of them were enrolled in a master's degree program, all the students at time 1 were completing their bachelor's degree. Instead, the probability of belonging in the first (i.e., living with parents) or third class (i.e., become fully adult) is reduced by financial well-being increasing.

In contrast, for emerging adults who were in class 3 at time 1 ("All-E"), the transition probabilities did not change when subjective financial well-being changed. Specifically, subjects with

a higher level of adulthood (i.e., higher number of adult role reached) at time 1 remained in configuration with a higher level of adulthood at time 2 despite changes in their subjective financial well-being.

The results just described are only descriptive. The significance of this relationship is reported in Table 2.14.

Even if not all the estimated coefficients were significant, the first hypothesis was confirmed. The subjective financial well-being that an emerging adult perceives at time 1 affects the *transition* that the subject decides to take from the configuration at time 1 to the configuration at time 2 (i.e., transition to adulthood).

These results shown that SFWB1 significantly affected the transition from “Only L” at time 1 to “Only L” at time 2. This means that, for people who belonged to the “Only L” class at time 1, when the value of subjective financial well-being at time 1 increased one unit, people are 83.1% (OR=1.831) more likely to stay in “Only L” than to move to the “All” class (comparison group) at time 2.

Table 2.14. Logistic regression coefficients and odds ratio for LTA model with subjective financial well-being at time 1 (SFWB1) effect on the adulthood configuration at time 2 (AC2), separately for each time 1 class

effect for "Nothing" at time1	Coefficient β	SE	Z	p-value	OR
Nothing+E at time 2 [a]	.155	.304	.511	.610	1.168
Only L at time 2 [b]	.788	.680	1.158	.247	2.199
effect for "Only L" at time 1					
Nothing+E at time 2 [c]	.103	.276	.373	.709	1.108
Only L at time 2 [d]	.605	.277	2.182	.029	1.831
effect for "All-E" at time 1					
Nothing+E at time 2 [e]	-6.524	5.553	-1.175	.240	.001
Only L at time 2 [f]	-3.685	2.161	-1.706	.088	.025

Note. The third class at time 2 is not present in the table because it is used as comparison group for the logistic regression.

[a] effect of SFWB1 on the transition from "Nothing" at time 1 to "Nothing+E" at time 2

[b] effect of SFWB1 on the transition from "Nothing" at time 1 to "Only L" at time 2

[c] effect of SFWB1 on the transition from "Only L" at time 1 to "Nothing+E" at time 2

[d] effect of SFWB1 on the transition from "Only L" at time 1 to "Only L" at time 2

[e] effect of SFWB1 on the transition from "All-E" at time 1 to "Nothing+E" at time 2

[f] effect of SFWB1 on the transition from "All-E" at time 1 to "Only L" at time 2

H2: adulthood configurations at time 1 (AC1) will predict subjective financial well-being at time 2 (SFWB2)

To test the second hypothesis, a different mean of the SFWB2 was estimated for each class at time 1. The three means were .19 (SD=.085), .22 (SD=.058) and .21 (SD=.106) respectively for "Nothing", "Only L" and "All-E". At a descriptive level, subjective financial well-being at time 2 seems to be higher for people who were in class 2 or 3 at time 1, but this difference was not significant (Wald test value (2) = 3.560; p=.169).

Consequently, the adulthood configuration that emerging adults had at time 1 did not affect the subjective financial well-being they had at time 2. My second hypothesis was not confirmed.

H3: adulthood configurations at time 1 (AC1) will predict adulthood configurations at time 2 (AC2)

This hypothesis concerns the autoregressive path between the two latent class variables, so it is the only hypothesis that does not involve any covariate. I expected that the adulthood configuration that the emerging adult had at time 1 affected his/her future adulthood configuration. This hypothesis was confirmed, as the relationship between AC1 and AC2 was significant (see Table 2.15).

Table 2.15. Logistic regression coefficients for the conditional model with AC1 effect on AC2

	Coefficient β	SE	Z	p-value
Nothing → Nothing+E [a]	14.186	8.637	1.643	.100
Only L → Nothing+E [b]	13.027	8.638	1.508	.132
Nothing → Only L [c]	6.313	3.175	1.988	.047
Only L → Only L [d]	6.309	3.127	2.017	.044

Note. The third class of the measurement model is not present because it was used as comparison group for the logistic regression

[a] effect of class 1 at time 1 (Nothing) on the probability to be in class 1 at time 2 (Nothing+E)

[b] effect of class 2 at time 1 (Only L) on the probability to be in class 1 at time 2 (Nothing+E)

[c] effect of class 1 at time 1 (Nothing) on the probability to be in class 2 at time 2 (Only L)

[d] effect of class 2 at time 1 (Only L) on the probability to be in class 2 at time 2 (Only L)

As suggested by Muthén and Asparouhov (2011), the easiest way to interpret the relationship between the latent class variable at time 1 (i.e., AC1) and the latent class variable at time 2 (i.e., AC2) is translating logits into transition probabilities. Using the formulas they proposed, the logits in Table 2.15 were translated into the probabilities in Table 2.16.

Table 2.16. Transition probabilities of the conditional model [12]

	Nothing+E	Only L	All
Nothing	.625	.159	.216
Only L	.344	.278	.379
All-E	0	.001	.999

The transition probabilities of the conditional model were really similar to the transition probabilities of the unconditional model (see Table 2.11). Also in this case, the values in the top-right diagonal are higher than the values of the bottom-left diagonal, indicating that more young adults in the sample progress toward more adult configurations. At the same time, a good percentage of emerging adults who lived apart from parents after their degree came back to the parental house (34.4% of subjects moved from "Only L" at time 1 to "Nothing+E" at time 2).

H4: subjective financial well-being at time 1 (SFWB1) will predict subjective financial well-being at time 2 (SFWB2)

A second autoregressive path (SFWB1 as cause of SFWB2) was included into the model to test if the subjective financial well-being that subjects had at time 2 depended on the subjective financial well-being they had at time 1. This linear regression was significant (β=.413; $p<.001$). As expected, the higher subjective financial well-being was at time 1, the higher subjective financial well-being was at time 2.

[12] Note that the transition reported in Table 2.16 are the same of the ones reported in the first matrix in Table 2.13. This is because that matrix reported the transition probabilities when the covariate (SFWB1) was equal to its mean. The mean of SFWB1 is 0 and consequently they transition probabilities affected by a covariate=0 correspond to the transition probabilities without any covariate effect.

H5: subjective financial well-being (SFWB) and adulthood configuration (AC) will have a significant relationship within each time point

I expected that subjective financial well-being was related to the adulthood configuration to which the emerging adult belonged at both time points. This relation was significant only at time 2 (see Table 2.17).

Table 2.17. Logistic regression coefficients and odds ratio for 3-class model at each time point with subjective financial well-being as a covariate

Time 1	Effect	Coefficient β	SE	Z	p-value	Odds ratio
Nothing	SFWB1	-.140	.182	-.771	.441	.869
Only L	SFWB1	.210	.183	1.151	.250	1.234
Time 2						
Nothing+E	SFWB2	-.944	.195	-4.844	<.001	.389
Only L	SFWB2	-1.063	.204	-5.204	<.001	.345

Note. The third class was used as comparison group for the logistic regression, both at time 1 ("All-E") and time 2 ("All").

The significant relation between subjective financial well-being at time 2 and adulthood configuration at time 2 is described by two ORs lower than 1. This means that when subjective financial well-being at time 2 is higher, the probability of staying in the "Nothing+E" or "Only L" class at time 2 is lower than the probability of staying in the "All" class (i.e., comparison group). This means that the subjects that at time 2 were in the "All" class (i.e., more adult configuration) were more financially satisfied than the others.

H6: the presence of debt (both student loan, SL, and other kinds, OD) will be significantly related to both adulthood configuration (AC) and subjective financial well-being (SFWB) within the same time point

To control whether the relationship between subjective financial well-being and adulthood configuration could depend on the mutual reliance of SFWB and AC on objective financial well-

being, the debts variables were regressed on the transition to adulthood and the subjective financial wellbeing within each time point. Specifically, the student loan (SL1) and other debts (OD1) at time 1 were regressed on the latent class variable at time 1 (AC1) and subjective financial well-being at time 1 (SFWB1). The same was done with time 2 variables.

Overall, eight regressions were performed. Four out of these were linear regressions because they had a continuous variable as an outcome. Specifically, subjective financial well-being at time 1 had a significant relationship both with student loan at time 1 (β=-.528; p<.0001) and other kinds of debts at time 1 (β=-.429; p<.001). In the same way, subjective financial well-being at time 2 had a significant relationship both with loan debts (β=-.228; p<.001) and other debts (β=-.125; p=.037) at time 2. In all these cases, people with debts had lower financial well-being than people without debts.

The other four regressions were logistic regressions because the outcome (AC1 or AC2) was a categorical variable (see Table 2.18).

Table 2.18. Logistic regression coefficients and odds ratio for 3-class model at each time point with student loan, SL (0 = no, 1 = yes), and other kinds of debt, OD (0 = no, 1 = yes), as a covariate

Time 1	Effect	Coefficient β	SE	Z	p-value	Odds ratio
Nothing	OD	-1.016	.358	-2.840	.005	.362
Only L		-1.347	.353	-3.816	<.001	.260
Nothing	SL	-.744	.337	-2.206	.027	.475
Only L		-.438	.332	-1.317	.188	.645
Time 2						
Nothing+E	OD	-.894	.254	-3.522	<.001	.409
Only L		-1.333	.400	-3.333	.001	.264
Nothing+E	SL	.269	.280	.961	.337	1.309
Only L		.022	.358	.061	.952	1.022

Note. The third class was used as comparison group for the logistic regression, both at time 1 ("All-E") and time 2 ("All").

Only three out of four relationships were significant. Specifically, the loan debts (SL2) that subjects had at time 2 were not related to adulthood configuration at the same time point (AC2). The presence of student loans was similar in the three adulthood configurations at time 2 ("Nothing+E", "Only L", and "All"). In contrast, at time 1 people with loan debts had less probability to stay in the "Nothing" class than in the "All-E" class (OR=.475; p=.027). In other words, undergraduate students who lived apart from parents and were financially self-sufficient ("All-E" class) had a higher probability of having a student loan than students who lived with their parents and were financially dependent ("Nothing" class). The same trend was found for the two relationships involving other kinds of debt (OD): the ORs were below than 1. This means that the greatest likelihood of having other debts was when emerging adults were in the comparison class ("All-E" at time 1 and "All" at time 2).

The sixth hypothesis was mainly confirmed: debts are negatively correlated with subjective financial well-being and usually more likelihood in the third class (most adult configuration) than in the other two classes. Only the relationship between SL2 and AC2 was not detected.

H7: the presence of debt (both student loan, SL, and other kinds, OD) at time 1 will predict the presence of debt at time 2

Finally, I expected that the presence of debt was related across time. This hypothesis was confirmed (see Table 2.19). Specifically, people who had student loans at time 1 were 92.1% (OR=1.921) more likely to still have a student loan at time 2. People who had other kinds of debt at time 1 were 55.4% (OR=1.554) more likely to have debts different from the student loan at time 2.

Table 2.19. Logistic regression coefficients and odd ratios with time 1 debts effect on time 2 debts

	Effect	Coefficient β	SE	Z	p-value	Odds ratio
SL2=1	SL1	.653	.027	24.437	<.001	1.921
OD2=1	OD1	.441	.030	14.809	<.001	1.554

Note. The comparison groups for the logistic regression were respectively SL2=0 and OD2=0.

All the results referred to the LTA model with the covariates are reported in Figure 2.6.

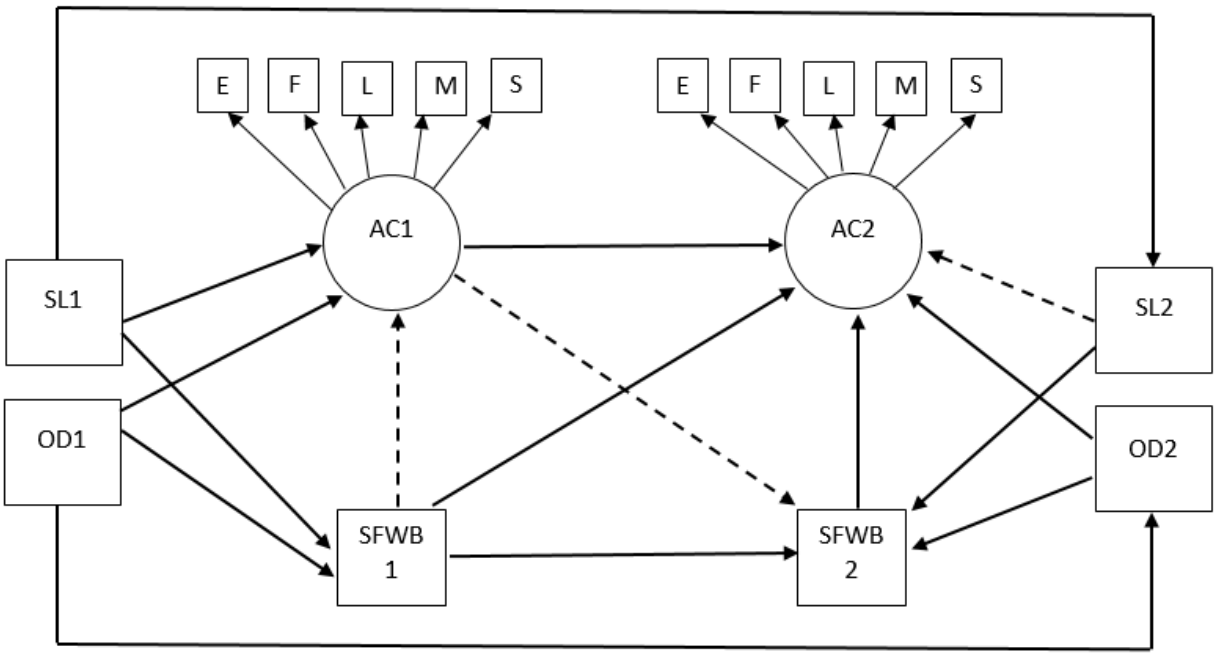

Figure 2.6. *Results of the conditional LTA model.*
The non-significant relationships are represented by dotted lines. E= completed education; F= financial self-sufficiency; L= living apart from parents' home; M= mature romantic relationship; S= self-perception of being adult; AC= Adulthood Configuration; SFWB= Subjective Financial Well-being; SL= Student Loan; OD= Other kinds of Debt. The two time points are indicated by 1 and 2.

The fit of this final model was good. Indeed, adding the six covariates to the unconditional model improved its fit. Specifically, considering the 11 most frequent response patterns[13], the number of

[13] I did not use only the first 10 most frequent response patterns as suggested by Nylund (2007), because in the current case, the 10th and 11th most frequent response patterns were equally frequent

pattern responses with a standardized residual larger than 1.96 decreased (from 4 to 2), thus the goodness of fit increased.

2.4. Discussion

The current study aimed to investigate the relationship between emerging adults' adulthood configuration and their financial well-being, taking into account the complexity of these constructs.

A personal-centered approach allowed operationalizing, at each time, the concept of "adulthood" in a latent class variable, which grouped the sample into three classes (i.e., three different configurations of adulthood), according to the configuration taken on by their (objective and subjective) social adult roles already achieved. The three identified classes consisted of: (1) a group of people who have not reached any social roles at time 1 ("Nothing") and only the "completed education" role at time 2 ("Nothing+E"); (2) a group of students who had only achieved an independent living arrangement ("Only L") at both time points; (3) and a group in which most adult roles were reached, except for "completed education" not usually having been reached at time 1 ("All-E") but usually having been reached at time 2 ("All").

The number of identified adulthood configurations (i.e., classes) is lower than the number of configurations identified by other authors. Indeed, other authors who used the personal-centered approach with the same aim obtained from 4 to 7 different configurations (Eliason et al., 2015; Fomby & Bosick, 2013; Maggs et al., 2012; Oesterle et al., 2010; Osgood, 2005; Sandefur et al., 2005). Fewer classes than previous studies were obtained probably because the used sample was more homogeneous give that it included only college students. Furthermore, the current study is different from previous ones because of the kinds of social roles taken into consideration to define the configurations. Specifically, I removed "parenthood" from the indicators (as in the used sample too few subjects were parents) and added the "subjective perception of being and adult."

All the previous studies that investigated adulthood configurations by LCA differ from the current study also because here adulthood configurations were investigated at two different time points. So, for the same people the adulthood configurations were detected twice. People who were in one group at time 1 were not constrained to be in the same group at time 2. Specifically, LTA allowed detecting the transition each subject made from an adulthood configuration at time 1 to another configuration at time 2. This opportunity is quite relevant for the study of the "*transition* to adulthood". Indeed, using only LCA allows for taking a picture of the transition to adulthood only in a specific moment (i.e., adulthood configuration). That picture is static and does not allow detecting the process that characterizes the transition. Instead, using LTA is possible both for detecting the static (i.e., configuration at each time point) and the dynamic (i.e., transition probabilities) aspects of this research object.

The construct of financial well-being was operationalized in a more robust way too, recognizing both its objective (operationalized as debts) and subjective dimension (operationalized as three items measuring subjective financial well-being).

Then, using a cross-lagged model, the reciprocal casual relationship between these two research objects was investigated. It was non-reciprocal. Only one direction was detected. The subjective financial well-being that subjects had at time 1 affected their adulthood configuration at time 2 (H1). This hypothesis was tested not simply considering adulthood configuration at time 2 but also the configuration subjects had before time 2 (i.e., using transition probabilities; Muthén & Asparouhov, 2011). Results showed that with a higher level of subjective financial well-being, students who were living apart from parents at time 1 were more likelihood to continue to study and to live apart from parents at time 2. Probably, to perceive a higher financial well-being allowed emerging adults to spend more years in education (i.e., graduate school), postponing the moment in which focusing on their job and earning.

The same relationship in the opposite direction was not significant (H2). To be in "Nothing", "Only L" or "All-E" at time 1 did not make any difference for the financial well-being subjects

measured at time 2. Probably, this result is due to the sample composition. Indeed, in the current study subjects evaluating their financial well-being at time 2 had obtained a bachelor's degree, regardless of the adulthood configuration they had at time 1. As education level is a relevant predictor of the financial well-being (Gutter & Copur, 2011), it is possible to suppose that subjects – having all graduated from college – perceived the same level of financial well-being.

The non-reciprocal relationship between adulthood configuration and subjective financial well-being was the main finding of this study, but not the only one. Firstly, two auto-regressed paths were tested. As expected, subjective financial well-being at time 2 was affected by the subjective financial well-being the subjects had 3 years before (H4). In addition, the adulthood configuration the emerging adult had at time 2 depended on the adulthood configuration s/he had 3 years before (H3).

The adulthood configuration at time 2 was also related to subjective financial well-being at the same time point (H5). Specifically, the members of the "All" class were the ones with the higher level of subjective financial well-being. The same relationship was investigated at time 1, but was not significant (H5). This mean that the three classes at time 1 ("Nothing", "Only L" and "All-E") do not differentiate for different levels of subjective financial well-being both at time 1 (H5) and time 2 (H2). Again, it is possible to suppose that reaching the same level of education (bachelor's degree) made their perception of financial well-being similar.

Finally, interesting findings concerned the control variables related to debts. As expected, the presence of debts at time 1 predicted the presence of debts at time 2 (H7). Specifically, 92.1% of subjects that had a student loan at time 1 still had a student loan at time 2. This was expected, as at time 2, subjects were only 2 years out of college, so – even when they did not decide to enroll in a master's degree program – they were still paying for student loan debt. Furthermore, 55.4% of students that had debts other than student loans at time 1 still had debts other than student loans at time 2. The probability of paying off other debts within 3 years (2010-2013) is higher than the probability of paying off a student loan because other debts (e.g., credit card debt) are not necessarily

as high as student loan debt. Still, people who affirmed that they were paying for debts other than student loans at time 2 were not necessarily paying for the same "other debt" s/he had at time 1.

Regardless of the kind of debt, subjects are conscious that they have to pay it back in the future, and this can explain why, at both time points, having debts was negatively correlated with subjective financial well-being (H6).

The relationship between debts and adulthood configurations was different according the kind of debt considered. Student loan debt was related to adulthood configuration only at time 1. Specifically, undergraduate students who had no loan debts had a higher probability of living with their parents and being financial dependent ("Nothing" class) than students who lived apart from parents and were financial self-sufficient ("All-E" class). This relationship was not found at time 2 (H6), meaning that student loans were equally present in the three classes at time 2: "Nothing+E", "Only L" and "All". Even though "Only L" is the only class of students at time 2, student loans were present in all the classes because subjects still had student loans from their bachelor's degree.

The relationship between other kinds of debt and adulthood was instead significant at both waves. Specifically, the prevalence of non-student loan debt was higher in the third class than in the others. This finding is very relevant for two reasons. First, the third class is the class with the most adult configuration. Emerging adults – at least those under typical circumstances in the United States – who want to quickly reach all the adult roles need to incur debt. As stated by Dwyer et al. (2012), in the U.S. more and more people look to debt as a strategy for attaining education, housing and other life goals. Second, the third class at time 2 is the class with the highest level of subjective financial well-being but also the class with the highest prevalence of debt. This is relevant because usually debt and subjective financial well-being have a negative relation (as it has been found in H6). We can suppose that in this subgroup of participants things work differently because these subjects used the received credit for a good investment, allowing them to reach the desired goal (to complete their education, come closer to financial self-sufficiency, and/or to live with their partner) and to perceive their financial condition in a positive way even if characterized by debts. Young debtors experience

debt as empowering, as increasing their sense of having prepared themselves to meet the future (Dwyer, McCloud, & Hodson, 2011). At the same time is hard to interpret this result because all involved variables (AC2, SFWB2, OD2) were collected at the same time point and thus it is hard to guess the real direction of the relationships.

Both the included control variables (student loans and other kinds of debt) had a significant relationship with the construct under investigation. This supports the decision to include them in the model. Note that I also wondered about another potential external variable that could generate contemporaneously a change in AP and in SFWB: the emerging adults' age. Indeed, previous research verified that age is related to both adulthood configurations (Easterlin, Macdonald, & Macunovich, 1990) and financial satisfaction (Plagnol, 2011). At the same time, I did not include this variable in the model because it had too low variability (M=21.34; SD=.56) to test its relations with other variables. Specifically, a standard deviation of .56 means that the participants differ from each other on average only few months in age. A months-level difference is not enough big to expected differences in the emerging adult's adulthood configuration or financial well-being.

Limitations

I identified four main limitations in this study.

The first consists in the used sample that, having specific characteristics (US college students post economic recession of 2008), made the results not generalizable to the entire emerging adult population. At the same time, the participants were well distributed for other relevant variables such as gender and socio-economic status.

Second, the way I managed missing data required the deletion of 5.58% of available participants. To avoid this deletion, I could have used Multiple Imputation to impute missing values, but this would not be an applicable solution for two reasons. Specifically, the disadvantage of MI is that the latent class model must be fit within each imputed dataset. Furthermore, if model selection is conducted

within each imputed dataset, a slightly different latent class model might be selected, leaving no logical way to combine results across imputations (Collins & Lanza, 2010).

Third, I expected a relationship between the two different kinds of debts (student loan and other kinds of debt) at both time points. It was not possible to include these paths in the model because these variables were categorical. To allow correlations between categorical variables when a mixture model is run, "parameterization = rescov" should be used in Mplus. But this command also would have implied the correlations among the five latent class indicators, generating a modification of the measurement model.

These statistical deficits were difficult to avoid. Instead, a more realistic improvement that could be done to this study concerns the operationalization of the two main constructs. For the adulthood configuration variable, it could be preferable have multinomial variables instead of dummy variables. Each adult role can indeed be described by more than two categories. For example, the indicator "live apart from parents" could be operationalized into three categories: living with parents, paying a rent, owning a house (see for example, Osgood, 2005). Furthermore, the advantages of adding the self-perception of being an adult to the indicator of the adulthood configuration is not clear. Usually, in the current study this indicator was proportional to the degree of adult role achievement that each class presented. For example, at time 1 only 42.2% of class 1's members (no adult role reached) felt they were adults, while this percentage increased to 53.6% and 79.4% respectively for class 2 (only one role reached) and class 3 (most of the roles reached). These findings suggest that the self-perception of being an adult is at least partially linked to adult roles that the subject reached. At the same time, the determinant of this self-perception goes beyond the adult roles. In class 1 42.2% of the members perceived to be adult even if s/he did not reach any adult role. The contribution of this indicator in distinguishing different pathways to adulthood remains unclear.

Finally, the operationalization of the financial well-being construct can be improved. Specifically, I suggest that in measuring objective financial well-being, the income of the subjects should also be taken into consideration. Even if for US emerging adults debts can be more influential

than income, the presence of both measures could help researchers in reaching new conclusions. Still, measuring income and debt using a continuous variable instead of a categorical one (0=no, 1=yes) could also clarify if the amount of the debt/income makes a difference.

Conclusion

This study, investigating the casual relationship between subjective financial well-being and the adulthood configuration of emerging adults, found that this relation is not reciprocal. Subjective financial well-being affects the adulthood configuration but not vice versa. This result is innovative for two reasons: (1) it was tested using a cross-lagged model, and (2) the impact of financial well-being on the adulthood configuration was studied taking in consideration the adulthood configuration that emerging adults were coming from (i.e., their transition path towards adulthood).

If it is true that the way in which emerging adults perceive their financial condition (i.e., subjective financial well-being) affects the decisions they make regarding their future (i.e., which transitional path toward adulthood they take), academics, practitioners and politicians should reflect more on the way in which emerging adults perceive their financial condition and what affects this perception (e.g., financial education, family socialization, information transmitted by mass media, and so on).

Furthermore, future studies should overcome the limitations of the current study. Improvements could include having a broader sample that also included participants with no post-secondary education, in a longitudinal study including more than two waves, in indicators of latent variables that describe the sample variability with more than two categories (yes/no), as well as objective financial well-being measured not only in terms of debt but also income and in continuous metrics.

Finally, results of this study led to create new hypotheses that could be interesting to test in future studies. For example I supposed that the “All” class had both high level of debt and high level of subjective financial well-being because subjects used their credit as an investment for their future and the goals obtained made them satisfied with their financial condition, regardless of their debt. Consequently, this “moderator effect” of the goals obtained could be tested. The same is true for my

supposition that the relationship between adulthood configuration at time 1 and subjective financial well-being at time 2 is not significant because all the subjects have the same educational level. A study to test the "mediator effect" of the education level between adulthood configuration and financial well-being could be done, using a sample heterogeneous for the different education levels of the participants.

CHAPTER 3. MEASUREMENT VALIDATION

3.1. What is measurement validation?

The concept of measurement

Modern cultures are deeply imbued with notions of measurement (Goldstein, 2012). Nearly all scientific disciplines depend heavily on mathematics, and the social sciences in particular have seen a rapid recent development of quantitative methodology and accompanying measurement regimes (Goldstein, 2012). This development is considered *recent* as the idea of measurement in social science arose only 100 years ago. The question "Is it possible to measure human sensation?" was officially posed in 1932 when, for seven years, a committee of the British Association for the Advancement of Science debated the problem of measurement (Stevens, 1946).

Measurement, in the broadest sense, is defined as the assignment of numerals to objects or events according to rules (Stevens, 1946). In psychology, the underlying phenomenon that is to be measured is called a *construct* and is by definition not directly observable. Psychological constructs are usually measured though tests, where the word "test[14]" is used here to indicate "procedure for measuring observables or constructs, typically encompassing several items then combined into a total test score" (Frey, 2017, p.1).

Concretely, measurement consists in using observable information (i.e., test score) to garner insights into constructs that cannot be directly observed. Making inferences about things that are not directly observable is an imperfect process and consequently our proxies for unobservable variables are likely to be error-prone to some degree (DeVellis, 2006). Charles Spearman (1904) was among the first theoreticians to recognize this and to explicate the relationship between the information we

[14] In the current text, the labels "test", "measure", "scale", and "instrument" are used as synonyms (e.g., Zumbo, 2007; 2009).

gather from observation and the information that truly interests us (i.e., the unobservable variable or construct). His reflections laid a foundation for the Classical Test Theory (CTT).

Classical test theory is a theory about test scores that introduces three concepts - test score (often called the observed score), true score, and error score (Hambleton & Jones, 1993). Specifically, the test or observed score is determined by the actual state of the unobservable variable of interest (i.e., true score) plus error contributed by all other influences on the observable variable. This relationship can be represented by the simple formula X = T + E, in which X is the score on the first of some unspecified set of items measuring a variable (e.g. a scale measuring depression), T is the true level of that variable (the actual quantity of depression experienced, in this example) for the person being observed, and E is the error associated with that particular scale, that is, the amount of influence that all variables other than X (e.g., patient errors in translating the experience of depression to a numeric scale) exert on that scale.

The advantage of this theory is that a related model can be based on relatively weak assumptions (i.e., they are easy to meet in real test data). Indeed, the assumptions in the classical test model are that (a) true scores and error scores are uncorrelated, (b) the average error score in the population of examinees is zero, and (c) error scores on parallel tests are uncorrelated (Hambleton & Jones, 1993).

On the other hand, the CTT has some limitations: both person parameters (i.e., true scores) and item parameters (i.e., item discrimination and item difficulty[15]) are dependent on the test and the examinee sample, respectively, and these dependencies can limit the utility of the person and item statistics in practical test development work and complicate any analyses (Hambleton & Jones, 1993).

[15] Item discrimination is essentially an item's strength of association with other items and thus, presumably, with the true score. Item difficulty is instead quantified in relation to the proportion of people who endorse an item – if it has a correct answer – or the proportion who choose a particular response to an item such as moderately agree from a set of ordered response options (DeVellis, 2006).

Because of these limitations, other test theories were developed. Test theories are theories concerned with methods and criteria for the construction, evaluation, and comparison of tests[16] (Frey, 2017). The most prominent test theory developed after CTT is the Item Response Theory (Frey, 2017). Although Item Response Theory and related applications have been under study for over 40 years, and extensively studied for the past 25 years, CTT and related models have been researched and applied continuously and successfully for well over 60 years, and many testing programs today remain firmly rooted in classical measurement models and methods (Hambleton & Jones, 1993)[17].

The concept of measurement validation

As seen, measurement implies making inferences from what we observe (e.g., test score) and things that are not directly observable (DeVellis, 2006). The researcher is called to justify these inferences in order to *validate* the measure. "Measurement validation is an ongoing process wherein one provides evidence to support the appropriateness, meaningfulness, and usefulness of the specific inferences made from scores about individuals from a given sample and in a given context" (Zumbo, 2007, p.48). The result of this validation process is termed validity; Messick (1989, p.13) stated that validity is "an integrated evaluative judgment of the degree to which empirical evidence and theoretical rationales support the adequacy and appropriateness of inferences and actions based on test scores." In short, "validity is the explanation for the measure score variation, and validation is the process of developing and testing the explanation" (Zumbo, 2009, p.70).

The ways in which the scientific community conceptualize validity and validation have changed over the last century (Sijtsma, 2010; Zumbo & Chan, 2014). Originally, in the 1920s, thanks to the newly proposed product-moment correlation, the idea that tests are valid for anything with which they correlated spread out. Specifically, the correlation with the criterion (i.e., the future or current behavior) was the dominant perspective in validation, because at the beginning of the XX

[16] Typically discussed with regard to psychological constructs like abilities, attitudes or knowledge, test theory in principle applies to the measurement of any type of variable (Frey, 2017).
[17] For the sake of synthesis, we are not presenting IRT, as we are not referring to it or applying it in next sections of the chapter. For a detailed comparison between CCT and IRT see Hambleton & Jones (1993).

century the “behavioral” view was dominant in the social sciences. Simply put, a test or measure was valid if it predicted the criterion (Zumbo & Chan, 2014). Later, in 1954, the Technical Recommendations for Psychological Tests and Diagnostic Techniques were published by the American Psychological Association in collaboration with the American Educational Research Association and the National Council on Measurement in Education. In this document, validity was classified into content, predictive, concurrent, and construct validity.

The real change happened in 1955, when Cronbach and Meehl argued that the focus should be on construct validity, emphasizing the importance of a nomological network as a form of theory building about the psychological phenomenon of interest. This theorization was an important landmark in the history of measurement as it shifted attention from the behavior to the unobserved phenomenon (i.e., one definition of a construct). In the wake of focusing only on construct validity, Messick (1989) published a paper about the unitary (or unified) view of validity. This view of validity states that “validity is all about the construct and hence the meaning of scores. The process of validation involves presenting *evidence* and a compelling argument to support the intended inference and to show that alternative or competing inferences are not more viable” (Hubley & Zumbo, 2011, p.221). It is no more appropriate to speak about different types of validity (e.g., criterion validity, construct validity, content validity) but we should consider them as different types of validity *evidence*.

Zumbo (2009) recently updated this new view of validity, stressing that the validity of the inferences one makes from test scores is somewhat bounded by place and time. Validity should be not only unified but also contextualized. It is not the measure per se that is being validated but rather the inferences one makes from a measure revealed in a specific place and time. According to this view, in addition to the traditional sources of evidence (such as content, relations to other variables, and internal structure), evidence based on consequences (intended use, and misuse), and response processes (cognitive processes during item responding or during rating) are important sources of validity evidence that should be included in validation practices.

Specifically, Zumbo (2009, p.69) defined validation as "a higher order integrative cognitive process involving every day (and highly technically evolved) notions like concept formation and the detection, identification, and generalization of regularities in data whether they are numerical or textual" and represented it as follows (see Figure 3.1):

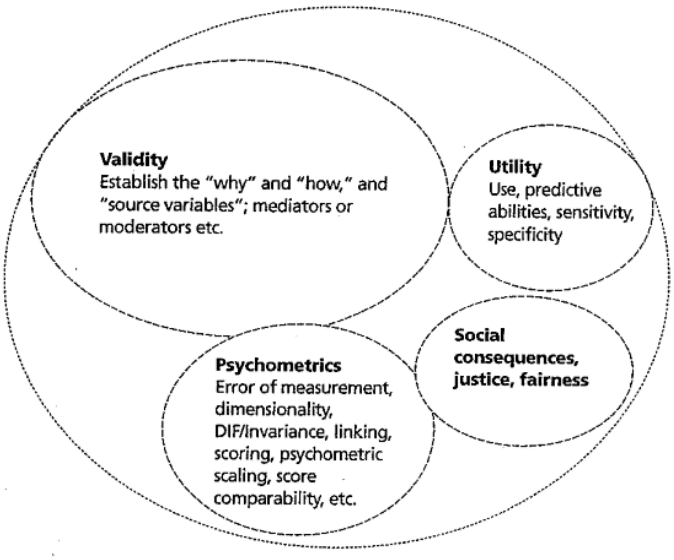

Figure 3.1. *A depiction of the integrative cognitive judgment in the contextualized and pragmatic explanation of validity and validation.*
Reprinted from "The concept of validity: Revisions, new directions and applications" (page 70), by In R. W. Lissitz, 2009, Charlotte, NC: IAP, Information Age Publishing.

In Zumbo's view, *validity* is the explanation for the measure score variation ("why" and "how"). An explanatory model is not a causal model, as we do not have a fully adequate analysis of causation. The concept of "explanation" is conceived as a body of information that implies that the phenomenon is more likely than its alternatives, where both the body of information and the class of alternatives to the phenomenon are fixed by the context (Zumbo, 2009). The explanation is always contextualized, as the researcher cannot separate validity from the sample from which, or the context in which, the information was obtained (Hubley & Zumbo, 2011). Validity is at the same time an aspect as well as an outcome of the validation process (Zumbo, 2009).

The process of validation also involves consideration of the *statistical and psychometric methods* applied to establish and support the explanation for the measure score variation, as well as

the test's *utility*, such as its sensitivity and specificity of the decisions it enables (e.g., the presence or absence of disease). Evidence about utility is only required in the validation process when the measure is used to make decisions (Hubley & Zumbo, 2011).

Finally, the last element of the validation process consists of evaluating the *social consequences* of the measure (i.e., empirical consequences of test use and interpretation). The word "social" references human society and hence social consequences imply societal consequences and the welfare of human beings as members of society (Hubley, & Zumbo, 2011). In this framework, the contextual influences in the validation process should be considered, as well as the researcher or test user's values that could affect the way in which the instrument is developed, used and interpreted. For example, it is essential to consider whether a newly studied cultural group understands the construct in the same way as the original group upon which the construct or measure was developed (Hubley & Zumbo, 2011).

Here summarized are the main differences between the traditional view and the contemporary view of validity (see Table 3.1).

Table 3.1. Comparing traditional and contemporary view of validity

Traditional view of validity	Contemporary view of validity
Validity is a property of the measurement tool, regardless of the context in which the tool is used. Therefore, one can validate the test once and then use it in each context.	Validity is a property of the inferences made from the scores, revealed in a specific context. Therefore, one does not validate a test, measure, or assessment but rather one validates the inferences.
A measure is either valid or invalid.	Validity statements are not dichotomous (valid/invalid) but rather are described on a continuum.
Four types of validity exist (content, predictive, concurrent, and construct). Test user, evaluator, or researcher typically assuming only one of the four is sufficient to have demonstrated validity.	Construct validity is the central, most important feature of validity. There are no longer various types of validity but rather different sources of evidence that can be gathered to aid in demonstrating the validity of inferences.
Validity is defined by a set of statistical methodologies, such as correlation with a gold standard.	Validity is no longer defined by a set of statistical methodologies, but rather by an elaborated theory and supporting methods.
If validity is the degree to which the test measures what it is supposed to measure and reliability is the consistency of a test yielding the same results when the entity being measured has not appreciably changed, reliability is a necessary, but not sufficient, condition for validity.	Reliability (i.e., having as little measurement error as possible) is a question of *data quality*, whereas validity is a question of *inferential quality*. They are interconnected: data quality bounds or limits inferential quality.

Measurement validation: from theories to procedures

The traditional and contemporary views of validity are different not only for the theoretical considerations about validity/validation, but also for the consequences for practical validation procedures.

To validate a measure, the traditional approach required researchers to (Zumbo, 2005):

- Ask experts if the items (or behaviors) tap the construct of interest (*content validity*);
- Select a criterion and correlate the measure with the criterion measure obtained in the present (*concurrent criterion validity*)

- Select a criterion and correlate the measure with the criterion measure obtained in the future (*predictive criterion validity*)
- Correlate the measure to a gold standard, applying factor analysis and/or multi-trait multi-method approaches (*construct validity*).

One of the limitations of these traditional quantitative test validation practices is that they are descriptive rather than explanatory (Zumbo, 2009). This distinction (descriptive vs explanatory) is in some ways parallel to the one proposed by Kane (2001): there are strong and weak forms of construct validity. The weak form is characterized by any correlation of the test score with another variable being welcomed as evidence for the "validity" of the test. In contrast to the weak form of construct validity, the strong form is based on a well-articulated theory and well-planned empirical tests of that theory. In short, the strong form is theory-driven whereas the weak form implies that a correlation with some criterion is sufficient evidence to use the test as a measure of that criterion. According to Zumbo (2005, 2007, 2009), the strong form of construct validity should provide an explanation for the test scores, in the sense of the theory having explanatory power for the observed variation in test scores.

This explanation of the measure (i.e., validity) is practically achieved by different validation practices that Hubley and Zumbo (2011) organized in the following representation (see Figure 3.2):

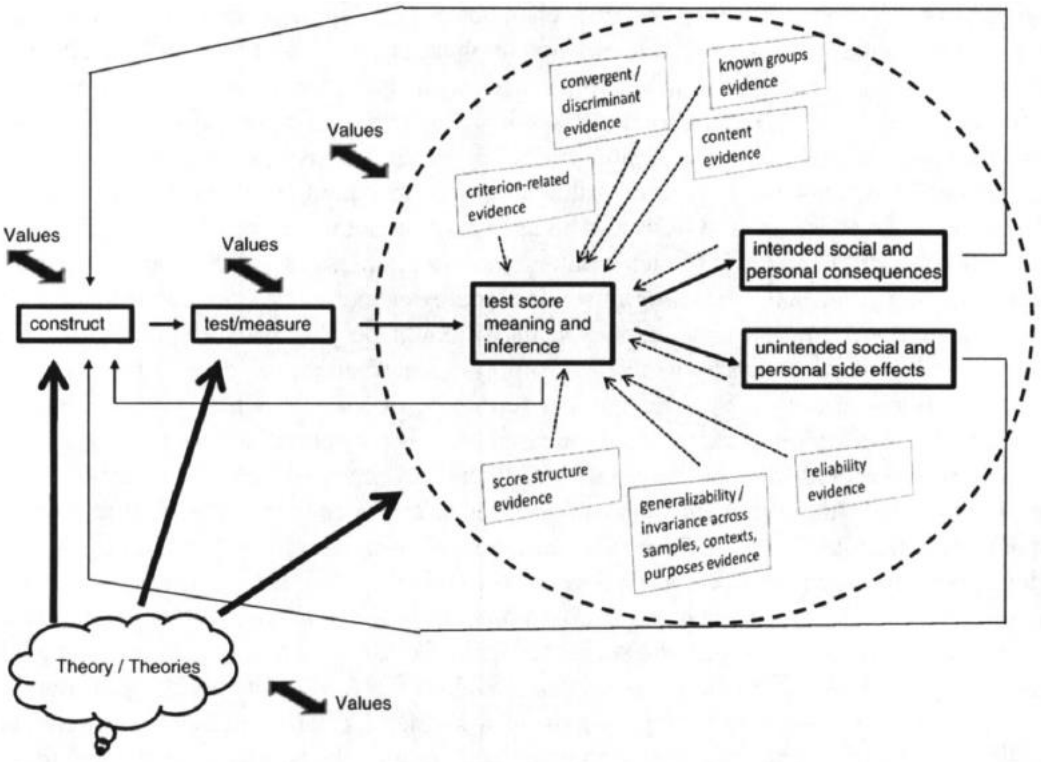

Figure 3.2. *Hubley and Zumbo's revised unified view of validity and validation.*
Reprinted from "Validity and the consequences of test interpretation and use" by A. M. Hubley, and B. D. Zumbo, 2011, *Social Indicators Research*, 103(2), page 226.

This figure shows that to measure a construct, the researcher needs to first develop a test/measure. Then the researcher has to explain why and how the inferences he or she made are appropriate, meaningful, and useful taking into account the context in which the test is used and subjects are embedded. Several forms of evidence of validity can support these inferences: criterion-related, convergent/discriminant, known groups, content, score structure, reliability, and generalizability/invariance evidence. These inferences inevitably generate (intended and unintended) social and personal consequences[18]. According to Hubley and Zumbo (2011), these consequences are elements themselves of construct validity, as they are considered necessary to fully understand the construct being measured. All the elements included in the large dashed circle are part of the

[18] Hubley and Zumbo (2011) proposed an example about a test measuring depression in old people. If the measure is being used to describe depression levels, one needs to consider the intended and unintended social consequences of finding very small or very large numbers of depressed elderly.

validation process. The circle represents construct validity (Hubley & Zumbo, 2011), which is at the core of this unified and contextualized view of validity and validation.

The last two elements included in Figure 3.2 are the theory/theories and the values. Theories (i.e., theory related to the construct, theories related to the sample and context, and psychometric theory) are included in the validation process, as they influence the construct, the test/measure, and construct validity evidence. Still more pervasive are the values of the researcher/test user, which affect theory/theories, the construct, test/measure, and construct validity as well as validation choices and decisions. As Messick (1995) noted, everything we do – from our development of a construct and measure, to our use of tests, to our interpretation of the obtained scores, to our validation approaches – reflects our values[19].

This graphic summary of the contemporary concept of validation is useful both to list new techniques of validation (e.g., measurement invariance) as well as to remind researchers that, during the validation process, we need to be more reflective, more thoughtful, and more aware of how values, theory, practice, and consequences are linked (Hubley & Zumbo, 2011).

As seen, the contemporary practice of validation is not in opposition to the traditional one, but more extensive, as it requires testing more validity evidence and adopting more statistical techniques. For example, the evidence related to the content, the criterion and the convergence are preserved, but other evidence is added. This extension does not concern only the kind of evidence that is of interest, but also the statistical techniques that can be used to obtain this evidence. Specifically, there is one class of methods that is particularly central to the contemporary validation process (Zumbo, 2005): structural equation models (SEM[20]). These models are particularly important to test validation research because they are a marriage of regression, path analysis, and latent variable modeling.

[19] In the example of Hubley and Zumbo (2011) about the test measuring depression, influences due to values can be reflected by (a) an interest in identifying and measuring negative symptomatology, (b) terming this constellation of symptoms 'depression', (c) focusing specifically on older adults, (d) using a deficit model or values of normality/abnormality to frame the construct, …

[20] As Zumbo (2007) stressed, structural equation models and exploratory as well as confirmatory factor analysis models decompose the covariance matrix of multivariate data into deterministic (i.e., reproduced covariance matrix) and stochastic (i.e., residual matrix) components. This fit the classical test theory that decomposes the observed score into a deterministic part (i.e., true score) and a stochastic part (i.e., error).

Zumbo (2005) identified two main classes of SEM models that can be useful for validation research. The first is the Confirmatory Factor Analysis (CFA), useful to test the dimensionality of the scale/test. The second is Multiple Indicators Multiple Causes (MIMIC) models, which are SEM models used to test relationships not influenced by error measurement. MIMIC models, first described by Jöreskog and Goldberger (1975), essentially posit a model stating that a set of possible observed explanatory variables (e.g., gender) affect latent variables (e.g., depression) that are themselves indicated by other observed variables (depression tests). Also, other authors (e.g., Conroy, Metzler, & Hofer, 2003; Pastore, *in press*) reflected on the potential of SEM to enrich the contemporary validation process. A synthesis of the main new validation practices is reported in Table 3.2.

The traditional procedures utilize the Pearson correlation between two observed measures. In the case of types of validity, the correlation is between two different measures (e.g., the measure to validate and a gold-standard or a criterion), while in the case of reliability, the correlation is between two measurements of the same thing (e.g., a measure is administered to the same person on two different occasions, there are two different observers of the same event, or two equivalent forms of the measure are used). For the contemporary conception of validity, these correlational analyses are useful, but not sufficient (Zumbo, 2005). First, the correlations among observed measures can be substituted with correlations among latent variables (correlations created using the SEM), excluding the measurement error from the correlation estimate. Furthermore, analyses other than correlations are applied to validate test scores (see Conroy et al., 2003; Pastore, *in press*; Zumbo, 2005): among these, the main examples are CFA, measurement invariance, Multiple Indicators Multiple Causes (MIMIC) models, and composite reliability.

Table 3.2. Comparing traditional and contemporary technical procedures of validation

Traditional view of validity		Contemporary view of validity	
Type of validity and reliability	Statistical procedure	Type of validity evidence	Statistical procedure
Content validity	/	Content evidence	/
Criterion validity	Correlation	Criterion-related evidence	Correlation by SEM
Construct validity	Correlation, EFA	Convergent/discriminant evidence	Correlation by SEM
/	/	Score structure evidence	CFA
/	/	Known groups evidence	MIMIC models
/	/	Generalizability/invariance evidence	Measurement invariance
Reliability	Correlation, Cronbach alpha	Reliability evidence	Correlation by SEM, Composite reliability

I proposed Table 3.2 to summarize the main statistical differences between the two views of the validation process, but I do not mean that the validation process involves only statistical issues. On the contrary, the process of validation is something that researchers and test users should have in mind starting with the test/measure development (in Figure 3.2, indeed, the validation process starts with the passage from the "construct" to the "test/measure").

Practical steps for measurement development and validation

Different authors (e.g., Benson & Clark, 1982; Chiorri, 2011; Downing, 2006; Furr, 2011; Hambleton & Jones, 1993; Schwab, 1980) suggested multi-step procedures to develop and validate a test (or, according to the new view of validity, to develop a test and validate inferences made from the test score). Across these different procedures, it is possible to identify three shared macro-steps: (1) item development; (2) test development; and (3) test score explanation.

1. **Item development:**
    - Construct definition and contextualization based on information collected by: (1) deductive processes: from the construct's definition in the literature (review of literature, previous instruments) and (2) inductive processes: from people's experience (focus groups, interviews) in order to make the construct fit with the *context*.

- Creation of the first version of the scale by: (1) producing items measuring the construct of interest; (2) choosing the response scale; (3) writing the instructions that the subject will read before taking the survey.

2. Test development:

- Cognitive interview to test the comprehensibility and applicability of the instrument by the target population. To know about cognitive processes during item responding is necessary to made the right inference from test scores (Zumbo & Chan, 2011).
- Pilot study: administering the scale to a representative target sample in order to select items that work better (normal distribution, response rate, correlations among items, factorial solution through the Exploratory Factorial Analysis, Confirmatory Factor Analysis, and estimate of reliability).

3. Test score explanation:

This is the step in which the focus is on validation, even if the previous steps also contribute to explaining the observed variation in test scores. During this step, technical procedures described in Table 3.2 are performed.

The values that influence test development and validation as well as the social consequences generated from the developed and validated test should be considered across all the multi-step procedures presented here.

3.2. Why does literature on emerging adults' financial well-being need it?

The ongoing theorization about measurement validation has prompted an increased number of validation studies across different disciplines. As found by Zumbo and Chan (2014), this trend is particularly strong in the fields of psychology and education (see Figure 3.3).

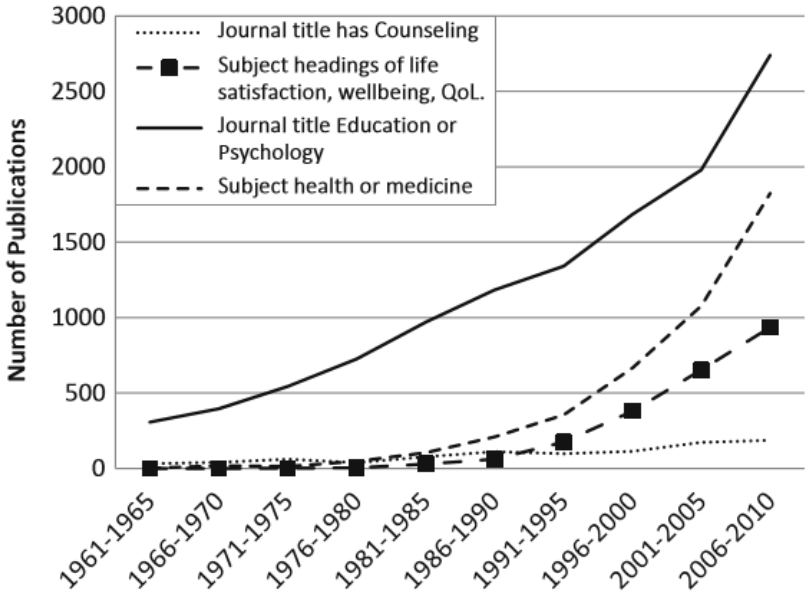

Figure 3.3. *Trend lines of publications of validation studies across disciplines.*
Reprinted from "Validity and validation in social, behavioral, and health sciences" (page 6), by B. D. Zumbo, & E. K. Chan (Eds.), New York, NY: Springer International Publishing.

Despite this, validation studies related to the *financial well-being* construct are still rare. In the scoping review presented in the first chapter of this thesis, I found that most of the studies on emerging adults' financial well-being (81.81%, 36 out of 44) measured this construct using non-validated measures. Paraphrasing Zumbo's words, the appropriateness, meaningfulness, and usefulness of the inferences made from their scores was never verified.

The remaining studies (8 out of 44) measured financial well-being using the Student Financial Well-Being Scale (Norvilitis, Szablicki, & Wilson, 2003) or the InCharge Financial Distress/Financial WellBeing Scale (Prawitz et al., 2006). The first instrument, adopted in six studies,

comprises eight items evaluated on a five-point response scale and has college students as the target population. These items load on two different factors, current financial concerns and future expectations. Examples for the first and second factors are "I am confident in my abilities to handle credit cards" and "I will be able to handle my money in the years to come," respectively. The second validated instrument used to measure subjective financial well-being was the InCharge Financial Distress/Financial Well-Being Scale (Prawitz et al., 2006), adopted in two studies. This scale, validated on a population diverse in age and stage of life, comprises eight items, each evaluated on a ten-point response scale. Sample items are "How frequently do you find yourself getting by financially, living paycheck to paycheck?" and "How do you feel about your current financial situation?"

These two scales were both presented as newly developed and validated instruments, but I argue that their validity has not been sufficiently demonstrated for a population of emerging adults for the following reasons.

The first scale (Norvilitis et al., 2003) has three limitations. First, this scale is applicable only to post-secondary education students because it has an item related to student loans ("I worry about repaying my student loans"). Second, this scale is applicable only in cultures in which emerging adults are used to having debt, because 5 out of 8 items concern debt. In cultures such as, for example, Italian culture – in which having debt is quite rare, above all among young adults (Forum Nazionale Giovani, 2006) – these items are not applicable. Finally, this scale was not completely validated. Specifically, the last step of validation, "test score explanation," was not completely performed (e.g., the scale structure was not confirmed).

On the other hand, the Financial Distress/Financial WellBeing Scale (Prawitz et al., 2006) is a completely validated scale. The problem with this scale is that it was developed to measure financial distress and well-being in a sample heterogeneous for what concerns the participants' stage of life. In other words, the validation of this scale was not *contextualized* specifically with emerging adults, so there is no evidence that this scale is adequate to measure the financial well-being of people aged 18-

29. As indicated by the scoping review, even if the definition of the construct is the same regardless of the age of the target population, its operationalization is more affected by the target population's stage of life. For example, it could be not adequate to use the word "income" in items measuring emerging adults' financial well-being, as a significant number of emerging adults do not have a personal income.

In sum, a developed and validated instrument that is completely adequate to measure *emerging adults' financial well-being* still does not exist.

3.3. How did I apply it?

Based on the results of the scoping review as well as the reflections just reported, I argued that literature on emerging adults' financial well-being could be enhanced by the development and validation of a test measuring emerging adults' subjective financial well-being.

The instrument I am going to present – the Subjective Financial Well-Being Scale (SFWBS) – was developed taking into consideration the specificities of the target population not only for its stage of life (emerging adulthood) but also for its cultural context (i.e., Italy), given that validity should be a *contextualized and pragmatic explanation* (Zumbo, 2009).

The development and validation of this measure is here presented, following the 3-step procedure (item development, test development, test score explanation) previously proposed.

Step 1: Item development

To produce items that are likely an empirical measure of the construct of interest to researchers (i.e., financial well-being), researchers need to outline a clear *definition* of the construct and identify its specificity related to the *culture and context* in which they expect to use it. I obtained the definition of financial well-being through a deductive process (review of literature), while its specificities related to the culture and the context (Italian emerging adults) were outlined through both a deductive

(demographic data on Italian young adults' financial condition) and an inductive process (interviews with experts on Italian emerging adults' financial well-being). The interviews with the experts were also used to test the appropriateness of the theoretical definition of financial well-being and its adaptability to the Italian context. Figure 3.4 shows a synthesis of the sources used to conceptualize Italian emerging adults' financial well-being.

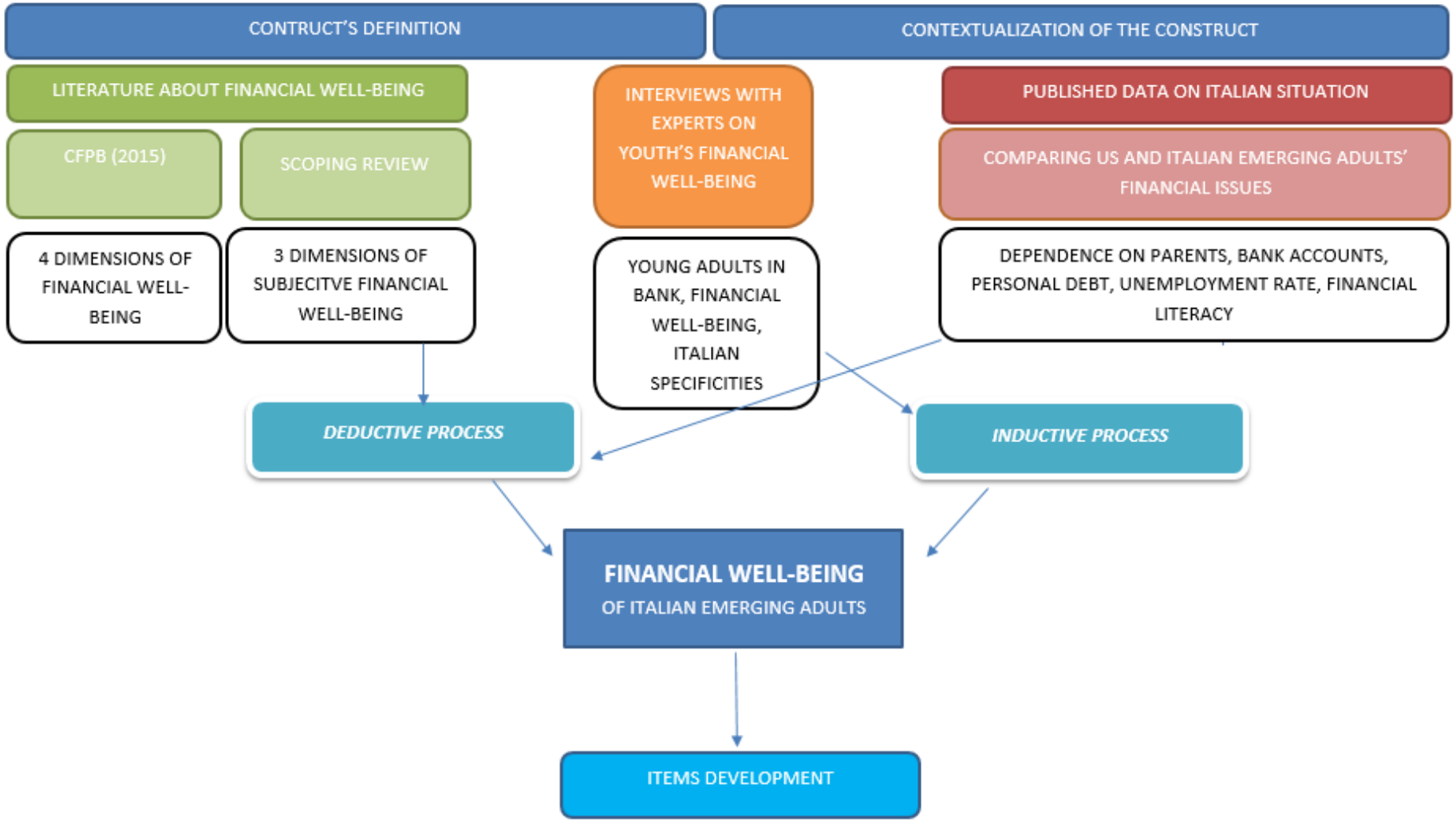

Figure 3.4. *Synthesis of the first step for develop the Subjective Financial Well-being Scale (SFWBS)*

Financial well-being definition

To outline the definition of financial well-being, two main sources were used: qualitative research conducted in the USA (CFPB, 2015) and the scoping review presented in the first chapter of this thesis.

According to CFPB research (2015, p.18), "financial well-being is a state of being wherein a person can fully meet current and ongoing financial obligations, can feel secure in their financial future, and is able to make choices that allow enjoyment of life." Specifically, this definition confers on financial well-being four elements different in their types of experience (security vs. freedom of choice) and timeframe (present vs. future; see Figure 3.5).

	Present	Future
Security	Control over your day-to-day, month-to-month finances	Capacity to absorb a financial shock
Freedom of choice	Financial freedom to make choices to enjoy life	On track to meet your financial goals

Figure 3.5. *The four elements of financial well-being.*
Reprinted from "Financial well-being: the goal of financial education" (page 19), by Consumer Financial Protection Bureau (CFPB), 2015, Iowa City, IA: Consumer Financial Protection Bureau.

This definition emerged from the only scientific effort to systematically define financial well-being that I found in the literature before performing the scoping review. As the CFPB's definition was based on interviews with adult workers (among which only a few were emerging adults), retired people, financial practitioners, I felt the need to investigate the specificities of this construct during emerging adulthood. Specifically, the conducted scoping review, collecting 44 papers about emerging adults' financial well-being, allowed producing an integrated definition of the construct:

Financial well-being is a good and positive financial condition that has an objective and a subjective side. The former (usually referred as "economic well-being") consists of the material resources that an individual possesses when the balance between entries (e.g., income) and exit (e.g., debt) is considered, and those he/she

already owns (e.g., assets, a saving account, a health insurance, job benefits, education). The latter, or subjective financial wellbeing, consists of an individual's subjective experience with respect to his/her financial condition and the manner in which he/she evaluates such condition. Thus, I detected two theoretical dimensions of subjective financial well-being, and here I propose to refer them as experience (individual's perception of his/her own financial condition) and evaluation (judgment that an individual conducts of their owns financial experience). This evaluation is emotional when it concerns the positive (e.g., security, control) or negative (e.g., worry, distress) feelings caused by personal financial experiences of the individual. Instead, the subjective evaluation of one's financial experience is cognitive when it consists of the degree of satisfaction or dissatisfaction that one has for his/her financial condition at that moment. The subjective financial well-being, both as an experience and an evaluation, is linked to one's past and future.

This definition incorporates some elements of the CFPB (2015)'s definition (e.g., security, control, present, future) but they are organized in a different way and integrated with other aspects (e.g., cognitive evaluation of own financial condition – financial satisfaction – and the objective side of the financial well-being) that are absent from the CFPB (2015)'s definition.

Based on the definition derived from the scoping review, I decided to create an instrument measuring only subjective financial well-being, as the objective and subjective sides of the construct are so qualitatively different that it is most appropriate to measure those using different measures.

Contextualization of the construct

Before proceeding with item-development, I verified whether the conceptualization of financial well-being that emerged from the scoping review fit the specificities of the place and time in which I planned to use the measure (Zumbo, 2009). Most of the studies included in the scoping review came from the USA, where emerging adults' financial condition has – according to Bongini, Trivellato and Zenga (2013) – characteristics similar to some nations (such as the UK and Australia), but different from others (such as Mediterranean European countries).

In Table 3.3 I reported the main differences identified in US and Italian emerging adults' financial circumstances in order to stress the main contextualization required when the financial well-being literature is adapted to the Italian context.

Table 3.3. Comparing US and Italian emerging adults' financial issues

	Unites States	Italy
Living arrangement	22.9% of US young adults aged 18-34 live with parents (Vespa, 2017).	67.3% of Italians aged 18-34 live with parents (Eurostat, 2015).
Financial dependence on parents	About 1 in 3 of all 18- to 34-year olds rely on their parents for financial assistance (Schoeni & Ross, 2005).	Italian young adults did not earn enough to become financially independent as quickly as France, Germany, Netherlands, Sweden, UK, and the United States (Smeeding & Phillips, 2002).
Personal debt	In 2012, 58.6% of US undergraduate students and 64.1% graduate students had student loan debt at the end of their degree program (Delisle, Phillips, & van der Linde, 2014). A significant amount of personal debt also stemmed from the widespread use of credit cards (Chiteji, 2007; Lyons, 2008). The 84% of the US student population had credit cards (Mae, 2009)	Most Italian young adults report that they do not need any kind of loans. Some of them imagined future loans to buy a house, but no one considered the option of student loans[1] (Forum Nazionale Giovani, 2006).
Bank account	Kirkham (2015) reported that the percentage of America young adults who do not have a savings account is relatively low for youth aged 18-24 (22.4%) and 25-34 (18.0%).	Few Italian young adults have a bank account. They say they do not need one (Forum Nazionale Giovani, 2006). Italian youth (aged 15-24) are less than half as likely to have a formal account as those ages 25–64 (Demirguc-Kunt & Klapper, 2012).
Unemployment rate	The Bureau of Labor Statistics (2017) found that at the end of 2016 the unemployment rate among US young adults aged 20-24 was 8.6%, while the unemployment rate among young adults aged 25 to 34 was 5.0%.	ISTAT (2016) found that at the end of 2016 the unemployment rate among Italian young adults aged 15-24 was 40.1%, while the unemployment rate among young adults aged 25 to 34 was 17.8%.
Financial literacy	There were often low levels of financial literacy among US young adults (e.g. de Bassa Scheresberg, 2013; Lusardi, Mitchell, & Curto, 2010).	Italian young adults have low financial literacy (Forum Nazionale Giovani, 2006) in comparison with young adults from most other countries (Bongini et al., 2013).

[1] It is important to consider that the Public University in Italy costs from 500 to 2000 euros at each year (http://www.a1life.it/2014/12/quanto-costa-l-universita/), while in the USA the cost is higher (https://www.topuniversities.com/student-info/student-finance/how-much-does-it-cost-study-us).

Information presented in Table 3.3 about the Italian context was obtained through a *deductive process* (i.e., from literature). To test the adequacy of the constructs' definition in the Italian context, and above all to understand Italian emerging adults' financial situation more in depth, I also performed nine structural interviews with eight bank employees and one Full Professor of Italian demography (*inductive process*). They all were experts on Italian young adults' financial situation. The empirical knowledge of bank employees – coming from their day-by-day experience with young clients – was integrated with the academic knowledge of the Full Professor.

Details about the method and results of interviews conducted with experts on Italian emerging adults' financial well-being are reported in Box 1.

Box 1. Interviews with experts on Italian emerging adults' financial well-being

Participants

Interviews were conducted with nine subjects: Eight were bank employees and the last was a Full Professor in demography with expertise on Italian young adults' financial condition. The process of selecting bank employees to interview involved an attempt to survey individuals with heterogeneous experiences (*maximum variation sample*; Patton, 2005). Interviewed bank employees worked for seven different banks (one of which was an online bank, as this format is favorited by new generations; Associazione Bancaria Italiana [ABI], 2014) and in different geographical locations (4 from the South of Italy and 4 from the North of Italy). They had 1 to 15 years (M=6.62; SD=5.32) of experience working for banks, with different experienced roles (director, private client manager, family manager, marketing and communication service, information desk, client consultant, and so on…), but all of them were, in some ways, in contact with 18-29 year old clients.

Instrument

The structural interview administered to participants investigated three main topics:

(1) Definition of young adult client. Participants were asked what they think of as a "young adult" client (i.e., what age range) and which bank offers/services are specific for young clients. Furthermore, they had to report the presence of young adults in their bank, the service they came for, and their knowledge about bank services.

(2) Definition of financial well-being. Two definitions of financial well-being (the one proposed by CFPB and the one obtained by the scoping review) were presented to interviewees, and they were asked to evaluate if and how these definitions were adaptable to Italian emerging adults.

(3) Comparing Italy with other countries. Participants had to compare the financial condition of Italian young adults to that of young adults in other countries they knew about. Furthermore, interviewees evaluated the applicability for the Italian context of critical items (e.g., about debt) used to measure emerging adults' financial well-being in other countries.

Procedures and Data Analysis

Each interview was recorded (as specified in the informed consent that participants signed) and then transcribed. Written texts were analyzed using ATLAS.ti software (1991). A thematic analysis (Braun & Clarke, 2006) was conducted, identifying common themes through the different interviews.

Results

As interviews were structured, identified themes are here presented separately for each section of the interview.

(1) Young adults in bank.

Young clients are people aged 18-35: Mainly banks use the expression "young" to refer to clients aged 18-35, even if most of the services for young adults (e.g., free checking accounts, including debit cards and internet banking) can only be used until the age of 27. Services specifically for young adults that can be used until age 35 concern benefits such as reduced rates for loans. The

only bank that has no specific policies or benefits for youth is the online bank, and that is because it offers a free checking account to all clients.

Low presence of young clients in bank: Bank employees stated that the presence of young adults in the bank is not common. Young adults usually have a debit card but they do not necessarily have a bank account. Usually they open their own bank account when they start having a stable job. Credit cards are available only for people who have a stable job and, consequently, they are not common among Italian youth.

Low financial literacy of young clients: Furthermore, many Italian young adults have no idea about the difference between debit cards and credit cards or the requirements to have them. This is evident when young adults go to the bank to apply for a credit card (in order to buy a smartphone on credit) having no idea that they need a salary to receive credit.

The prepaid card is the bank service most used by young clients: The bank service most used by young clients is the prepaid card (that they use to withdraw cash or to buy stuff online). They can obtain a prepaid card even if they have no bank account. Most young adults who open a bank account before starting work have a bank account co-signed by their parents. Once the child obtains a stable job and his/her own bank account, he/she sometimes activates an automatic saving option (e.g., designating a specific percentage / amount to be set aside in a saving account), while it is rare for youth to open higher-growth investment accounts (e.g., stocks). More established workers (those older than 27) may ask for a loan (e.g., to buy a house or a car), but often the loan is approved only if their parents act as guarantors (especially when the loan is for a house).

To apply for a student loan is not a common practice in Italy: No cases of student loans were reported by bank employees. Actually, only one out of the 8 banks offers a student loan option, and no clients have ever actually taken out a student loan. According to the Professor of Demography, Italians traditionally ask for loans from relatives and friends rather than the bank, because of low trust in financial institutions.

(2) Definition of financial well-being.

Present financial security is rarely relevant for financial well-being: The first element of financial well-being proposed by CFPB (2015) - *having control over day-to-day, month-to-month finances* – was considered inadequate by half of the interviewed subjects because, according to them, Italian young adults do not yet have these kinds of worries; when they do have financial concerns, they are on a month to month rather than a day to day basis.

Future financial security is always relevant for financial well-being: The second element of the CFPB definition - *having the capacity to absorb a financial shock* – is considered relevant by all the subjects. They affirmed that this worry is mainly a consequence of the 2008 economic crisis and that parents are often the means that young adults use to absorb financial shocks.

Financial freedom in the future is always relevant for financial well-being: The third element - *being on track to meet one's financial goals* – is considered very important for young adults' stage of life. However, bank employees also told stories about young adults who have lost their hope about the future because of the economic crises Italy has endured.

Financial freedom in the present is often relevant for financial well-being: Finally, the fourth element - *having the financial freedom to make the choices that allow you to enjoy life* – is always considered relevant for youth. Rare exceptions can happen when parents are in a difficult economic situation and the child's priority is to help parents instead of enjoying his/her life. Furthermore, the Professor of Demography affirmed that young adults desire the financial freedom not only to enjoy their present life but also to realize their goals for the future. At the same time, bank employees reported some cases of young adults who prefer to live day to day.

Objective financial well-being consists of entries (e.g., income), exits (e.g., debt), and assets (e.g., house): All those interviewed considered the definition of objective financial well-being obtained by the scoping review as exhaustive.

Subjective financial well-being is affected by contextual factors: With respect to the scoping review's definition of subjective financial well-being, they agreed about the distinction between

experience and evaluation, as well as the distinction between cognitive and emotional evaluation. At the same time, bank employees wanted to stress that the way in which young adults experience and evaluate their financial condition depends on the values transmitted by their family, the place in which they live (and relative culture), the people with whom they compare themselves (social comparison), and on their and their family's financial literacy.

The influence of parents on emerging adults' financial well-being is strong: Also the Professor of Demography agreed with the scoping review's definition, although he stated the need to stress the role of parents in emerging adults' financial well-being more, because their role affects the perceptions that Italian youths have of their financial condition. For example, young adults know that if they have a financial problem, they can receive help from parents. Parents are their first reference point, so young adults are really worried about their financial condition only if their parents are in financial difficulties. In order to really obtain an evaluation of *their own* financial situation from young adults, it is necessary to ask them if they are worried about the financial situation that they will have when they are age 35. In this way, young adults can perceive their financial situation as independent from their parents' and offer a more individual and differentiated evaluation.

(3) Comparing Italy with other countries.

Italian parents have a stronger presence in their children's financial life: Bank accounts of young Italian clients are often co-headed with parents and when the account is overdrawn, the parents are directly contacted and informed of the problem.

Italians have lower financial literacy: Italian young adults have lower financial literacy than other countries' young adults. Financial education programs are rare in Italy and the main financial socialization source is still the family.

Italians have specific financial habits: Young adults use different bank services from other countries' young adults. Specifically, they still prefer cash while young adults in other countries make all payments with credit or debit cards. Italians still desire to own a house and so, after age 30, they ask for a mortgage. They are not usually interested in investments.

Italians' financial specificities are due to the Italian context: These differences are attributed to the prolonged cohabitation of children and their parents as well as the scarce work opportunities offered to young people in Italy.

The analysis of the interviews showed that the financial well-being definition proposed by the CFPB (2015) is only partially applicable to Italian emerging adults. The two elements referring to the future were more pertinent than the ones referring to the present. The scoping review's definition of financial well-being was considered adequate even though, considering the Italian context, the influences due to future expectations, social comparison, and parents should be more stressed. Experts described Italian emerging adults as having limited financial literacy, little expertise about banking services, and a low financial differentiation from parents, especially before obtaining a stable job.

First version of the scale measuring financial well-being

After having defined subjective financial well-being and having contextualized it within the Italian emerging adults' context, items related to the construct were developed (see Figure 3.4).

I started with items used in previous publications to measure emerging adults' subjective financial well-being, removing items that were not adaptable to the Italian context (e.g., items about personal debt) and adding new items to operationalize specific aspects of financial well-being not represented by previous items (e.g., items about family).

Overall 45 items were produced, which I expected to belong to three different dimensions of the construct: 23 items measured financial experience (e.g., "Sometimes there is no money to buy things that I need"), 11 items measured cognitive evaluation (e.g., "I am satisfied with my present financial situation"), and 11 items measured emotional evaluation, with some of the items concerning positive emotions (e.g., "My financial condition makes me feel safe"), and others negative ones (e.g., "Often I worry about paying my expenses").

To complete the first version of the scale, the instructions for test administration were written. Furthermore, I decided to use a five-point Likert response scale - the most often used (Dawes, 2008) – in order to make the scale more similar to others and facilitate their inclusion in surveys containing other scales.

As suggested by Chiorri (2011), the test instructions were written to be clear and short. They instructed participants to evaluate the truth of each sentence, on the 5-points of the response scale corresponding to: 1= Totally false; 2= More false than true; 3=Neither false or true; 4= More true than false; 5= Totally true.

Step 2: Test development

Once the draft of the scale was completed, the instrument's comprehensibility and adaptability among Italian young adults were verified (cognitive interviews), and then the scale was administered in order to select items with adequate psychometric characteristics (pilot study).

Cognitive interviews

Cognitive interviews consist of structured interviews focused on the cognitive processes that respondents use to answer survey questions (Willis, 1994). The aim is to deeply investigate respondents understanding of the items (e.g., What does the respondent believe the question to be

asking?, What do specific words and phrases in the question mean to the respondent?) and respondents feeling regarding the relevance of each item's content to their lives (e.g., asking about the worry the respondent feels regarding student loans is not relevant if respondents do not have students loans).

The comprehensibility and applicability of the Subjective Financial Well-Being Scale (SFWBS) were tested through eight cognitive interviews (see Box 2 for details).

Box 2. Cognitive Interviews among Italian emerging adults

Participants

A cognitive interview was administered to eight emerging adults, paying attention to select subjects that had different profiles with respect to the more relevant aspects of variability during the emerging adulthood stage of life (*maximum variation sample*; Patton, 2005). Specifically, the sample was heterogeneous for gender (4 male and 4 female), age (4 aged 18-24 and 4 aged 25-29; M=24; SD=3.02), occupational status (4 students and 4 workers), and living arrangement (4 living with parents and 4 living out of family of origin house).

To have at least one subject for each possible combination of these variables eight subjects were needed. I started interviewing eight subjects and then evaluated if their answers were too heterogeneous, thus requiring additional respondents (*redundancy criterion;* Hardon, Hodgkin, & Fresle, 2004).

Participants were all Italians, belonging to different Italian regions (4 from North Italy, 2 from the South, and 2 from the Center of Italy), and having different experience regarding economic dependence on parents (4 were totally dependent, 2 were partially independent, and 2 were totally independent).

Instrument

A structured interview was conducted with each subject, asking them to evaluate each item of both scales in terms of its comprehensibility and applicability. The interviews were conducted using the *think-aloud* procedures described by Ericsson and Simon (1980). The term think-aloud is used here to describe a very specific type of activity, in which subjects are explicitly instructed to "think aloud" as they answer the survey questions. Specifically, the respondent received a paper version of the scales (the same version as that of the interviewer). The interviewer read each question aloud to the subject, and then recorded the processes that the subject used in arriving at an answer to the question. The interviewer interjected little else, except to say <tell me what you are thinking> when the subject paused. When the interpretation of the items made by the respondents was different from the one expected, the interviewer asked the subjects for suggestions to make the item more understandable.

The same procedure was used to verify the comprehensibility of the instructions and scale responses.

Procedure and Data Analysis

The eight interviews were recoded and transcribed (as specified in the informed consent that participants signed) and their content compared item by item. When the item was correctly interpreted and considered applicable to their own life by all eight respondents, the item received no modification. When the item was not considered very comprehensible or applicable by one or more respondents, the research team evaluated how to modify it.

Results

High agreement was found among the 8 participants' suggestions about modifications, so the content extracted by these interviews was considered sufficient (*redundancy criterion*). All respondents considered instructions and the scale response easily understandable, so no modifications to those were made. However, different modifications were made with respect to item formulations. Specifically, the item "Some people I know almost always have clothes better than mine" was removed from the scale because interviewees suggested that answers to this question did not depend only on economic possibilities, but also on personal style and fashion preferences. Furthermore, 14 items (31.11%) were deemed to be hard to understand, and were simplified.

After removing or modifying items, the new version of scale was tested by a pilot study.

Pilot study

The aim of this pilot study was to test the statistical properties of the items, according to the following criteria:

- *Response rate*. Items with non-response rates above 30% had to be discarded or reviewed because many examinees may have found the item problematic (e.g. not understandable or too difficult; Crocker & Algina, 1986).
- *Normal distribution of answers to that item*. Items with kurtosis and skewness higher than $|1|$ had to be removed from the scale (Muthén & Kaplan, 1985).
- *Correlation of the item with other items belonging to the same scale*. Items with initial or extraction communality lower than .40 were removed from the scale (Fabrigar, Wegener, MacCallum, & Strahan, 1999).
- *Clear belonging to just one factor*. Items having all factor loadings lower than .30 in Exploratory Factor Analysis (EFA) (Comrey & Lee, 1992; Fabrigar et al., 1999) and/or being multifactorial were removed. Items were considered saturated by only one factor when their highest factor loading was at least twice that of the second highest factor loading.
- *Internal consistency*. Factors obtained by EFA had to have a Cronbach Alpha's score higher than .60 (Cronbach, 1951). Items that decrease the internal consistency of the factor they load on have to be removed from the scale.

The pilot study conducted to verify if items respected these five criteria involved more than 400 emerging adults who filled in an online questionnaire. For details about the methods of this pilot study see Box 3.

Box 3. Method of the pilot study

Participants

Data were collected in January 2017 from 405 Italian emerging adults. The current data collection was done using a *convenience sample* (Farrokhi & Hamidabad, 2012), and trying to make the sample heterogeneous for the variables most relevant respect to this topic: gender, age, occupational status, and living arrangement. I also adopted a *snowball sample* technique (Biernacki & Waldorf, 1981), asking each participant to invite friends to take part in the survey. The final sample of 405 subjects was composed of 65% females. Their ages ranged from 18 to 29 years old, and 69.9% of participants were 24 years old or less (M=23.2; SD= 2.7). Different occupational statuses were detected in the sample: 51.5% were students, 21% were workers, 21.3% were both students and workers, 1% were involved in a non-paying internship, 3.8% were looking for a job, and 1.5% were NEET (Not in Education, Employment, or Training; Bynner & Parsons, 2002). Finally, 49.1% of the participants were living in their parents' house, while 50.9% were living elsewhere.

Only 374 participants (92.35%) filled in at least one item of the Subjective Financial Well-being Scale.

Instrument

The survey was composed of socio-demographic questions related to the young adult participant and his/her family of origin as well as the 44-item Subjective Financial Well-Being Scale. Before beginning the survey, each participant signed an online informed consent form.

Data Analysis

Descriptive analyses were conducted to test the response rate and normal distribution of each item. Exploratory Factor Analysis (Principal Axis Factoring; Kaiser criterion; Oblimin Rotation) allowed testing of communality and factor loading requirements. Cronbach's Alpha was computed to test how each item contributed to the internal consistency of the factor it belonged to.

The obtained factorial structure was also tested by Confirmatory Factor Analysis, and measurement invariance of the scale was verified for the following variables: gender, age, living arrangement, and occupational status.

Results of the pilot study suggested the need to remove 19 items out of 44.

None of the items was problematic due to the response rate, as the highest detected non-response rate was 4.28%. Six items were removed because they had a non-normal distribution and 13 items were removed according to the results of the EFA. Specifically, six items were removed because they had communality lower than .40, and the other seven items were removed because they were bifactorial; none of the items had a main (i.e., higher) factor loading below .30. The financial factor solution, with no problematic items, was composed of 25 items, belonging to five different factors (see Table 3.4). All items met the internal consistency criterion because each factor had Cronbach alpha higher than .60 and no item made it lower.

Table 3.4. Final factor solution for the Financial Subjective Well-being Scale

Item	Expected Factor	Factor loading	Explained Variance	Alpha
Factor 1: General Subjective Financial Well-being				
I cannot complain about my financial situation	EMO	.807		
I'm happy with my financial situation	EMO	.796		
My current financial situation makes me feel tranquil	EMO	.762		
I'm satisfied with my present financial situation	COG	.750		
I'm satisfied with how my life is going from a financial point of view	COG	.726	32.937%	.910
I have enough money to pursue my passions	EXP	.611		
I am stressed daily because of my financial situation	EMO	.576		
I have enough money to enjoy my life	EXP	.547		
I have less money than I need (R)	EXP	.491		
I have enough money for everything I need	EXP	.450		
Factor 2: Financial Future				
I expect to be very satisfied with the financial situation that I will achieve thanks to my commitment	COG	.804		
The study/work path I have undertaken will allow me to achieve a satisfactory financial situation	COG	.762		
In the near future, I will have enough money to carry out my plans	EXP	.732	12.478%	.821
I'm on the right track to meet my financial goals	EXP	.490		
I am satisfied with the way I am preparing to reach my long-term financial goals (for example, to buy a car)	COG	.471		
Factor 3: Money management				
I am satisfied with the way I manage my financial situation	COG	.818		
I am satisfied with the way I manage my money	COG	.762	8.413%	.814
I am satisfied with the way I spend my money	COG	.679		
I feel I can handle my financial situation	EMO	.652		
Factor 4: Having money				
At times I do not have the money to buy what I need (R)	EXP	.779		
Sometimes I miss the money to buy things I need (R)	EXP	.705	5.312%	.839
I cannot do some things with my friends, because I do not have the money to do them (R)	EXP	.547		
Factor 5: Peer Comparison				
My financial condition is worse than that of my friends (R)	EXP	.831		
My financial situation is better than that of my peers	EXP	.691	4.949%	.780
My peers have usually more money available for free time activities than me (R)	EXP	.622		

Note. EXP= financial experience; COG= cognitive evaluation; EMO= emotional evaluation.

The resulting factorial solution showed (see Figure 3.6) that the three elements of subjective financial well-being (financial experience, cognitive evaluation, emotional evaluation) are not empirically distinct.

At the same time, my theoretical prospective was partially confirmed, as the main factor "general subjective financial well-being" was composed of items measuring all the financial well-being elements I proposed (financial experience, cognitive evaluation, and both positive and negative emotional evaluation). In this sense, it is possible to affirm that all elements concur with the subjective perception that emerging adults have of their financial condition. In other words, the three elements of subjective financial well-being are not empirically differentiated, but are all pertinent aspects of the constructs as constituting the general subjective financial well-being factor.

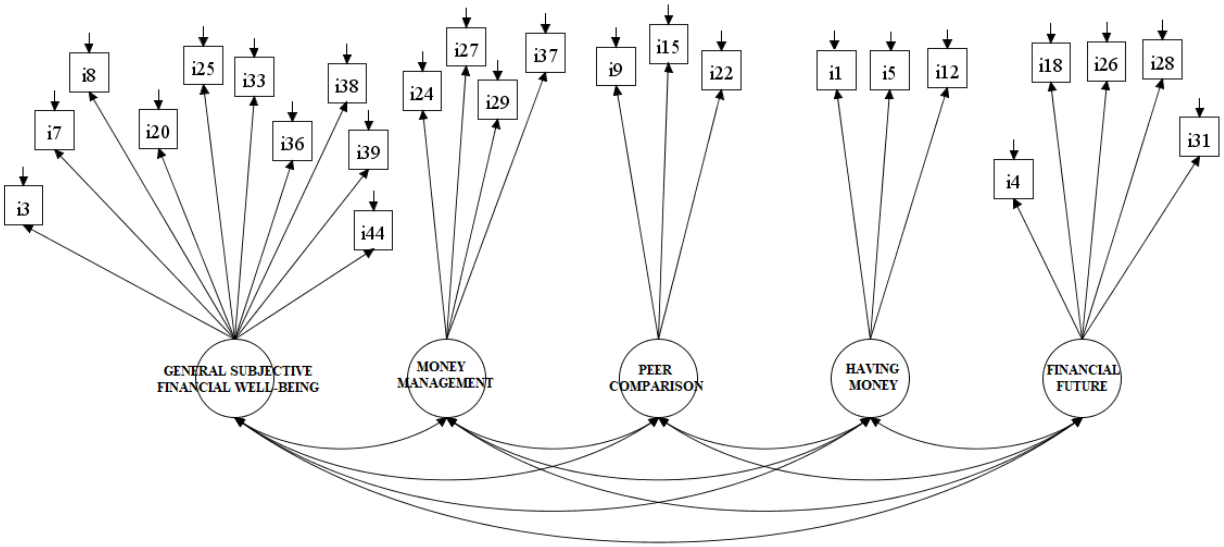

Figure 3.6. *Empirical factorial structure of the Subjective Financial Well-being Scale (SFWBS)*

The factors other than "General Subjective Financial Well-being" seem to measure very specific aspects of young adults' financial situation that are more or less linked to the this main factor (factor correlations from .285 to .556; see Table 3.5).

Table 3.5. Correlations among factors of Subjective Financial Well-being Scale

	1	2	3	4	5
1. General Subjective Financial Well-being	1.000	.285	.299	.456	.556
2. Financial Future	.285	1.000	.284	-.005	.166
3. Money Management	.299	.284	1.000	.114	.035
4. Having Money	.456	-.005	.114	1.000	.332
5. Peer Comparison	.556	.166	.035	.332	1.000

The following open question remained: is the main factor (general subjective financial well-being) the only pertinent measure of the construct "subjective financial well-being" while the other factors measure financial issues linked to financial well-being only but are not coincident with it?

The same factorial structure was also tested through Confirmatory Factor Analysis (CFA). CFA was performed using Mplus software (Muthén & Muthén, 1998-2014) and adopting the following model fit indexes: $\chi 2$ value, Root Mean Squared Error of Approximation (RMSEA), Comparative Fit Index (CFI), and the Standardized Root Mean Square Residual (SRMR). The model $\chi 2$ is a measure of poor fit, such that large, significant $\chi 2$ values indicate that the model fits the data poorly, whereas non-significant $\chi 2$ values indicate the model is consistent with the data (Iacobucci, 2010). The weakness of this index is that it is strongly influenced by the number of subjects (Cheung & Rensvold, 2002). Specifically, when the sample size is high the $\chi 2$ is not reliable. Also RMSEA is a measure of poor fit, and thus values close to zero indicate better fit (i.e., values less than .10 indicate reasonable fit, and values below .05 indicate good fit; Browne & Cudeck, 1992). In contrast, CFI is a measure of goodness of fit, with values close to 1 indicating good model. However, CFI values less than .90 indicate the model does not fit the data well (Hu & Bentler, 1999). Note the CFI is not informative when the RSMEA for the null hypothesis (RMSEA fnh) is less than .158 because this implies too small a value of the CFI (Kenny, 2015). RMSEA for null hypothesis is the RMSEA index computer for the independent model and, thus, it is different from the RMSEA just cited as fit indices (i.e., the

RMSEA for the alternative model). Finally, SRMR was used as a measure of poor fit, where values of .08 or less indicate good fit (Hu & Bentler, 1999).

The factorial structure of the Subjective Financial Well-being Scale was tested by a CFA on the same sample from which the EFA solution was obtained (N= 374). Fit indices suggested that the model was acceptable [$\chi 2$ (265) =777.676; p<.001; RMSEA= .072(.066, .078), p<.001; RMSEA fnh= .201; CFI=.886; SRMR = .063]. Specifically, the significant $\chi 2$ could depend on the sample size. The measures of poor fit (RMSEA and SRMS) were sufficiently low. CFI is problematic because it is slightly lower than .90. When RMSEA and CFI disagree and CFI is the problematic index, the cause is correlations in the data that are sufficiently low that the Fb (population fit function values of the baseline model) $\leq df_m/40$ (where df_m is the model's degrees of freedom), but not so low that Fb > $df_m/400$ (Lai & Green, 2016). In this kind of model, a higher CFI could be obtained using a bigger sample. As the problem is with the number of subjects and not with the model, this model was considered confirmed. Moreover, all factor loadings were higher than .60, so the items seemed good measures of the factors. The problems were likely the result of correlations among factors, as some were lower than .30 and one was non-significant (Money management with Peer comparison: r=.079; p=.217). This is another piece of evidence that made me reflect about what I was measuring with these factors. Indeed, to justify the meaning and the appropriateness of the measures, researchers should consider not only the relationship between the measure being validated and other measures (e.g., convergent evidence) but also the relationships among the factors within the same measure.

Another piece of evidence relevant to explaining the variability in test scores is the generalizability of the measure (Zumbo, 2009). The generalizability aspect of validity examines the extent to which properties and interpretations of scores on the construct of interest generalize across population groups, settings, and tasks (Messick, 1995). Testing for invariance of a measure between a sample's subgroups provides information about how the instrument works within each subgroup and a better understanding of the meaning of the construct within each group (i.e., explains test score variation). In order to obtain information about how the instrument works within each subgroup,

Zumbo (2009) suggested verifying that the measurement structure is equivalent across different sampling units in the target populations. Four multi-group measurement invariance analysis were performed, one for each of the main socio-demographic variables involved in the target population: gender, age, living arrangement, and occupational status. For each variable, I tested the four types[21] of invariance (configuaral, metric, scalar, and uniqueness invariance) needed to verify how the measure works for different emerging adults' subsamples (Bontempo, Hofer & Lawrence, 2007):

1. *Configural invariance*: To test if the same items load on to the same factor across groups and if the same factor structure exists. If the model fits well in both groups (i.e., good multigroup model fit indices), the structure of the scale is identical within both groups, and configural invariance is verified.
2. *Metric invariance*: To statistically compare factor loadings among groups by applying equality constraints to common factor loadings (*metric invariance*). Applying these constraints tests the assumption that the factor loadings (i.e., the meaning of the construct) are equivalent across groups.
3. A further test of invariance involves testing common items' intercepts (*scalar invariance or strong factorial invariance*). Applying these constraints tests the assumption that the level of the construct is equivalent across groups.
4. A final test of invariance involves statistically comparing error variances to test whether each item has different unexplained variance for each group (*invariant uniqueness or strict factorial invariance*). Applying these constraints tests the assumption that the measurement error is equivalent across groups. If residual invariance is not met, the unequal variation of

[21] The concept of invariance actually refers to seven types, and assessing it would consist of evaluating the equivalence of (Wu & Zumbo, 2007): (1) the model specification (number of factors and item-factor correspondence); (2) the regression coefficient (i.e., factor loading); (3) the regression intercept term; (4) the regression residual variance; (5) the means of the common factors; (6) the variances of the common factors, and (7) the covariances among the common factors. The first four elements are related to the measurement model, which specifies how the observed indicators are related to the latent common factors. The last three elements are related to the structural model, which specifies the distribution of and relationships among the latent variables. There is agreement in the research literature that cross-group equality in the last three structural elements is not a necessary condition for measurement invariance because equality in these elements is not involved in defining the relationship between the items and the factors (Wu & Zumbo, 2007). Only the first four kinds of invariance were here tested.

the residuals between the groups may distort the loading/intercept metric equality and, consequently, to have a full factor score comparability the strict invariance is needed (Wu & Zumbo, 2007).

These levels of invariance are tested in order from weakest to strongest (Bontempo, Hofer, & Lawrence, 2007). If a specific test for invariance is not met at one level, partial invariance can then be tested to determine which parameters do not meet invariance across groups (i.e., which items, loadings, or variances differ across groups).

To test if a specific kind of invariance is achieved, the correspondent model is compared with the less constrained model. This comparison is usually made by delta chi-square tests: if the chi-square obtained as a difference between the two models' chi-squares is not significant, the two models are not significantly different and, thus, invariance is met. Because this test is "sensitive" to sample size (Cheung & Rensvold, 2002), when the delta-chi square was significant, before rejecting invariance, the delta CFI model comparison was checked.

A negative ΔCFI value lower than −.01 (e.g., ΔCFI = −.02) would indicate a lack of invariance (Cheung & Rensvold, 2002). There is no concern when CFI increases (i.e., ΔCFI > 0), which may occur due to changes in degrees of freedom, because a larger CFI indicates better fit (Dimitrov, 2010).

This procedure to test measurement invariance offers information that explains what causes test score variation. Specifically, it allows the researcher to distinguish between differences among groups that result from a true difference rather than a measurement artifact.

The synthesis of the measurement invariance test of the Subjective Financial Well-being Scale is reported in Table 3.6. As for these models the RMSEA fnh was lower than .158, the CFI was not used as informative fit index. At the same time, however, models' CFI was reported in order to calculate ΔCFI and test measurement invariance.

Table 3.6. Measurement invariance of the Subjective Financial Well-being Scale (pilot study)

Invariance	χ^2	df	p-value	RMSEA (90% CI)	p	RMSEA fnh	CFI	SRMR	Δ_{df}	Δ_{χ^2}	p	Δ_{CFI}
Gender (male = 127 VS female = 245)												
Configural	1165.76	530	<.001	.080 (.074, .087)	<.001	.144	.863	.072				
Metric	1187.52	555	<.001	.078 (.072, .084)	<.001	.144	.863	.077	25	21.76	.65	0
Scalar	1236.07	580	<.001	.078 (.072, .084)	<.001	.144	.858	.081	25	48.55	.003	-.005
Uniqueness	1277.45	605	<.001	.077(.071, .083)	<.001	.144	.855	.083	25	41.38	.02	-.003
Age (18-24 years old = 255 VS 25-29 years old = 119)												
Configural	1109.96	530	<.001	.076(.070, .083)	<.001	.143	.873	.074				
Metric	114.16	555	<.001	.075 (.069, .081)	<.001	.143	.871	.084	25	30.20	.22	-.002
Scalar	1219.48	580	<.001	.077(.071, .083)	<.001	.143	.859	.093	25	79.31	<.001	-.012
Partial scalar (less one constraint)	1205.16	579	<.001	.076(.070, .082)	<.001	.143	.862	.093	24	65.00	<.001	-.009
Partial uniqueness	1237.46	603	<.001	.075(.069, .081)	<.001	.143	.861	.093	24	32.30	.12	-.001
Living arrangement (living with parents = 189 VS living without parents = 184)												
Configural	1139.91	530	<.001	.079(.072, .085)	<.001	.144	.869	.074				
Metric	1174.46	555	<.001	.077(.071, .084)	<.001	.144	.867	.078	25	34.55	.10	-.002
Scalar	1205.27	580	<.001	.076(.070, .082)	<.001	.144	.866	.080	25	30.81	.19	-.001
Uniqueness	1248.76	605	<.001	.076(.070, .081)	<.001	.144	.862	.082	25	43.49	.01	-.004
Having a work (yes=162 VS no=212)												
Configural	1135.03	530	<.001	.078(.072, .084)	<.001	.144	.870	.073				
Metric	1153.29	555	<.001	.076(.070, .082)	<.001	.144	.871	.078	25	18.26	.83	.001
Scalar	1199.59	580	<.001	.076(.070, .082)	<.001	.144	.867	.078	25	46.30	<.01	-.004
Uniqueness	1244.86	605	<.001	.075(.069, .081)	<.001	.144	.862	.085	25	45.27	<.01	-.005

Note. RMSEA fnh: RMSEA for null hypothesis.

Results showed that Subjective Financial Well-being Scale was highly invariant across subgroups. Specifically, complete invariance was found between male and female groups, between subjects living with or without parents, and between students and workers. In these three comparisons, the scale's structure (configural invariance), factor loadings (metric invariance), intercepts (scalar invariance), and residuals (uniqueness invariance) were the same across the two groups. In contrast, the Subjective Financial Well-being Scale resulted in only partial invariance between subjects aged 18-24 and 25-39. Specifically, the item "My financial situation is better than that of my peers" was not invariant for intercepts: older young adults had higher intercepts (3.30) than younger subjects (2.98). Overall, these multigroup analyses on the Subjective Financial Well-being Scale showed that the scale can be applied to different subgroups of Italian emerging adults to obtain results that can be interpreted in the same way across subgroups. The only exception was for subgroups of subjects aged 18-24 vs. 25-29, as a slightly high score was expected in emerging adults aged 25-29.

Step 3: Test score explanation

The last step in this development and validation process of the Subjective Financial Well-being Scale focused on validation. The first two steps, indeed, aimed to develop the test, while this step aimed to "explain the test score variation" (i.e., to validate the test score). Of course, several pieces of information collected during the first two steps were equally informative in explaining score variation (e.g., cognitive interviews, measurement invariance), so the distinction between test development and validation is not rigid. As Messick (1995) stated, validation is not an activity that occurs once the assessments are developed, but rather it is an ongoing process that is initiated at the beginning of assessment design and continues throughout development and implementation.

In the present validation step, the following validity evidence were collected: score structure evidence, generalizability evidence, convergent/discriminant evidence, criterion-related evidence, known groups evidence, and reliability evidence. To gather and evaluate this evidence, additional data were collected. See Box 4 for details about the method of this validation study.

Box 4. Method of the validation study

Participants

Participants were obtained through *convenience sampling* (Farrokhi & Hamidabad, 2012). A description of the research project was presented by email to more than 3000 emerging adults, along with the link to the survey. Among the 3000 who were e-mailed, 923 clicked on the link, but only 581 began the survey.

The emerging adults of this sample were mainly female (76.1%). Their age ranged from 18 to 29 years old and 73.5% of them were 24 years old or less (M=23.21; SD=2.51). Most participants, 65.6%, were students; 7.9% were workers; 21.5% were both students and workers; 1.5% were involved in a non-paid internship; 1.5% were looking for a job; and 1.9% were NEET (Not in Education, Employment, or Training; Bynner & Parsons, 2002). Finally, 53.8% of the participants were living in their parents' house, while 46.2% lived elsewhere.

Among the 581 participants, 516 (88.81%) filled in at least one item of the Subjective Financial Well-being Scale.

Instrument

An online survey was administered by Qualtrics ® during May-July 2017. The survey was composed of socio-demographic questions related to the young adult participant, his/her family of origin, and multiple measurement scales, including the 25-item Subjective Financial Well-Being Scale and other measures needed to test validity evidence.

Before beginning the survey, each participant signed an online informed consent form.

Validation analysis were performed on the sample of 516 emerging adults who filled in at least one item of the Subjective Financial Well-being Scale.

Score Structure evidence

Before performing the CFA, the distribution of items was checked in order to select the most appropriate estimator. As five items had kurtosis slightly higher that 1 in absolute value, the MLR estimator in Mplus was adopted. The 5-factor structure obtained during the pilot study (see Figure 3.6) was tested on the new sample by a CFA. Fit indices obtained for this model were good [$\chi 2$ (265) = 902.146; p<.001; RMSEA= .068 (.063 .073), p<.001; CFI=.902; SRMR = .063], confirming the 5-factor structure of the scale (see Figure 3.7). The fit indices improved with respect to the same model tested in the pilot study, confirming that the disagreement obtained in that case between RMSEA and CFI was due to the sample size (too small) rather than the goodness fit of the model.

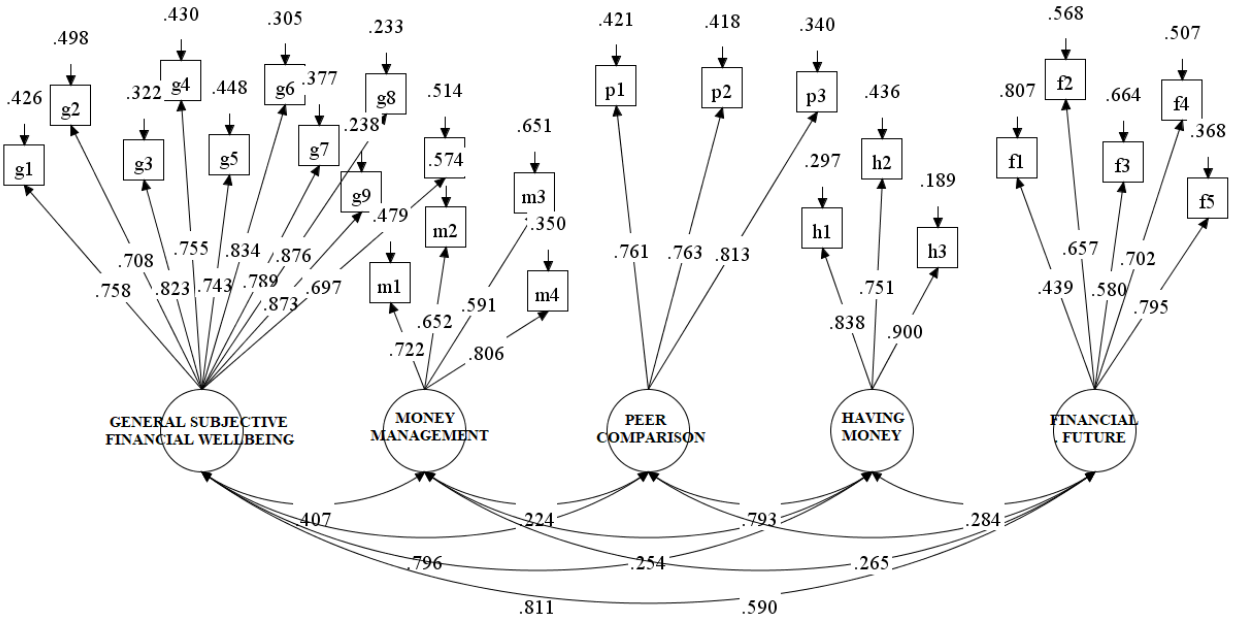

Figure 3.7. *Confirmed factorial structure of the Subjective Financial Well-being Scale (SFWBS)*

The factor loadings were all high (>.50) and significant (p<.001). The only difference respect to the pilot study was the increased effect size of the correlations among the five factors. Specifically, in this model the "general subjective financial well-being" factor had very high correlation with the "peer comparison" (r=.796; p<.001) and "having money" factors (r=.881; p<.001). In the pilot study, these correlations were lower: .627 (p<.001) and .691 (p<.001) respectively. The expected dimensionality of the scale (5 factors) was confirmed on the whole sample.

Generalizability evidence

Multi-group analyses were tested, in order to collect new evidence about generalizability of the interpretation of the test scores. Specifically, invariance was tested for subgroups based on the following variables relevant for this individual developmental phase: gender, age, living arrangement and work status (Table 3.7).

Table 3.7. Measurement Invariance for Subjective Financial Well-being Scale (validation study)

Invariance	χ^2	df	p	RMSEA (CI)	P	CFI	SRMR	Δ_{χ^2}	Δ_{df}	p	Δ_{CFI}
Gender (123 male VS 393 female)											
Configural invariance	1256.72	530	<.001	.07 (.07, .08)	<.001	.892	.07				
Metric invariance	1287.75	555	<.001	.07(.07, .08)	<.001	.891	.07	24.29	25	.50	-.001
Scalar invariance	1347.35	580	<.001	.07(.07, .08)	<.001	.886	.09	59.55	25	<.001	-.005
Uniqueness invariance	1395.32	605	<.001	.07(.07, .08)	<.001	.883	.09	50.31	25	.002	-.003
Age (375 aged 18-24 VS 141 aged 25-29)											
Configural invariance	1235.60	530	<.001	.07 (.07, .08)	<.001	.896	.07				
Metric invariance	128.70	555	<.001	.07(.07, .08)	<.001	.893	.08	43.12	25	.014	-.003
Scalar invariance	1349.52	580	<.001	.07(.07, .08)	<.001	.886	.08	70.29	25	<.001	-.007
Uniqueness invariance	1355.62	605	<.001	.07(.06, .07)	<.001	.889	.08	18.22	25	.833	.003
Living arrangement (231 living without parents VS 276 living with them)											
Configural invariance	1195.42	530	<.001	.07 (.06, .08)	<.001	.899	.07				
Metric invariance	1208.44	555	<.001	.07(.06, .07)	<.001	.901	.07	10.10	25	.996	.002
Scalar invariance	1239.21	580	<.001	.07(.06, .07)	<.001	.900	.07	28.24	25	.297	-.001
Uniqueness invariance	1279.11	605	<.001	.07(.06, .07)	<.001	.898	.08	42.53	25	.016	-.002
Work status (149 having a job VS 367 not having a job)											
Configural invariance	1252.36	530	<.001	.07 (.06, .08)	<.001	.894	.07				
Metric invariance	1288.47	555	<.001	.07(.07, .08)	<.001	.892	.07	33.61	25	.116	-.002
Scalar invariance	1357.49	580	<.001	.07(.07, .08)	<.001	.885	.08	69.98	25	<.001	-.007
Uniqueness invariance	1369.73	605	<.001	.07(.06, .07)	<.001	.887	.08	20.56	25	.717	-.002

Results showed that this scale had invariant structure, factor loading, means and residuals between males and females, between emerging adults aged 18-24 and 25-29, between emerging adults living with or without their parents, as well as between working and non-working emerging adults. These results were very similar to the ones obtained in the pilot study and confirmed that the scale structure is homogeneous across the different subgroups of emerging adults. Differences between subgroups can be considered true difference rather than measurement artifact.

Convergent evidence

Convergent evidence demonstrates that measures that are expected to be related are, in fact, related (Pedon & Gnisci, 2004). In this study convergent evidence about the Subjective Financial Well-being Scale was collected as this scale was correlated with measures of objective financial well-being. In particular, the income level was used as a measure of objective financial well-being. I decided to use both individual and family income of young adults because in the current sample only 28.88% of participants had some kind of job and a personal income. Table 3.8 shows the correlation coefficients (obtained by a SEM model) among the five factors of the Subjective Financial Well-being Scale and personal income and family of origin income[22]. In the model, correlations were also required between the two kinds of income, in order to control for their covariance. The fit of this model was good [$\chi 2$ (305) =978.026; p<.001; SCF= 1.1254; RMSEA= .062(.058, .066), p<.001; CFI=.902; SRMR = .061]. Here only information related to the convergent validity evidence were reported (see Table 3.8).

[22] Personal income was reported by having participants choose among 12 salary ranges (from 1=0 € at month to 12=over 5000€ at month). Family of origin income was operationalized with five thresholds corresponding to the one used by the State to defined the amount of tax to pay (1=less than 15.000 € at year; 2= from 15.001 to 28.000; 3=from 28.001 to 55.000; 4= from 55.001 to 75.000; 5=higher than 75.000).

Table 3.8. Convergent evidence of the Subjective Financial Well-being Scale

	Personal income	Family of origin income
General Subjective Financial Well-being	.238***	.466***
Money Management	.067	.112*
Peer Comparison	.383***	.512***
Having Money	.285***	.442***
Financial Future	.084	.084

Note. *p<.05; *** p<.001.

These results suggested that three factors (General Subjective Financial Well-being, Peer Comparison, and Having Money) were significantly related to both measures of objective financial well-being and measure effectively what I was expecting to measure. These results corroborated the hypothesis that not all five factors of the Subjective Financial Well-being Scale measure the construct of subjective financial well-being. Interesting, all factors had higher correlations with family of origin income than with personal income. It is possible to *explain* this result taking into consideration the important role that parents play in children's financial life within the considered context.

Discriminant evidence

Discriminant evidence is the extent to which latent variable A discriminates from other latent variables (e.g., B, C, D). Discriminant validity means that a latent variable is able to account for more variance in the observed variables associated with it than other constructs within the conceptual framework (Fornell & Larcker, 1981). In the current conceptual model of the SFWB, discriminant evidence means that each of the five factors of the SFWBS (e.g., "general subjective financial well-being" factor) has to be more related to its items (i.e., factor loadings) than the other factors of the model (i.e., correlation with other factors of the SFWBS). An accepted way to test discriminant evidence using SEM consists of comparing the Average Variance Extracted (AVE) by a factor in its items with the Shared Variance between that factor and another factor. Specifically, in order to have

sufficient discriminant evidence, for any two constructs, A and B, the AVE for A and the AVE for B both need to be larger than the shared variance between A and B (Fornell & Larcker, 1981).

The AVE of a factor can be computed as the average of all its squared factor loadings. Instead, the shared variance among two factors consists of the square of their correlation (Farrell, 2008).

In Table 3.9 are reported both the AVE for each of the five factors of the SWFBS (values on the diagonal) and the shared variance between couple of factors (values above the diagonal).

Table 3.9. Discriminant evidence of the Subjective Financial Well-being Scale

	1	2	3	4	5
1 General Subjective Financial Wellbeing	**.621**	.166	.634	.658	.182
2 Money Management	.407	**.486**	.050	.064	.348
3 Peer Comparison	.796	.224	**.607**	.623	.070
4 Having Money	.811	.254	.793	**.692**	.081
5 Financial Future	.427	.590	.265	.284	**.417**

Note. Correlations are below the diagonal, squared correlations (i.e., shared variance) are above the diagonal, AVE estimates are presented on the diagonal.

Results suggests that some of factors of the SFWBS miss of discriminant evidence. Specifically, the general subjective "financial well-being", the "peer comparison", and the "having money" factors share more variance among them than with their items (i.e., the shared variance is higher than AVE).

Criterion-related evidence

Criterion-related evidence tests how well one measure predicts an outcome. Having collected data just at one time point, the *concurrent* validity (i.e., the outcome is collected at the same time as the measure to be validated) was tested. As financial well-being is a measure of well-being related to a specific domain, it is expected to predict measures of general well-being (e.g., Shim et al., 2009). I performed a SEM model in which the five factor scores of the SFWBS were related to three different outcomes: psychological well-being measured by 10-item Brief Inventory of Thriving (BIT; Su, Tay, & Diener, 2014), subjective well-being measured by the 5-item Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) and physical well-being measured by one item evaluated

on a 11-point Likert scale (from 0=very bad to 10=excellent). In the model, correlations were also required among the three outcomes, in order to control for their covariance. The fit of the model was good [$\chi 2$ (752) =1986.137; p<.001; SCF=1.1295; RMSEA= .056(.053, .059), p<.001; CFI=.881[23]; SRMR = .072] and correlations between latent factors of the SFWBS and the concurrent outcomes were reported in Table 3.10.

Table 3.10. Criterion-related evidence of the Subjective Financial Well-being Scale

	BIT	SWLS	Physical Well-being
General Subjective Financial Well-being	.327***	.490***	.188***
Money Management	.324***	.359***	.178***
Peer Comparison	.196***	.348***	.092
Having Money	.197***	.323***	.090
Financial Future	.452***	.493***	.182***

Note. *** p<.001

As expected (Shim et al., 2009), subjective financial well-being had the highest correlations with subjective well-being, followed by somewhat lower correlations with psychological well-being still lower correlations with physical well-being. Not all the five factors of the scale met this expectation to the same extent. Specifically, "General Subjective Financial Well-being", "Money Management" and "Financial Future" are the factors with higher criterion-related evidence. Among these, the "General Subjective Financial Well-being" factor is the only one that also had favorable convergent evidence. The results obtained from testing construct and criterion validity evidence suggested that the only test score that can be properly interpreted as measuring "subjective financial well-being" is the 10-item factor "General Subjective Financial Well-being."

[23] This disagreement between RMSEA (indicating good fit) and CFI (indicating not sufficient fit) is due to the sample size being too small with respect to the number of degrees of freedom (Taasoobshirazi & Wang, 2016), but the values of other fit indices allow considering this model as sufficiently good (Lai & Green, 2016).

Known groups evidence

The Multiple Indicators Multiple Causes (MIMIC) models test regression paths avoiding bias due to the measurement error in the observed composite score (Zumbo, 2005; 2007). Specifically, MIMIC allowed detecting if the gender, age, living arrangement, and occupational status of the respondents were important predictors of the latent variable scores on the SFWBS.

Specifically, the four main socio-demographic variables of the current sample were coded as dummy variables (gender: 0=female and 1=male; age: 0=18-24 and 1=25-29; living arrangement: 0= living with parents and 1= without parents; occupational status: 0=not having a job and 1=having a job) and tested as predictors by SEM. The fit indices suggested that the model is good [$\chi 2$ (345) =1006.755; p<.001; SCF= 1.1099; RMSEA= .062(.057, .066), p<.001; CFI=.902; SRMR = .057]. Regression paths required as validity evidence are reported in Table 3.11.

Table 3.11. Results of MIMIC model with known groups

	Gender	Age	Living arrangement	Occupational status
General Subjective Financial Well-being	.418***	-.070	-.096	.149
Money Management	.264*	-.033	-.086	.332**
Peer Comparison	.385**	.317*	-.117	.271*
Having Money	.242*	.209	-.055	.113
Financial Future	.601***	-.081	.028	.236

Note. * p<.05; ** p<.01; *** p<.001

Results suggested that men had a higher level of subjective financial well-being than women do. This group difference was found for all five factors of the scale. With regard to age, only one difference was found: people aged 25-29 felt they had better financial well-being compared to their peers than people aged 18-24 do. With regard to occupational status, results suggested that people having a job had higher ability to manage money and felt they had better financial well-being

compared to their peers than people not having a job do. Finally, no differences were found between people living with parents or apart from them.

Reliability evidence

CFA allows estimating reliability by composite reliability (ω) rather than Cronbach's alpha (α). Composite reliability has been discussed by several authors (e.g., Bentler, 2007; McDonald, 1970; Pastore, *in press*; Raykov, 1997; Werts, Linn, & Jöreskog, 1974) and is conceptually similar to α in that it represents the ratio of a scale's estimated true score variance relative to its total variance, but composite reliability overcomes the limitation of Cronbach's alpha.

The composite reliability of the five factors of the Subjective Financial Well-being Scale was estimated in Mplus using the formula proposed by Geldhof, Preacher and Zyphur (2014). All factors of the scale proved to be highly reliable: General Subjective Financial Well-being (ω =.940), Money management (ω =.781), Peer comparison (ω =.823), Having money (ω=.866), and Financial Future (ω= .771).

3.4. Discussion

Validity is the most complex and controversial topic in measurement (Sijtsma, 2010). According to recent theories, validity is the explanation of the inferences made from a test score about its meaning and interpretation. Validity is unified (there is only construct validity, which can be argued for by collecting different kinds of evidence) and contextualized (validity depends always on the place and time in which the test is applied). This contemporary view of validity implies a new view of the validation process, summarized by Hubley and Zumbo in a graphic representation (see Figure 3.2). Starting from the definition of the construct and development of the test/measure, researchers have to explain why and how the inference they make is appropriate, meaningful, and useful given the context in which the test user and sample are working. Several forms of validity evidence can support this explanation: some belong to the traditional view of the validity (e.g.,

criterion-related evidence), while other are new opportunities offered by the more recent statistical techniques (e.g., generalizability evidence). Hubley and Zumbo (2011) stressed that, in order to explain the measure score variation, statistical analyses alone are not sufficient. This explanation needs to be contextualized, as the researchers cannot separate validity from the context in which the information was obtained.

Within this framework, even the procedures applied to test development contribute to the test validation (i.e., explanation of the inferences). For this reason, in developing the Subjective Financial Well-Being Scale three different kinds of data were collected in order to contextualize the measure.

First, I described the specificities of the Italian emerging adults' financial situation, comparing Italian emerging adults with US peers with respect to different financial issues (living arrangement, financial dependence on parents, personal debt, bank account, unemployment rate, financial literacy). This descriptive comparison highlighted that Italians tend to live more often with parents and to be more financially dependent than US peers. Furthermore, Italian emerging adults are not necessarily workers and do not always have a personal bank account. Personal debt is also rare. Second, I performed interviews with experts on Italian emerging adults' financial issues. Although the contextualization of the measure refers to emerging adults, I chose to interview experts instead of young adults themselves, because of emerging adults' low financial literacy (Forum Nazionale Giovani, 2006), their tendency to confuse their financial situation with that of their parents (Sorgente, Lanz, Schilirò, & Terranova, 2016), and because of their difficulties in figuring out the subjective side of financial well-being (Tagliabue, Lanz, Sorgente, & Oliveira, 2016). These interviews helped to further contextualize the construct to the place and time in which I aimed to apply it. Experts described Italian emerging adults as having limited financial literacy, little expertise about banking services, and a low degree of financial differentiation from their parents, at least before obtaining a stable job. This focus on contextualization was very important as it allowed: (1) avoiding the use of items not applicable to the stage of life (e.g., items about the personal income) or the cultural context

(e.g., items about debt) of the target population, and (2) developing new items fitting the specificities of the context (e.g., the importance of the family of origin).

Finally, to check if the inferences made from the developed items were correct, cognitive interviews were performed with the target population. The emerging adults who read the developed items confirmed that the contents of items were applicable to their situation (i.e., well contextualized), except for one item that was removed.

After this triangulation process, sufficient evidence was collected to consider the measure adequate for the specific place and time of application, and it was possible to move on to statistical procedures. The obtained SFWBS factor structure offered new insight on the construct. First, it showed that financial experience, cognitive evaluation, and emotional evaluation are all relevant aspects of financial well-being, but that they are not empirically distinct. Second, empirically distinct are the contexts in which these experience and evaluations take form: general subjective financial well-being, money management, having money, peer comparison, and financial future. Each of the obtained factors – as well as their relation with other variables – promotes new reflections and considerations:

- The "general subjective financial well-being" factor seems to be the only proper measure of the construct as it is the only factor that achieved both convergent and criterion-related favorable evidence. As it is saturated by items reporting financial experience, cognitive evaluation, as well as emotional evaluation, these three elements can all be considered pertinent elements of the subjective financial well-being construct.
- The "money management" factor, although it is composed of items used in previous publications (e.g., Shim & Serido, 2011) of measures of financial well-being, could probably be considered more properly a measure of "financial behavior". Collecting discriminant evidence between these two measures could be useful to clarify what this factor measures.
- The "having money" factor is composed of three recoded items that describe the "lack of money" ("At times I do not have the money to buy what I need (R)", "Sometimes I miss the

money to buy things I need (R)" and "I cannot do some things with my friends, because I do not have the money to do them (R)"). Instead, another three items referring to money loaded on the general subjective financial well-being factor ("I have enough money to enjoy my life", "I have less money than I need (R)" and "I have enough money for everything I need"). This happened with data in both the pilot study and the validation study. It would be interesting to investigate the differences among these items referring to money. It seems that items composing the "having money" factor concern money used for day-by-day expenses, while items about money loading on the "general subjective financial well-being" factor concern money used for "extra" expenses (e.g., having money for enjoying life). Even if some light differences can be found between these items belonging to two different factors, it is important to note that between these two factors low discriminant evidence has been found.

- The "peer comparison" factor showed high convergent evidence as the "general subjective financial well-being" factor. At the same time, between these two factors low discriminant evidence has been found. The social comparison factor was defined by interviewed experts as a relevant element of subjective financial well-being. Future studies should investigate if it is really an element of financial well-being or if it is a predictor (i.e., as I perceive myself having a better financial situation than my peers, I positively evaluate my financial well-being), an outcome (i.e., if I perceive my financial well-being positively, I consider my situation better than my peers'), or it coincides with the "general subjective financial well-being" factor itself (scarce discriminant evidence)
- Finally, the "financial future" factor is also controversial. The importance of future expectations for financial well-being was also stressed in the CFPB's (2015) definition of financial well-being, but, at the same time, this factor is the only one that had no correlation with measures of objective financial well-being. It is likely that, emerging adults know the transformative potential of their stage of life: they can imagine a positive financial future irrespective of their current personal or familial financial condition.

The reflections just reported about the construct are *generalizable* to each subgroup of emerging adults' population. The population of emerging adults is a highly heterogeneous population, as it is a population in transition. Each participant is dealing with his/her transition adopting different resources and travelling different paths. To control for this heterogeneity, measurement invariance was tested for the socio-demographic variables that were expected differentiating the population more (i.e., gender, age, living arrangement, occupational status). For all these comparisons, full strict invariance (i.e., factorial structure, factor loadings, intercepts and residuals are the same across groups) was obtained, suggesting that the test works in exactly the same way across all the sample subgroups. This result is a relevant advantage for the developed scale, as the full invariance makes the scale equally applicable to each emerging adult, being sure that any difference found is a true difference and not a measurement artifact.

As related to what we are measuring, other important reflections emerged about the causes of test score variation. For example, I verified that occupational status, age and gender, even if they do not modify the structure and interpretation of the scale (i.e., invariance evidence), can predict score variation. Specifically, I found that people having a job had higher ability to manage money and felt they had better financial well-being compared to their peers than people not having a job do. This makes sense as having a job is often equivalent to having a higher personal income (higher objective financial well-being). Getting a job has been demonstrated to be a crucial point during the transition to adulthood. In the context of Italian emerging adults, a job generates personal income, it motivates the child to open a personal bank account (Forum Nazionale Giovani, 2006), and it helps the child to see herself/himself as an autonomous individual in society (Sorgente et al., 2016). Interestingly, this change happens with each kind of job. The here used "occupational status" variable differentiates emerging adults having a job from emerging adults without a job, regardless of the stability or the hours of the job (occasional, part-time, full-time). Thus, it is sufficient to start experiencing the work world to change personal financial experience and evaluation.

Less expected were the differences found for gender and age. Specifically, results suggested that men have a higher level of subjective financial well-being than women do, but this difference was not found in previous publications (e.g., Shim et al., 2009). Usually differences between men and women with respect to financial issues concern financial literacy but not financial well-being (Chen & Volpe, 2002). Finally, I found that people aged 25-29, when comparing themselves with peers, felt they had better financial well-being compared to their peers than did people aged 18-24.

While these results obtained by the MIMIC model suggested that test scores can vary with gender, age and occupational status, convergent evidence suggests that test score can vary with objective financial well-being. Interestingly, test score variation is caused more by family of origin income than personal income. This means that we are measuring and defining financial well-being as something that is more dependent on family resources than personal ones. As researchers, we should reflect on this and be aware of how our values, practice, and social consequences are linked to this (Hubley & Zumbo, 2011). For example, an unintended social consequence of the measure here developed is that, if practitioners are required to improve emerging adults' financial well-being, they could reach this quickly enriching their family of origin instead of the emerging adults themselves.

Limitations

I identified two main limitations in the studies presented in this chapter. The first one consisted in often adopting convenience samples. I tried to overcome this limitation as follows. When the needed sample was smaller (e.g., interviews with experts, cognitive interviews) I performed a theoretical sampling, aiming to generate a maximum variation sample (Patton, 2005).When the needed sample was bigger (e.g., pilot study, validation study), I tested measurement invariance in order to check influences on the test structure due to the majority of a sample subgroup (e.g., non-working emerging adults) compared to their counterparts (e.g., working emerging adults).

The second limitation was due to the large amount of missing data present in the validation study. Specifically, the survey link was sent by email to more than 3000 emerging adults, and among

these, only 923 subjects clicked on the link, and only 581 subjects started to fill it in. Furthermore, only 516 completed the survey. This loss of participants is a weakness of the current study probably due to: (1) insufficient stimulation of participants' motivation in taking the survey due to the presentation of the research happening by email; (2) the excessive length of the survey, which had an estimated completion time of 40 minutes.

Conclusion

The current chapter summarized the historical evolution of the concept of validity, and applied new validation practices to the development of the Subjective Financial Well-Being Scale (SFWBS). Specifically, I organized the test development and validation according to three macro-steps (item development, test development, test score explanation). The two main new aspects of this three-step procedure are the focus on the contextualization of the construct and the quantitative data analysis conducted via SEM.

The context in which the test is used becomes highly relevant, and consequently the researcher has to pay attention to cultural specificities as well as participants' response processes (cognitive processes during item responding or during rating). For this reason, before applying traditional procedure of validation (factor analysis, correlation with other measures), a long time was spent in studying the context in which I aimed to use the instrument. Specificities of the context were identified through literature analysis, interviews with experts and cognitive interviews with the target population. After this contextualization, I returned to the traditional technical procedures to validate the test (or more appropriately, to explain the test score variation in the specific place and time in which I adopted it), enhancing them by using the opportunities offered by SEM. Correlations among observed measures were substituted by correlations among latent variables. Factor analysis was performed not only by EFA, but confirmed also by CFA. CFA also allowed estimating reliability by composite reliability instead of Cronbach alpha. Finally, SEM models were also used to verify if observed variables could explain variation of the test's latent measures (MIMIC model) and to verify

the generalizability of the test structure across different subsamples (measurement invariance). Not all the opportunities offered by SEM were here applied. For example, measurement invariance analysis was performed only among known groups (e.g., male vs. female), that allows only for a "context free" measurement (Zumbo, 2009). In other words, the groups male vs. female are not due to the context. Instead, testing measurement invariance between latent groups (i.e., groups identified by latent class analysis) is a procedure that greatly respects context specificities. Specifically, Zumbo (2009) suggested using factor mixture models, which allow the factor loadings, thresholds/intercepts and factor variances to vary across two or more latent classes (for example, see Sawatzky, Ratner, Johnson, Kopec, & Zumbo, 2009).

The result of this validation process is the development of the 5-factor Subjective Financial Well-Being Scale. Evidence obtained by the current study found that only the "general subjective financial well-being" factor is a proper measure of the construct and that this score can also be used to compare different subgroups (e.g., male vs. female; younger vs. older emerging adults; emerging adults living with vs. without their parents; emerging adults having vs. not having a job). Future studies are instead needed to collect new evidence on the other four factors of the scale as their meaning or interpretation is not yet clear as well as new evidence about discrimination among the five factors is needed.

Finally, future studies could test this scale in a cultural context different from the one here considered. Of course, when a test is adapted to a new culture, this does not imply only the test translation, but also a reflection about if the newly studied cultural group conceives the construct in the same way as the original group upon which the construct or measure was developed (Hubley & Zumbo, 2011). To verify if the construct is conceived in the same way across different cultures, assessing the classic measurement invariance between different known groups (e.g., country X vs country Y) remains an important solution, as it would offer relevant information about the test score interpretation (Hubley & Zumbo, 2011; Zumbo, 2005).

CHAPTER 4: MULTIPLE INFORMANT METHODOLOGY

4.1. What is Multiple Informant Methodology?

Family is characterized by interdependence among its members and among relationships. Interdependence, defined as having a shared history and a future perspective (Scabini & Manzi, 2011), challenges family researchers from a methodological point of view, as a whole (family) and its parts (interpersonal relationships and individual) have to be simultaneously taken into account (Lanz, Scabini, Tagliabue, & Morgano, 2015).

One of the strategies used by family researchers to manage the complexity of relational and family-related constructs consists in collecting information about these constructs from more family members. Family members could be asked to report different information according their roles. For example, if the researchers are interested in how marital satisfaction affects a child's adaptation, they could ask mothers to report about marital satisfaction, and children to evaluate their adaptation. This research strategy underlies the idea that there is one family member, implicitly considered more reliable than others are, that can report the complexity of the considered construct. Consequently, family relationships can be investigated considering the point of view of one family member and generalizing his/her perceptions to all other family members (Alfieri & Lanz, 2015).

On the other hand, one can argue that there is no subject sufficiently reliable to be used as a unique point of view to detect the complexity of the construct. This idea led researchers to collect the same information from more family members. A research strategy that requires collecting information about the same construct (e.g., marital satisfaction) and the same unit of analysis[24] (e.g., the same

[24] The term "unit of analysis" indicates the entity (object, person, dyad, group, social artifact, space, time, or event) to which the measured construct refers (Babbie, 2001; Pedon, 2009; Yurdusev, 1993).

family) from more than one subject (e.g., the mother, the father and the child) is referred as Multiple Informant Methodology (MIM).

The present chapter aims to describe the MIM, its origin and potential application, its research opportunities and technical challenges. The MIM presentation was here structured through the six WH questions (What? Where? Who? Why? When? How?).

What is MIM?

The Multiple Informant Methodology, also known as multiple informant research (Anderson, 1985) and multiple informant approach (De Los Reyes et al., 2015), is a research approach specifically designed for data collected from multiple information sources (i.e., informants) which evaluates the same construct on the same unit of analysis. For example, if the unit of analysis is the family, the researcher can investigate family cohesion (i.e., the construct) collecting this information from only one family member (i.e., single informant methodology) or from two or more family members (i.e., multiple informant methodology). Multiple informant does not just mean having more than one participant (e.g., a sample of 100 adolescents each one reporting information about own family's cohesion); it means having multiple informants who report information about the same construct and unit of analysis (e.g., a sample of 100 families where each member - 100 mothers, 100 fathers and 100 adolescents - reports information about their family's cohesion). In this last example there are three informants (mother, father and adolescent child) who report information about the same construct (i.e., family cohesion) and the same unit of analysis (i.e., their unique family).

Where is MIM widely used?

The option of using more informants to get information about the same unit of analysis on the same construct was proposed only few decades ago (Seidler, 1974) as a new opportunity for organizational research. Studying organizations by collecting information from just one organization member was considered insufficient. Organizations should be studied by collecting information from

more members. Organizational research indeed, in a brief period, made multiple informant research a widely used approach (e.g., Bagozzi & Phillips, 1982; John & Reve, 1982; Phillips, 1981; 1982; Silk & Kalwani, 1982).

Shortly afterwards, even developmental researchers figured out the opportunity MIM afforded for their field. Developmental research often deals with children as the unit of analysis. Collecting information about children by asking the children themselves (e.g., children who evaluate their adaptation) is not always practicable because the child is too young or because his/her report is considered not sufficiently reliable. As no single informant could validly measure the child's characteristics (Kraemer et al., 2003), developmental researchers got used to collecting data from multiple informants (e.g., Jorgensen & Dusek, 1990; Lösel & Bliesener, 1990; Phelan, 1986). Nowadays, organizational and developmental research (above all in the fields of child and developmental psychopathology; van Dulmen & Egeland, 2011; De Los Reyes et al., 2015) remain the two main fields where MIM is commonplace. At the same time, many other research fields could get advantages from using more sources of information for the same unit of analysis. Lanz, Sorgente and Tagliabue (2017) recently stressed the opportunities that MIM could offer to family research. For example, family cohesion, a family level outcome, can be investigated by collecting data from the mother, father and the child.

Who are the informants involved in MIM?

The person chosen to report information on a construct in relation to a specific unit of analysis is defined as the informant (Osgood, 1940). The label "informant" was proposed as an alternative to "respondent" (Anderson, 1987; Seidler, 1974). While the label "respondents" indicates the participants in a study with a (usually) large-size sample, where subjects have to report their thoughts, opinions and behavior (Seidler, 1974), the label "informant" refers to a subject who was specifically selected because of his/her expertise about the unit of analysis (Seidler, 1974). Phillips (1981) proposed the concept of "key informant" in order to stress the fact that the informant is a subject

selected because of the key information he/she has. If the researcher is studying the family of Ellen, the parents of Ellen are key informants, as no other parents are as expert about Ellen's family as they are.

Note that the experts on the unit of analysis are not always members of that unit. For example, it is possible that individuals outside of Ellen's family (e.g., therapists or teachers) may have as much or more expertise than family members. This depends on the research question. If the research topic concerns mother-child conflict in a family where the adolescent child is anorexic, the report of the family therapist who is conducting therapy with the family can be a key informant, even though the therapist does not belong to the family.

Lanz et al. (2017) suggested classifying informants who provide information about the unit of analysis according to the positions they have with respect to that unit. They can be embedded in the unit of analysis (i.e., internal), such as mothers or adolescents who evaluate the conflict in their relationship, or they might not be embedded in the unit of analysis (i.e., external), such as the therapist who evaluate the mother-child conflict. Finally, the group of informants can also be mixed (i.e., some internal and some external), if information is collected from mother and/or child (i.e., internal informants) as well as from the therapist (i.e., external informants).

***When* is MIM applicable?**

Multiple informants should be used when the complexity of the investigated construct cannot be reduced to a single informant's perception. This is true every time a construct refers to a dyadic or group unit of analysis. Each time a construct relates to two (e.g., couple satisfaction) or more (e.g., family cohesion) informants, it is advisable to collect data from more than one informant to ensure greater accuracy (Kraemer et al., 2003). On the other hand, even constructs referred to on an individual unit of analysis can be better investigated by collecting information from more than one informant. For example, if researchers want to measure the adaptation (i.e., the construct) that a 5-year-old child (i.e., individual unit of analysis) had to the divorce of his/her parents, collecting this

information from both the mother and father (as well as eventually sisters, brothers, teaching, and other persons that know the child) can be a better choice than arbitrarily selecting just one informant's perception. In general, MIM can be applied in family research when researchers are interested in different units of analysis: individual, dyadic, and familial. For example, examining the construct of adaptation of a child (i.e., individual unit of analysis) may be measured through his/her father's and mother's report (i.e., the father and mother are the informants). Similarly, the construct of support in the parent–child relationship (i.e., dyadic unit of analysis) may be measured through reports from both the father and child (i.e., the informants). Similarly, the family climate (i.e., the construct of "climate" measured for the group unit of analysis) may be measured through data reported by family members (i.e., the informants).

To collect data from more than one informant (i.e., to have a multiple informant dataset) is a necessary, but not sufficient, condition to apply MIM. Adopting a dyadic or group-level analysis is the other necessary condition to use MIM properly. The term "level of analysis" indicates the level at which researchers analyze the collected data, which is driven by their hypotheses and research purpose. The level of analysis can be individual (i.e., each informant's report is used separately from other reports), dyadic (i.e., two reports are used jointly), or group (i.e., more than two reports are used jointly). For example, researchers can collect information on the mother's and child's perception of their relationship to identify which is the strongest predictor of child's well-being. In this case, the researchers' purpose requires collection of data from more than one informant, but different informants' reports are used separately (i.e., individual unit of analysis).

Using multiple informant data jointly (e.g., aggregating the mother and child's score) is a necessary condition to use MIM properly. Note that the level of analysis does not necessarily have to coincide with the unit of analysis. For example, if one deals with a construct (e.g., family satisfaction) related to a group *unit* of analysis (i.e., family), one does not have necessarily to analyze data at the group *level* of analysis. While measuring family satisfaction (i.e., *group* unit of analysis) from mother, father, and child, one can use a *dyadic* level of analysis, for instance, by separately measuring the

aggregate score of mother's and child's reports and comparing this with the aggregate score of father's and child's reports in order to test their predictive power. Using Table 4.1, I synthetized the possible research scenarios in which the MIM is appropriate.

Table 4.1. Principal scenarios of MIM based on units of analysis, types of informants, and levels of analysis.

Unit of analysis	Informants								
	Embedded			Non-embedded			Mixed		
Individual	I	/	/	I	D	G	I	D	G
Dyadic	I	D	G	I	D	G	I	D	G
Group	I	D	G	I	D	G	I	D	G

Note. I= individual level of analysis; D=dyadic level of analysis; G=group level of analysis.

As previously noted, MIM can be used with different units of analysis (individual, dyadic, and group). Informants who report information about these units of analysis can be embedded (i.e., internal), non-embedded (i.e., external), or both (i.e., mixed) with respect to the unit of analysis. Data collected from these informants can be analyzed at individual (I), dyadic (D) or group (G) levels of analysis. The shaded cells in Table 4.1 represent the research scenarios in which MIM can be used adequately.

MIM is never appropriate when a construct referring to an individual unit of analysis is reported by embedded informants. Indeed, only one informant can be embedded in an individual unit of analysis (i.e., only the child is internal to himself/herself). In this case, a single-informant methodology is the only solution. For all the other scenarios (i.e., kind of informants X kind of unit of analysis), it is possible to collect data from more than one informant, but MIM is properly applied only when a dyadic (D) or group (G)-level of analysis is performed (i.e., shaded cells).

Why researchers should adopt MIM?

A multiple-informant dataset can be used with two main aims: (1) to measure a construct using different points of view, and (2) to assess the similarity of informants' reports.

Researchers can use MIM to measure a construct using different points of view, in order to obtain a score that closely corresponds to the construct's true value (Kraemer et al., 2003; van Bruggen, Lilien, & Kacker, 2002). The idea underlying this procedure, based on classic test theory, consists in considering each informant's report as an insufficiently precise measure of the construct. The measured value reported by each informant consists of two components (van Bruggen et al., 2002):

$$\text{Measured Value} = \text{True Score} + \text{Error},$$

$$\text{Where: Error} = \text{Systematic Error} + \text{Random Error}.$$

The research aiming to measure a construct (e.g., mother-child conflict) is interested only in the true score and not in the error. The problem is that informants' reports often exhibit less than 50% of the variance attributable to the construct under investigation, with random and systematic error accounting for the rest of the variance (Philips, 1981).

The random error is caused by unknown and unpredictable changes (e.g., the subject has a lapse of attention). If the same informant repeats the same evaluation, the random error will be not the same, so random errors are expected to sum to zero (van Bruggen et al., 2002). The systematic error in an informant's response can instead result from differences in informants' roles and perspectives (Houston & Sudman, 1975; Seidler, 1974). For example, the evaluation that a mother does of her child's adaptation can be affected by her depression (depressed mothers tend to rate their children higher on psychopathology than do unimpaired observers; Bauer et al., 2013). Asking for the same information from the child's teacher will offer measured values that will not have the same bias of the mother (i.e., bias due to the depression), but another one caused by her own perspective (e.g., the teacher is particularly permissive and her evaluation tend to be too positive). The use of a single informant limits the researcher's ability to control for the response bias that each informant has

(Huber & Power 1985; Philips 1981). Multiple informants improve data validity (Philips, 1981) because researchers can use systematic differences amongst informants to correct for individual differences and biases in estimates provided by these informants (Anderson 1985; Anderson 1987; Wilson & Lilien, 1992). The idea is to abstract the common element across informants' ratings while isolating the unique perspectives and potential biases of the individual reporters (Bauer et al., 2013).

The second reason why researchers can adopt the MIM is that they want to evaluate how much informants' reports are similar to each other. The similarity of two measures can concern two different aspects: ranking similarity (inter-rater reliability) or rating similarity (inter-rater agreement; Wagner, Rau, & Lindemann, 2010). Ranking (i.e., order) similarity is the degree to which the informants rank the items similarly, i.e., if their ratings are *proportional* (Fleenor, Fleenor, & Grossnickle, 1996). Rating (i.e., assigned value) similarity instead consists of the degree to which the informants assign *equal* values to the items (Fleenor et al., 1996). For clarification, suppose that four couples of informants fill in four different items on a 5-point scale about their marital relation quality as reported in Table 4.2.

Table 4.2. Informants reports about marital relation quality

		Item 1	Item 2	Item 3	Item 4
Couple 1	Husband	3	3	4	5
	Wife	1	1	4	4
Couple 2	Husband	3	3	4	4
	Wife	3	4	3	3
Couple 3	Husband	1	3	2	2
	Wife	3	5	4	4
Couple 4	Husband	3	4	1	2
	Wife	3	4	1	2

Partners of the first couple have high ranking similarity, as their evaluations have proportional consistency (e.g., both informants see the fourth item as the most adequate to describe their relation and the first two as the least adequate), but they have low rating similarity, as the values they assigned to the items are almost all different. Instead, partners of the second couple have high rating similarity

(i.e., the values the two informant assigned to each item are highly similar), but low ranking similarity as the relevance assigned to items has a different order for the two informants (e.g., according the wife the second item is the most adequate to describe their relation, while the husband had higher ranking for the third and fourth items).

Informants' reports with high ranking similarity are considered consistent. Informants' reports with high rating similarity are considered interchangeable (Wagner et al., 2010). Informants' reports can be fully consistent and, at the same time, not interchangeable, but not vice versa. For example, the third couple's informants evaluated items giving them the exact relative ordering: the responses have the same patterns (i.e., for both informants the second item is order as first, the third and the fourth items have the same ranking order, one point after the second item, and the first item is the last in order, one point after the third and fourth items). These informants have the maximum possible level of ranking similarity (i.e., the assigned values are perfectly proportional), but not rating similarity. Instead, the fourth couple's informants have the maximum possible level of rating similarity (i.e., they assigned exactly the same value to all the items) and consequently the relative order assigned to those items is the same for the two partners (i.e., the values assigned to each item are perfectly proportional because are exactly the same).

Wagner et al. (2010, p. 590) argue that, even if rating similarity (inter-rater reliability) and ranking similarity (inter-rater agreement) illustrate different aspects of the similarity among multiple informants, "inter-rater agreement is by far more relevant for multiple informant research." Ranking similarity could have some application in measurement validation research, as it can be used to estimate the *reliability* of scores collected from different judges (Lanz et al., 2017), but in most other multiple informant research, researchers are interested in the value assigned to items and not only in their relative ordering (Wagner et al., 2010).

In estimating rating similarity (i.e., similarity of the values assigned to items), researchers measure how much informants' perspectives agree with each other. For example, collecting data from both a mother and her child about their conflict, researchers can measure the amount of agreement

that mother and child's points of view have. This agreement can be used in a descriptive way (e.g., how equal are mother and child's perception of their conflict?), in a comparative way (e.g., agreement is higher in family X or Y?), or in association with other constructs (e.g., does the mother–child agreement about their conflict predict the child's wellbeing?). Measuring mother-child agreement about their conflict involves creating a new construct other than the conflict. In this example, the researcher is not testing if the mother-child conflict affects the child's well-being, but if the agreement between the mother and the child' perceptions of the level of conflict affects the child's well-being.

How can multiple informant data be analyzed at the dyadic or group level?

This paragraph discusses how to reach the two MIM aims described above: (1) how to measure a construct using different points of view, and (2) how to assess the similarity of informants' reports.

As reported by van Dulmen and Egeland (2011), historically, when researchers aimed to measure a construct using different points of view, they aggregated data using an average: data from multiple informants were simply averaged across informants (Achenbach, 1995), obtaining a new variable that contained less measurement error than information derived from only one single informant (van der Ende, 1999). Another approach to aggregating multiple informant data is to apply a different weight to each informant, where the weight of each informant is obtained by Exploratory Factor Analysis (EFA) or Principal Component Analysis (PCA). These techniques assigned values to the relation between items (i.e., informants' reports in this case) and the latent factor (i.e., the construct). In this way, different items (informants) are given different weight based on their contribution to the underlying factor score for any given individual in a particular data set. These factor scores can then be used, for example, as predictor variables in regression analyses. Based on advancements in statistical methodology, Confirmatory Factor Analysis (CFA) is becoming increasingly popular for modeling multiple informant data (e.g., Ge, Conger, Lorenz, & Simons, 1994; Rowe & Kandel, 1997). Similar to EFA/PCA procedures, CFA provides the opportunity to give different weights to each informant. CFA, however, also allows for modeling additional sources

of variation and error. More specifically, CFA provides the opportunity to model three sources of variation: behavioral trait variation (i.e., the construct the researcher is interested in), method variation (i.e., variation due to informant specificity[25]), and random error (van Dulmen & Egeland, 2011). In this approach, a latent variable is obtained that represents the perspective of multiple informants on the investigated construct for the same unit of analysis, controlling for other sources of variation. This important opportunity offered by CFA has made this technique the main procedure used in current multiple informant literature (e.g., Alfieri & Lanz, 2015; Bauer et al., 2013; Martel, Nigg, & Schimmack, 2017).

The second reason to use MIM is to assess the similarity of informants' reports. If researchers are interested in ranking similarity, the IRR (Inter-Rater Reliability) indices have to be applied, while if researchers are interested in rating similarity, the IRA (Inter-Rater Agreement) indices have to be used. Specifically, here I am going to present only IRA indices, as they are more relevant for multiple informant research than IRR indices (Lanz et al., 2017; Wagner et al., 2010).

IRA indices consist of mathematic formulas that estimate how much informants are interchangeable (i.e., how much informants assigned equal values to items). The applicable formulas are different for measures on qualitative vs. quantitative scales. When qualitative scales are applied, usually agreement is estimate as the observed percentage of cases (e.g., items) on which the informants agree (i.e., give the same answer) corrected for the percentage of cases in agreement expected by chance (e.g., Cohen's Kappa; Cohen, 1960). Instead, when quantitative scales are used, IRA indices compare the variance (i.e., diversity) observed among the informants with a theoretical variance (that depends on the assumptions made by the researchers).

[25] Method variation is usually ascribed to the informants' unique perspective as well as informants' bias. At the same time, the "method" used to collect the information does not consist only in the informant who reports the information, but also into the instrument used to collect information. Recently proposed CFA models (e.g., Bauer et al., 2013) suggested solutions to manage both variation due to the informant as well as variation due to the instrument/items used to evaluate the trait. The variation due to the instrument can be detected only if the informants' point of view are included in the model at item-level and not total-score level and is indeed named "item-level variability".

IRA indices for quantitative scales (e.g., James, 1982) are more recent than indices for qualitative ones (e.g., Cohen, 1960), and are currently more applied. Different reviews of IRA indices for quantitative scale have been published in the last decades (e.g., Kline & Hambley, 2007; Lanz et al., 2017; LeBreton & Senter, 2008; Wagner et al., 2010) and new IRA indices for estimate agreement on quantitative scales continue to be proposed. The most recent IRA index (r_{RG}) have been proposed by Biemann, Ellwart, and Rack (2014), who tried to overcome the limitations of previous IRA indices. Specifically, the theoretical variance they proposed to correct the observed variance does not control only for agreement due to chance, but also for agreement due to knowledge or cultural tendency shared among people (i.e. general agreement present among people that exists regardless the target they are evaluating). This general agreement is estimated by measuring agreement in randomly created groups; for this reason, this index's subscript is RG (random group). The estimate of IRA controlling for general agreement allows researchers to detect only group-specific agreement.

To estimate agreement using r_{RG}, the following formula should be applied:

$$r_{RG} = 1 - \frac{s^2}{\sigma_{tot}^2}$$

where:

- s^2 corresponds to the variance observed among the informants who evaluate the same target (e.g., mother, father and child of the same family);
- σ_{tot}^2 corresponds to the average variance found in randomly created groups (e.g., mother, father and child that belong to different families but are randomly assigned to the same group).

If the instrument administered to the informants is composed of only one item, the r_{RG} formula is applied to that item. If the instrument is a multi-item scale, the formula has to be performed separately for each item, and, then, the total index is obtained as the mean of the one estimated for each item. In both cases, interpretable values of the r_{RG} index range from 0 (minimum group-specific agreement) to 1 (maximum group-specific agreement). If the observed variance among informants is equal to the

theoretical variance, the index is equal to zero: the group agreement is as high as general agreement and no group-specific agreement is detected. The r_{RG} index is higher than zero when the actual group's agreement is higher that general agreement and, thus, some amount of group-specific agreement is detected. Finally, the index is equal to 1 when there is no variability between informants of the same actual group (maximum agreement among actual group members), but there is variance in random teams.

As already said, the value obtained from this formula can be used in different ways: descriptively (e.g., how equal are mother and child's perception of their conflict?), in a comparative way (e.g., agreement is higher in family X or Y?), or the agreement itself can be linked to other constructs (e.g., does the mother–child agreement about their conflict predict the child's wellbeing?). Furthermore, James (1982) suggested also using agreement to verify that the agreement level among informants is sufficiently high before aggregating their scores. This requirement was formulated based on the aggregation consisting of the average score. Nowadays, techniques that weight informants' reports aggregate reports including only shared variance among informants (i.e., agreement).

In sum, the general question "What is Multiple Informant Methodology?" – explored across six different WH questions – can be answered as reported in Table 4.3.

Table 4.3. The WH questions of Multiple Informant Methodology

Question	Answer
What?	MIM consists of collecting information about the same construct and the same unit of analysis from more sources of information.
Where?	MIM was applied above all in organizational and developmental psychology, but can be useful in other fields too.
Who?	The sources of information are named informants, who (in contrast to respondents) are specifically selected because of their expertise about the unit of analysis. Informants can be embedded, non-embedded or mixed with respect to the unit of analysis they evaluate.
When?	A multiple informant dataset (i.e., collecting data from more than one informant) is a necessary, but not sufficient, condition to use MIM. Adopting a dyadic or group-level analysis (i.e., use those data jointly) is the other necessary condition to use MIM properly.
Why?	A multiple-informant dataset can be used with two different aims: (1) to measure a construct using different points of view, and (2) to assess the similarity among informants' reports.
How?	If the aim is to aggregate different point of views, the researcher can adopt the following techniques: average score, latent factor of EFA/PCA and latent factor of CFA. If the aim is to assess the similarity among informants' reports, the researcher can use IRR indices (to assess ranking similarity) or IRA indices (to assess rating similarity).

4.2. Why does literature on emerging adults' financial well-being need it?

According to the results of the scoping review presented in the first chapter, only three studies investigating emerging adults' financial well-being collected information from more than one informant, but none of these applied MIM. Specifically, two studies (Oman, Vesely, Aspy, & Tolma, 2015; Spangler, 2013) collected information from both the emerging adult and one parent, but these informants evaluated different constructs: e.g., emerging adults reported about their financial well-being, while the parent reported about family income. The only study in which the informants reported information about the same constructs was the study by Negru-Subtirica, Damian, and Friedlmeier (2015), where both the child and one parents evaluated emerging adults' financial

behavior (i.e., individual unit of analysis) and parent-child financial relations (i.e., dyadic of analysis). At the same time, however, Negru-Subtirica et al. (2015) cannot be considered a proper multiple informant study as the data were analyzed at an individual level (e.g., the parent and child's reports were separately tested as predictors of the emerging adult's financial satisfaction).

To the best of my knowledge, multiple informant research has never been properly applied to investigate emerging adults' financial well-being. This scarce use of MIM in investigating emerging adults' financial well-being is probably because the construct "financial well-being" does not fit the two main conditions in which MIM is usually applied: (1) investigation of a construct referring to a dyadic or group unit of analysis or (2) investigation of a construct at an individual unit of analysis where the information from the embedded informant is considered not fully reliable (e.g., if the informant is a child). Financial well-being is a construct with an individual unit of analysis (i.e., the emerging adult in this study's case) and the single individual is considered to have the most expertise regarding how much money, debt and assets s/he has (i.e., objective financial well-being) as well as how positively s/he perceives and evaluates her or his financial condition (i.e., subjective financial well-being). Objective financial well-being is private information, so the emerging adult himself/herself is the only person who has this information for sure. Subjective financial well-being is a subjective perception and evaluation, being an internal feeling and not an external and observable behavior (e.g., financial behavior); thus, the perceiver is considered the best informant (van der Ende, 1999).

At the same time, MIM can be applied in literature on emerging adults' financial well-being to properly investigate financial well-being's predictors that involve (1) a dyadic or group unit of analysis or (2) an individual unit of analysis for which the embedded informant is not the unique expert informant (e.g., observable trait).

Constructs referring to a dyadic or group unit of analysis are studied in relation to financial well-being, above all when the role of parent(s) and family in child's financial issues is investigated.

For example, different studies investigated the financial socialization enacted by parents towards their child as predictor of child's financial behavior and well-being. In these studies, researchers included constructs referred to dyadic or family unit of analysis such as family income (Jorgensen & Savla, 2010) or financial relationship with parents (e.g., Shim, Barber, Card, Xiao, & Serido, 2010).

Even constructs related to an individual unit of analysis can be investigated by MIM. For example, Shim et al. (2010) investigated the "adoption of parental financial role modeling" (i.e., the extent to which emerging adult children presently imitate the roles modeled by their parents when managing their finances). Even if this construct refers to an individual unit of analysis (i.e., the emerging adult), collecting information from the parent(s) as well can guarantee a more reliable estimate of the construct, as the child could be affected in evaluating which are his/her parents' financial behaviors and, consequently, how much he/she imitates them. Even the parents can be considered experts on this construct, as they know their own financial behavior as well as how much their child imitates them.

Examples presented above show how collecting information from more informants can be useful to measure constructs related to emerging adults' financial well-being with higher reliability and validity. At the same time, collecting information from more informants also allows the researcher to verify if the agreement that the child has with parents about the observed trait (e.g., financial relationship with parents) affects the child's financial well-being.

I argue that both MIM strategies can improve the study of emerging adults' financial well-being, above all when *family* financial socialization is investigated. In this framework, the key informants other than the emerging adult himself/herself are his/her parents. Furthermore, I argue that both parents' points of view should be taken in account. The three previously cited studies that collected information from informants other than the emerging adults (Negru-Subtirica et al., 2015; Oman et al., 2015; Spangler, 2013) included only one parent per child. It is important to stress that both parents should be involved in this kind of research because (1) both parents participate in the

family socialization process; (2) differences amongst informants allow for correcting individual differences and biases in estimates provided by these informants.

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4.3. How did I apply it?

Originally, financial socialization was conceived as a process by which young people acquire skills, knowledge, and attitudes relevant to their functioning as consumers in the marketplace (Ward, 1974). Later, Danes (1994, p.128) suggested that "financial socialization is much more inclusive than learning to effectively function in the marketplace. It is the process of acquiring and developing values, attitudes, standards, norms, knowledge, and behaviors that contribute to the financial viability and individual wellbeing".

This process is promoted by different agents of socialization (family, school, peers, media). Among these, according to Grusec and Davidov (2007), the parents are primary in socialization for the following reasons: (1) parents are ''biologically prepared'' not only to produce offspring, but to attend to multifaceted demands of their upbringing, (2) parents who are primed to protect and nurture children find opportunities to play into a human need for interrelatedness, (3) there are strong cultural expectations in all societies for parents to be primary socializers of children, (4) because parents typically live in close proximity to their children, an incentive for parents exists to help establish prosocial behavior in children, and (5) parents control economic and material resources that children need to grow and develop.

In the current chapter, I aimed to investigate how different family socialization factors affect the financial outcomes of the emerging adult child, using a multiple informant approach.

Family socialization factors

A review by Gudmunson and Danes (2011) found that family socialization happens on two levels of intention (implicit and purposive). Implicit family socialization occurs via family interactions and relationships: interaction patterns among family members influence financial attitude

development, knowledge transfer, and financial capability development. For instance, Flouri (2004) found that mothers' parenting involvement, measured by items such as spending time together and setting rules, was negatively related to development of children's materialistic attitudes. Gudmunson and Danes (2011) suggested measuring family interactions by incorporating constructs such as family interpersonal communication, relationship quality, and parenting style. These interactions transmit information to children about how the family views financial processes. In this way, families provide an informal and not-explicit environment in which parents teach children skills and develop shared understandings of what is acceptable behavior. For example, parents can implicitly transmit the idea that they feel they have the duty to financially help the child if he/she needs (i.e., family financial obligation; Aquilino, 2005). In this informal environment the child will probably act differently in terms of his/her financial behavior from a peer raised in a family environment where parents transited the idea that the child would have to resolve his/her financial problems by himself/herself.

Overall, "implicit family socialization" consists both in the quality of the interaction within the family as well as the implicit environment that informs family members about how other family members view financial processes.

The second intention level of family socialization is instead purposive. By "purposive family financial socialization," Gudmunson and Danes (2011) meant intentional efforts parents use to financially socialize children. Parents explicitly affect children's financial socialization via purposive, overt teaching and practice (e.g., family discussion about financial healthy behavior).

Thus far, most of the literature has been directed at parents' intentional efforts in socializing children (Beutler & Dickson 2008; Clarke et al., 2005). Specifically, the two main models of family financial socialization during emerging adulthood (Jorgensen & Savla, 2010; Shim et al., 2010) investigated the impact of variables such as the frequency of financial discussion with parents (Jorgensen & Savla, 2010) or parental direct financial teaching (Shim et al., 2010) on child's financial outcomes.

Instead, the impact of implicit financial socialization enacted by family interaction and relationships has been rarely investigated. For this reason, in the current study I aimed to investigate the impact of the implicit financial socialization process on emerging adults' financial outcomes. Specifically, I aimed to investigate the two different aspects of "implicit financial socialization": the quality of the family interaction as well as the content of this implicit socialization (i.e., implicit information about how the family views financial processes). For the quality of the interaction, I measured the extent to which **parent-child communication** is open and not problematic. However, to represent implicit information transmitted about family financial processes, I proposed a new construct called "**family financial enmeshment**". The term enmeshment has been used in the literature to refer to a familial environment in which members are undifferentiated from or overly dependent on each other (Minuchin, Montalvo, Guerney, Rosman, & Schumer, 1967). Differentiation is the process whereby individuals extricate themselves from parental dominion and develop autonomous self-identities; indeed, the opposite of individuation is fusion. Usually, the term enmeshment has been used in relation to the whole child's identity. The proposed construct is called "family financial enmeshment" because it refers only to the degree of (un)differentiation of financial identities. I argue that financially enmeshed families transmit the implicit idea of "what is mine is also yours," so all the assets and money that belong to the parents belong, in *the family's mind*, in the same way to the child (undifferentiation/fusion). At the opposite extreme are families that transit the implicit idea that "what is mine is only mine, and what is your is only yours." In this case, the financial world of the child is totally differentiated from the parents'.

Financial outcomes

According to the review by Gudmunson and Danes (2011), the final outcome of the financial socialization process is the child's (objective and subjective) financial well-being. However, prior to financial well-being, explicit and implicit family financial socialization influences financial values, attitudes, standards, norms, knowledge, and behaviors; these in turn influence financial well-being.

In other word, family financial socialization affects the way in which the child financially thinks and acts and, later, his/her financial well-being. In this framework, the efficacy of family financial socialization is assessed by measuring how positive are the child's financial attitudes, capability and behavior (Gudmunson & Danes, 2011). In the current study, I proposed to evaluate the efficacy of family socialization as the degree to which the child tries to financially think and act like their parents when managing their finances (**adopting parental financial role modeling**; Shim et al., 2010). Previous studies found that, as results of family financial socialization as well as children's observation, children may emulate behaviors their parents demonstrate in their financial practices and make similar financial decisions (Bakir, Rose, & Shoham, 2006; Mandrik, Fern, & Bao, 2005).

Study's aim

The scope of the current study can be summarized as follows. First, I aimed to investigate how implicit family financial socialization factors (interpersonal communication and family financial enmeshment) impact on the degree to which the emerging adult child adopts the parents as financial models (adoption of parental financial role modeling) as well as how implicit family financial socialization factors and the adoption of parental financial role models affects the child's financial well-being. In this theoretical model, I collocated the child's adoption of parental financial role modeling between implicit family socialization factors and financial well-being. Technically, the child's adoption of parental role modeling is a mediator between family socialization and financial well-being, but in the current study I do not test the mediating role of this variable, as it would require analyses (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002) that detract from the focus of the current study (multiple informant methodology). Second, I aimed to verify if the *agreement* that family members had about (1) interpersonal communication, (2) family financial enmeshment, and (3) the child's adoption of parents as financial models affects the emerging adults' financial well-being.

These two research questions have been analyzed at three different levels: the individual level, the dyadic level and the family level. The aim is also verifying how the adoption of MIM (i.e., dyadic

and family levels of analysis) generates differences in terms of model fit, explanatory power (R-square) and detecting relations with respect to the single informant methodology (i.e., individual level of analysis).

Method

Participants

Family data collection was here made using a convenience sample (Farrokhi & Mahmoudi-Hamidabad, 2012) and adopting a *snowball sample* technique (Biernacki & Waldorf, 1981). Email invitations were sent to university students using their university email address as well as non-student emerging adults friends of members of the research team. All emerging adults who received the email invitation were asked to share the invitation with their non-student peers. Of the 3000 emails distributed, a total of 583 (19.4%) emerging adults and their families participated in the research. For most of the families, only the child responded to the survey (N=405, 69.47%). For 76 families (13.04%) both the child's and the mother's reports were collected, for 41 families (7.03%) both the child's and the father's reports were collected, and for two families (.34%) only the father responded to the survey. Finally, for 59 families (10.12%) all the informants' reports (mother, father and child) were obtained.

The emerging adults in this sample were mainly female (76.1%). Their age ranged from 18 to 29 years old and 73.5% of them were 24 years old or less (M=23.21; SD=2.51). Different occupational statuses were detected in the sample: 65.6% were students, 7.9% were workers, 21.5% were both students and workers, 1.5% were involved in a non-paying internship, 1.5% were looking for a job, and 1.9% were NEET (Not in Education, Employment, or Training; Bynner & Parsons, 2002). Finally, 53.8% of the participants was living in the parental house, while 46.2% had left that house.

As for the parents, mothers were aged 41 – 67 years old (M=53.33; SD=4.96) and were mainly married (73.9%). The other mothers were separated/divorced (20.1%) or widows (6%). The fathers

were aged 46-75 years old (M=56.70; SD=4.55) and were mainly married (90.2%), rarely separated/divorced (8.8%) or cohabitating without marriage (1%).

Instruments

An online survey was administered by Qualtrics ® to both child and parents during May-July 2017. Two different questionnaire versions were administered according to the informant: a child questionnaire for emerging adults and a parent questionnaire for mothers and fathers. Both versions were composed of socio-demographic questions referring to the subject who was filling in the survey as well as different measurement scales. Specifically, scales measuring family socialization factors (Family Communication Scale, Family Financial Enmeshment Scale) and the adoption of parental financial role modeling were present in both questionnaire versions. However, scales measuring emerging adults' objective and subjective financial well-being were included only in the child questionnaire.

Family Communication Scale. The quality of the communication that the child has with the mother and the father was measured by the Parent–Offspring Communication Scale (Barnes & Olson, 1982). The scale is composed of two subscales, one that measures the degree of openness in family communication and one that assesses the extent of problems in family communication (reverse scored), each of which contains 10 items. The Parent–Offspring Family Communication subscale includes (in the child version) items such as, "It is very easy for me to express all of my true feelings to my mother/father," and "My mother/father is always a good listener." The Problems in Family Communication subscale includes items such as, "My mother/father has a tendency to say things to me that would be better left unsaid," and "When we are having a problem, I often give my mother/father the silent treatment." The Italian version of this scale (Lanz, 1997) was administered twice to the child. First, the child evaluated openness (α= .931) and problems (α= .823) in communication with the mother, and then openness (α= .940) and problems (α=.839) with the father. The same scale was administered to parents. The items were the same except for the referent of each question. A sample item for the parent version is "It is very easy for me to express all of my true

feelings to my child." The reliability for the scale was high both for the mothers' (openness α= .886 and problems α= .759) and fathers' (α= .880 and .858) reports.

Family Financial Enmeshment. Family financial enmeshment was measured with the Inclusion of Other in the Self scale (IOS; Aron, Aron, & Smollan, 1992). This scale consists of seven pairs of circles labeled "self" and "other" that overlap to various degrees creating a 7-point interval scale. Subjects select the pair that best describe their relationship. Selecting pairs of circles that are more overlapped indicates a higher level of fusion/low differentiation and vice versa. I used the same graphic representation (seven pairs of circles) but changed the instructions and the circles' labels. Instruction for the child required evaluating how much he/she considered his/her own financial condition (money, saving, assets) coincident with one of his/her parents. Circles' labels were "MINE" and "THEIR" (financial condition). In the same way, instruction for the parents required evaluating how much they considered their child's financial condition (money, saving, assets) coincident with the one of the parents. Circles' labels were "HIS/HER" and "OUR" (financial condition).

Adopting Parental Financial Role Modeling. To measure the extent to which children presently imitate the roles modeled by their parents when managing their finances, the Adopting Parental Financial Role Modeling Scale of Shim et al. (2010) was adopted. Children were asked to indicate on a five-point scale of 1 (completely false) to 5 (completely true) their agreement with four statements (e.g., "I make financial decisions based on what my parents have done in similar situations"; "When it comes to managing money, I look to my parents as my role models"). Cronbach's alpha was .897. The same scale was administered to parents who evaluate how much their child adopted them as financial models ("My child make financial decisions based on what we parents have done in similar situations"). This scale showed good reliability both for mothers (α= .823) and fathers (α=.753).

Subjective financial well-being. Emerging adults' subjective financial well-being was assessed with the 10-item "general subjective financial well-being" factor of the Subjective Financial Well-Being Scale developed and validated in the previous chapter of this thesis. Sample items are:

"I'm satisfied with my present financial situation" and "I have enough money to pursue my passions". The internal consistence of the scale is optimal (α=.940).

Objective Financial well-being. The emerging adults' objective financial well-being was measured with questions about two variables, personal income and economic dependence[26] on parents. Personal income was reported on a 12-point scale (1=0€ at month; 12=over 5000€ at month). Economic dependence was reported as the average amount of money in Euros that the emerging adults received from their parents each month.

Procedure

Family were contacted by sending an email to the emerging adult child. If the child expressed his/her consent to take part in the research (signing an online informed consent form), before starting his/her questionnaire, the child was asked to provide the researchers with contact information for his/her parents in order to allow the research team to invite parents to take part in the research. The subjects were encouraged to provide their parents' contact information with the chance to win an Amazon voucher of 50 euros.

To guarantee the subject's privacy, each participant was asked to create a family code (i.e., a code of seven numbers based on information related to his/her family). Thanks to this family code, I could match participants belonging to the same family, without violating their privacy.

Data analysis

The amount of missing data was analyzed for the different levels featuring family data: item-, respondent-, and dyad-level (Tagliabue & Donato, 2015). Item level missing data means that a specific item is missing for one or more respondents (e.g., item 7 of the communication scale has not been filled in by three participants). Missing data at the respondent level means that the whole questionnaire of one respondent is missing (e.g., the father did not provide data on the whole

[26] Higher levels of economic dependence (i.e., higher amount of money received from parents) corresponded to higher levels of objective financial well-being. I simply considered economic dependence as a relevant component of the material resources that an emerging adult has and that consequently should be considered when emerging adults' material resources (i.e., objective financial well-being) are investigated (Zhang & Cao, 2010).

questionnaire). Missing data at the dyad level means that some dyads within the family did not provide data on the whole questionnaire, so that both members of a dyad are missing (e.g., mother-father dyads did not provide data on the whole questionnaire). Tagliabue and Donato (2015) suggested that analysis of missing data at each level should proceed backwards (from the dyad level to the item level) in order to control for missing data at the higher level when computing the amount of missing data at the lower level.[27] After describing the amount of missing data at each level, I performed – separately for each level – analyses in order to identify the mechanisms causing data to be missing (Acock, 2005): missing completely at random (MCAR), missing at random (MAR), and not missing at random (NMAR).

Missing data were managed by the Multiple Imputation method offered by Mplus software (Muthén & Muthén, 1998-2014). These imputed datasets were used to run six models different in the level of analysis used (individual, dyadic, family) and in the technique used to manage multiple informant data (CFA, agreement). The child's (objective and subjective) financial well-being was measured only by the child's report; thus, this construct was treated in the same way across all the models: observed scores of subjective financial well-being, personal income, and financial dependence on parents were always included as the model's outcomes. In the same way, in all the models the variables of emerging adults' gender (0=female, 1=male), age (in years), and living arrangement (0=with parents, 1=without parents) were included as control variables. Specifically, control variables were included as predictors of financial well-being variables and a correlation was required also between age and living arrangement. What changes across models is the way in which multiple-informant variables, i.e. variables collected from more informants (interpersonal communication[28], family financial enmeshment, adoption of parental financial role modeling), were treated.

[27] For example, missing data on one item could be because the whole questionnaire of the respondent is missing. Thus, controlling for higher missing data level would allow to consider the amount of missing data that is specific of each level.
[28] Due to the length of this scale (i.e., 20 items), the total scores of the two observed subscales (10-items openness and 10-item problems in communication) were used as observed measures of the parent-child communication construct.

Model 1: individual level of analysis. For each variable (e.g., adoption of parents as financial models) the three informants' points of view (i.e., mother, father, child) were included in the model, but the informants' reports were treated separately. Specifically (see Figure 4.1), the variables related to the same construct were correlated with each other (e.g., adoption of parental financial role modeling reported by the father was related to the one reported by mother and by child), but the latent factor measuring the construct (e.g., adoption of parental financial role modeling) was estimated separately for each informant. In this model, the correlations among latent factors of different informants measuring the same construct control for variability due to the belonging of the same family, while correlations among the same item evaluated by different informants control for item-level variability (Bauer et al., 2013). A correlation was also required between mother-child communication and father-child communication evaluated by the child, because the informant and the construct were the same (even if the unit of analysis was different).

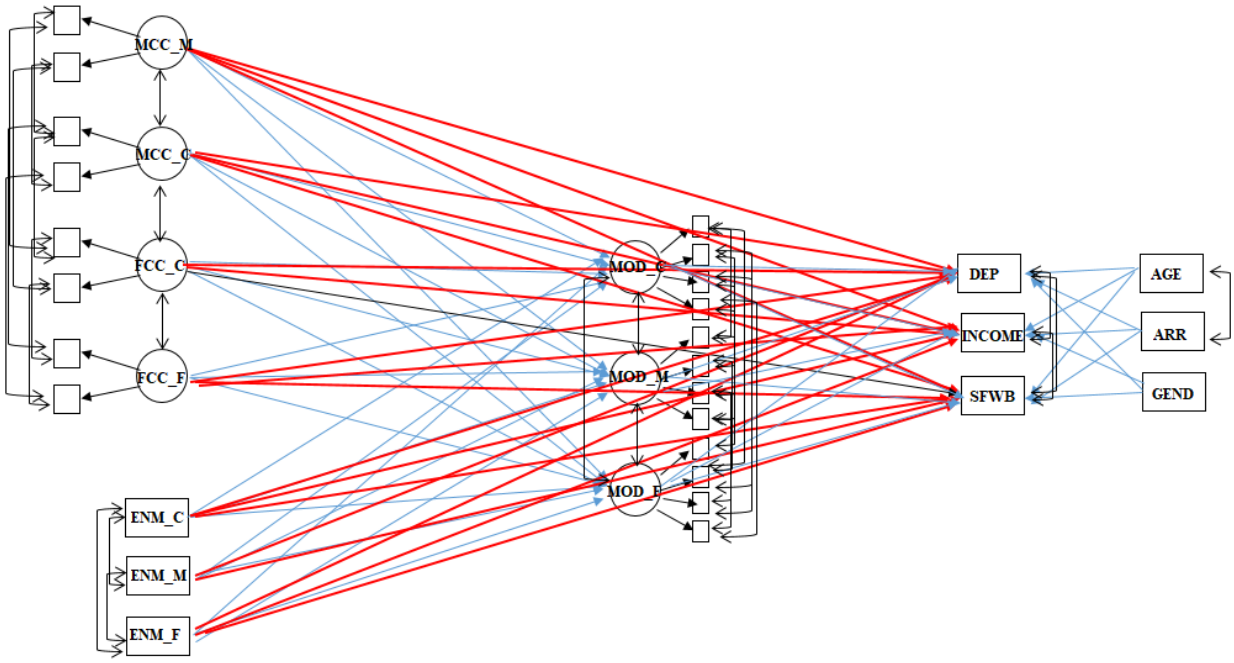

Figure 4.1. *Individual level of analysis (Model 1)*
MCC=mother-child communication; FCC=father-child communication; ENM=enmeshment; MOD=adoption of parental financial role modeling; DEP=economic dependence on parents; INCOME=personal income; SFWB=subjective financial well-being; AGE=emerging adults' age; ARR=emerging adults' living arrangement; GEND=emerging adults' gender. When variables are reported by more than one informant, the letter after the underscore indicates if the variable is reported by the child (C), the mother (M), or the father (F). Regression paths that go directly from family financial socialization factors on the financial well-being are reported in red.

Model 2: dyadic level of analysis by CFA (mother-child). For each variable, the two informants' points of view (i.e., mother and child) were included in the model and were treated as two measures of the same construct. In other words, only one latent factor was created for each construct, based on both mother and child's reports. The latent multiple-informant factor can be obtained in two different ways (Alfieri & Lanz, 2015). The first option consists of using all informants' items as indicators of the one-level factor. In this model the latent factor represents the dyadic (if informants are two) or family/group (if informants are more than two) view of the construct. Error terms of the observed variables represent the unique perception of each family member (i.e., the amount of variance not shared by the other family members). Finally, correlations for the same item evaluated by different informants (e.g., item 1 of mother correlated with item 1 of the child) control for item-level variability (Bauer et al., 2013). The second option consists of creating a second-

order latent factor which affects the single informant first-order latent factor. In other words, each informant's item load on a single-informant first-order latent factor. First-order factors belonging to different informants but measuring the same construct load on a second-level factor that measures the dyadic (if informants are two) or family/group (if informants are more than two) view of the construct. In this model, the second-order latent factor represents the dyadic/family dimension, while the residual variance of each one-level factor represents the informant's unique perception. Again, correlations for the same item evaluated by different informants can be added to control for item-level variability.

As in Alfieri and Lanz (2015) the one-level model has been found to be less satisfying in terms of fit than the two-level model, I performed the two-level factor structure for each multiple informant construct (communication, financial enmeshment, adoption of parental financial role modeling) present in this mother-child model (see Figure 4.2) as well as in the other dyadic or family CFA models.

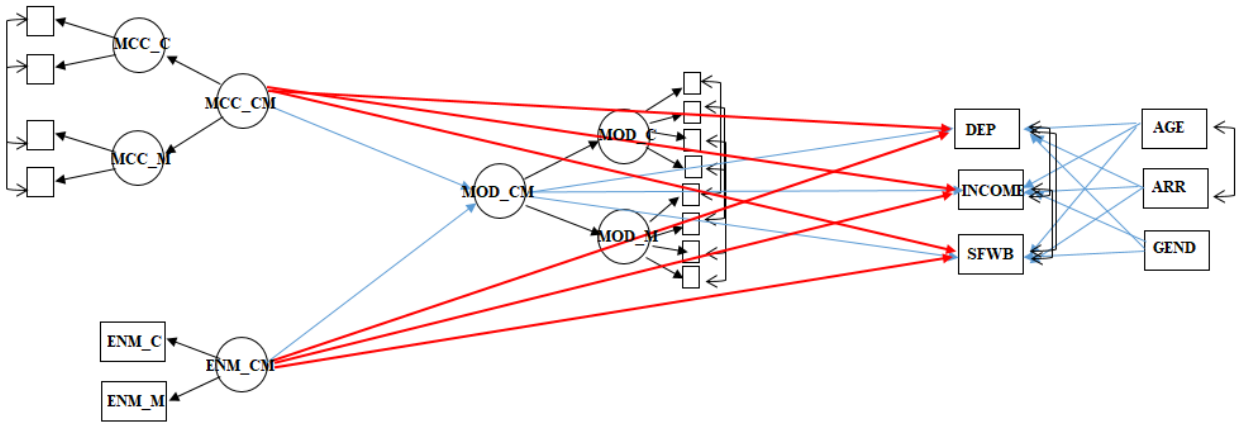

Figure 4.2. *Mother-child dyadic CFA model (Model 2).*
MCC=mother-child communication; ENM=enmeshment; MOD= adoption of parental financial role modeling; DEP=economic dependence on parents; INCOME=personal income; SFWB=subjective financial well-being; AGE=emerging adults' age; ARR=emerging adults' living arrangement; GEND= emerging adults' gender. When variables are reported by more than one informant, the letter after the underscore indicates if the variable is reported by the child (C) or the mother (M). When variables are analyzed at child-mother dyadic level, the letters CM are reported after the underscore.

Model 3: dyadic level of analysis by CFA (father-child). The third model is the replication of the second model but the father's point of view has been substituted for the mother's point of view.

Model 4: dyadic level of analysis by agreement indices (mother-child and father-child). For each multiple-informant variable, the level of parent-child agreement was estimated separately for mother (e.g., agreement that mother and child have on the degree in which the child adopt the parents as financial model) and father (e.g., agreement that father and child have on the degree in which the child adopt the parents as financial model). Agreement was estimated using the r_{RG} index. Separately for each scale item, the observed variance among the three informants (i.e., mother, father, and child) was weighted for theoretical variance (e.g., general agreement found in randomly created family). Almost one thousand families were created by R software (R Core Team, 2013) and the average variance among members of these random groups was estimated using the function *rgr.agree* of the *multilevel* package of R software. The specific-dyad agreement level was estimated separately for each item, then agreement of items belonging to the same scale were averaged. In sum, for each construct, there is only one agreement final score for each dyad (mother-child and father-child).

These agreement variables were included in the same model as predictors of emerging adults' financial well-being. Note that while in CFA models "adoption of parental financial role modeling" is a mediator – as it is considered an outcome of "communication" and "enmeshment" but a predictor of financial well-being – in the agreement models the "*agreement* about the adoption of parental financial role modeling" is on the same level of other predictors. As said, estimating inter-rater agreement involves creating a new variable that is not coincident with the previous one. I am no longer measuring how much the child use the parents as model in his/her financial decisions and behavior, but how much the points of view of parent and child about this aspect are similar. In this model, I am verifying how much the similarity of the parent's and child's prospective about different aspects/constructs predicts the emerging adults' financial well-being.

Finally, as these predictors are interdependent, correlations among predictors that measured agreement or the same construct (e.g., mother-child agreement on family financial enmeshment with

father-child agreement on family financial enmeshment) or between the same informants (e.g., mother-child agreement on family financial enmeshment with mother-child agreement on their communication) were included (see Figure 4.3).

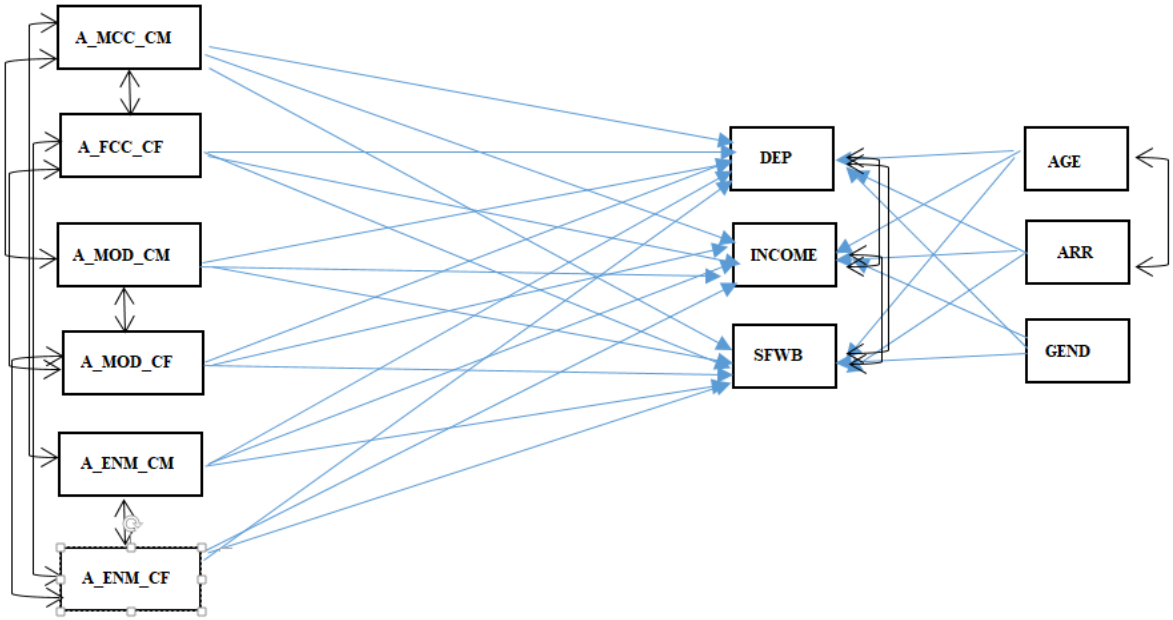

Figure 4.3. *Dyadic agreement model (Model 4).*
MCC=mother-child communication; FCC=father-child communication; ENM=enmeshment; MOD= adoption of parental financial role modeling; DEP=economic dependence on parents; INCOME= personal income; SFWB=subjective financial well-being; AGE=emerging adults' age; ARR= emerging adults' living arrangement; GEND=emerging adults' gender. When variables are reported by more than one informant, the letter after the underscore indicates if the variable is reported by the child (C), the mother (M), or the father (F). The A at the beginning of the labels indicates that the variables consisted of the estimated agreement on a specific construct (three letters after the first underscore) between the two informants (two letters after the second underscore).

Model 5: group level of analysis by CFA. For each variable, the three informants' points of view were used as different measures of the same latent construct. In this model there are three family latent factors (i.e., communication, family enmeshment, parental modeling) predicting the emerging adults' financial well-being (see Figure 4.4).

Note that interpersonal communication is a dyadic unit of analysis (mother-child communication and father-child communication). Using these two first-order factors as indicators of

a second order factor, a family factor (COM_CMF) that describe in general how good the communication that the child has with his/her parents was obtained.

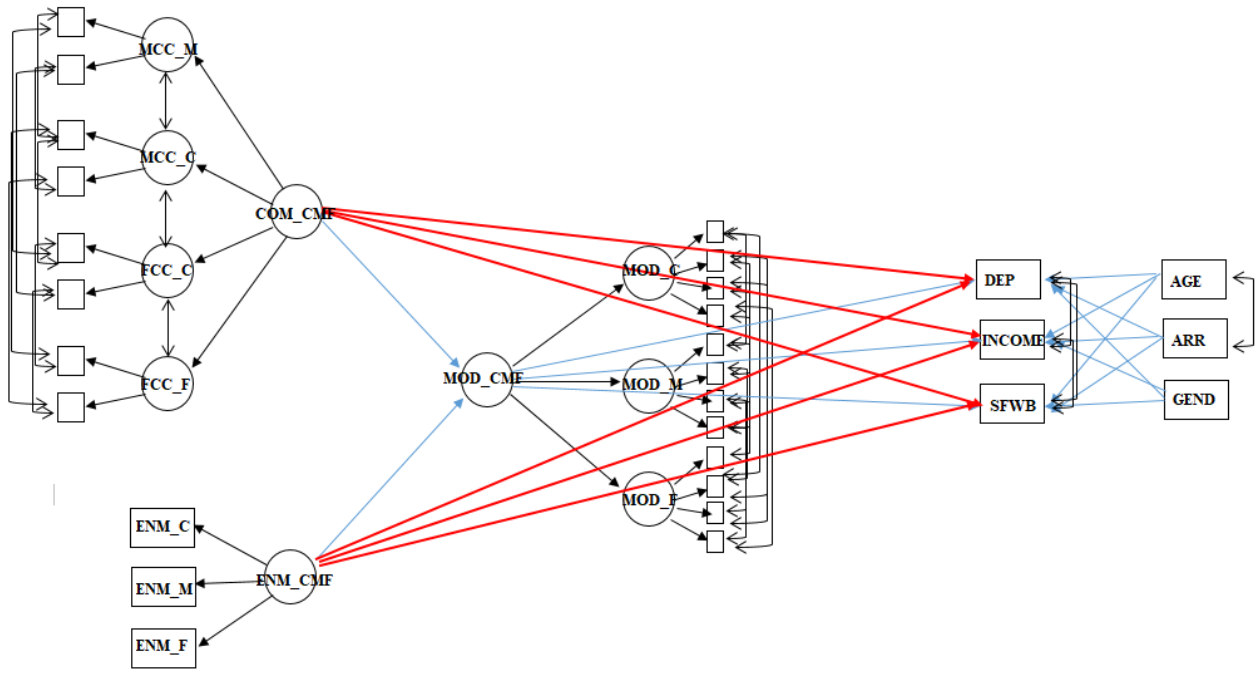

Figure 4.4. *Family-level CFA model (Model 5).*
MCC=mother-child communication; FCC=father-child communication; COM= communication; ENM=enmeshment; MOD=adoption of parental financial role modeling; DEP=economic dependence on parents; INCOME=personal income; SFWB=subjective financial well-being; AGE=emerging adults' age; ARR=emerging adults' living arrangement; GEND=emerging adults' gender. When variables are reported by more than one informant, the letter after the underscore indicates if the variable is reported by the child (C), the mother (M), or the father (F). When variables are analyzed at child-mother-father family level, the letters CMF are reported after the underscore.

Model 6: group level of analysis by agreement. Family-level agreement can be properly estimated only for family financial enmeshment and the child's adaptation of parental modeling (i.e., as the items of these scale referred to the same unit of analysis for all the three informants' reports). For these two variables, agreement was estimated using the r_{RG} index. Separately for each scale item, the observed variance among the two informants (e.g., mother and child) was weighted for theoretical variance (e.g., general agreement found in randomly created mother-child dyads). Almost one thousand families were randomly created and the average variance among these families' members was estimated with R software (R Core Team, 2013). The specific-family agreement values obtained for the four items of the adoption of parental financial role modeling were averaged. In sum, two

agreement scores (family agreement about family financial enmeshment and family agreement about child's adoption of parents as financial models) were obtained and then were tested as predictors of financial well-being (see Figure 4.5).

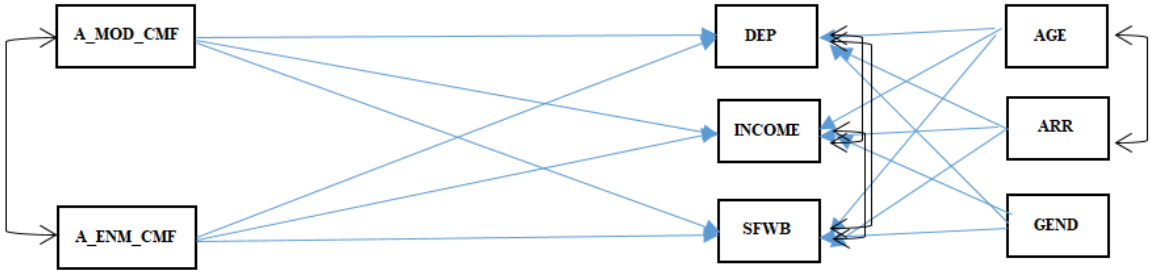

Figure 4.5. *Family-level agreement model (Model 6).*
ENM=enmeshment; MOD=adoption of parental financial role modeling; DEP=economic dependence on parents; INCOME=personal income; SFWB=subjective financial well-being; AGE=emerging adults' age; ARR=emerging adults' living arrangement; GEND=emerging adults' gender. When variables are reported by more than one informant, the letter after the underscore indicates if the variable is reported by the child (C), the mother (M), or the father (F). The A at the beginning of the labels indicates that the variables consisted of the estimated agreement on a measured construct.

Results

Missing data

The amount of missing data was described at the dyad, respondent and item levels (see Table 4.4).

Table 4.4. Amount of missing data at different levels

Family member	Missing data at dyad level	Missing data at respondent level	Missing data at item level
Child	Child-Mother: 0.3% (N=2 out of 583 families) Child-Father: 0% (N=0 out of 583 families)	0% (N=0 out of 581 families that do not involve the child in a dyad-level missing)	The 60 items of the child questionnaire had from 0 to 145 missing out of the 581 respondent children (from 0% to 24.96%)
Mother	Child-Mother: 0.3% (N=2 out of 583 families) Father-Mother: 69.8% (N=407 out of 583 families)	23.56% (N=41 out of 174 families that do not involve the mother in a dyad-level missing)	The 25 items of the mother questionnaire had from 0 to 4 missing out of 133 respondent mothers (from 0% to 3.01%)
Father	Child-Father: 0% (N=0 out of 583 families) Father-Mother: 69.8% (N=407 out of 583 families)	42.04% (N=74 out of 176 families that do not involve the father in a dyad-level missing)	The 25 items of the father questionnaire had from 0 to 3 missing out of 102 respondent fathers (from 0% to 2.94%)

Results suggest that frequently (30.2% of the time) only the child took part in the research. In cases in which only one parent – in addition to the child – took part in the research, this is usually the mother (father respondent level missing=42%). Finally, once the parent decides to take part in the research, he/she usually answers all the questions of his/her survey (mother and father item-level missing data is very low). In contrast, the children who participated to the research usually skipped some items of their survey (child item-level missing data is higher), probably because their survey was much longer than the parents' one.

After describing the amount of missing data at different level, I checked the mechanism underlying the missing data. Little's test on the variables reported by children (60 items) showed that the pattern of missing data could not be considered MCAR: $\chi^2(2568) = 2875.143$, $p < .001$. However, both for the 25 items reported by mothers [$\chi^2(247) = 270.752$, $p = .143$] and the 25 items filled out by the fathers [$\chi^2(195) = 212.664$, $p = .183$], the assumption of missing completely at random seems plausible. To better understand the mechanism generating the missing data, I checked which auxiliary variables could be associated with the missing data pattern for model variables at each of the three

levels. I created, for each level of interest, a dummy variable measuring the presence of missing data (where 0 represents the absence of missing data and 1 the presence of missing data). The dyad-, respondent- and item-level missing data dummy variables were correlated with potential auxiliary variables (i.e., variables potentially associated with missing data). Significant associations were found between auxiliary variables and missing data at each level.[29] This means that at each level, missing data could be either MAR or NMAR (Tagliabue & Donato, 2015). NMAR cannot be evaluated and it is more a matter of a conceptual consideration: the researcher should subjectively evaluate how likely is that a participant with high (or low) scores on this variable would omit the item or leave the study. As there is no way to demonstrate if missing data are MAR or NMAR, I decided to handle missing data with a method made for MAR, as available evidence suggests that violations of the MAR assumption have minimal impact on estimates and standard errors when MAR-based methods are used (Collins, Schafer & Kam, 2001; Young & Johnson, 2013).

The current MAR-based methods that work best are FIML (Full Information Maximum Likelihood) and MI (Multiple Imputation) methods (Johnson & Young, 2011). Both perform well even when the proportion missing is high. Many simulation studies have tested missing data approaches and verified their efficacy with 50% or more missing values on variables in the model (e.g., Allison, 2001; Collins et al., 2001). I decided to adopt the MI method because I needed imputed data in order to perform formulas to estimate dyadic- and family-level agreement. Specifically, to calculate the variance among family members' scores for each item, I needed the responses that each informant had given for each item. When the informant's response was missing, it was imputed. Specifically, in order to reduce the number of variables to impute (and make the imputation more efficient) I imputed only the multiple-informant variables. Missing variables reported only by the

[29] For example, at the dyadic-level, the missing data variable related to the father-mother dyad is positively predicted by child's age (r=.106; p=0.11): the older the child, the less probable is the participation of parents. At the respondent level, the amount of missing data of father as respondent is related to the openness in father-child communication evaluated by the child (r=-.103; p=.029): the higher the openness in communication, the lower the probability that the father will be missing at the respondent level. Finally, for item-level missing data, an example of an auxiliary variable is living arrangement: emerging adults who do not live with their parents are more likely to not report their personal income (r=.088; p=.035).

child (i.e., gender, age, living arrangement, subjective financial well-being, personal income and economic dependence) were not imputed both because they were not used to estimate agreement and their amount of missing data was small. The multiple-informant variables (parent-child communication, family financial enmeshment, adoption of parental financial role modeling) were imputed for all the three informants. Ten different datasets were imputed using Mplus software. To inform the imputation procedure, I also used variables not included in the models I aimed to test, but present in the original dataset and correlated with the variable to impute, as they can improve the estimates and increase the likelihood of meeting the MAR assumption (Johnson & Young, 2011).

The descriptive statistics for the variable included in the four CFA models I performed are reported in Table 4.5, while variables included in the two agreement models (i.e., new variables created using r_{RG} index) are reported in Table 4.6. In both cases, reported values are average values over the 10 datasets and an average of 522 observations (i.e., families) for each dataset.

Table 4.5. Descriptive statistics of variables included in the models

	Child as informant		Mother as informant		Father as informant	
Variable	M	SD	M	SD	M	SD
Openness in mother-child communication	3.99	.89	4.21	.59		
Problems in mother-child communication (recoded)	3.52	.80	4.02	.63		
Openness in father-child communication	3.50	1.02			3.92	.66
Problems in father-child communication (recoded)	3.41	.84			3.76	.72
Family financial enmeshment	4.74	2.14	4.82	2.00	4.81	2.33
Adoption of parental financial modeling	3.60	.94	3.75	.73	3.84	.70
Economic dependence in Euro	261.14	258.66				
Subjective Financial well-being	3.06	.97				
Personal income	(1)	(2)				

Note. Average number of observations = 522; Shaded cell indicates that the informant did not reported information for that variable. Personal income is the only variable that is not quantitative. Being an ordinal variable, reported values are median and inter-quartile range instead of mean and standard deviation.

Table 4.6. Descriptive statistics of agreement variables

Agreement between	Agreement on	M	SD
Mother and child	Mother-child communication	.20	1.01
(dyadic level of agreement)	Family financial enmeshment	.42	.82
	Adoption of parental financial modeling	.26	.78
Father and child	Father-child communication	-.01	1.20
(dyadic level of agreement)	Family financial enmeshment	.38	.86
	Adoption of parental financial modeling	.15	.91
Mother, father and child	Family financial enmeshment	.23	.78
(family level of agreement)	Adoption of parental financial modeling	.08	.71

Data in Table 4.6 showed that maximum levels of agreement were always found for family financial enmeshment, both at dyadic and family levels. The lowest level of agreement was found between father and child when they evaluated their communication. Specifically, the average agreement level is -0.01. Values of the r_{RG} index below zero only occur if the variance in random groups (theoretical variance) is smaller than in the actual group (Biemann et al., 2014). This means that real father-child dyads had less agreement than (or equal to – as agreement level here was very near to zero –) random father-child dyads.

Model 1: individual level of analysis

The first run model consisted of the individual level of analysis model (see Figure 4.1). As the result was that model 1 was not identified, I added three constraints. Specifically, I had to constrain the residual variances of the following three variables: "openness in mother-child communication evaluated by the child," "openness in mother-child communication evaluated by the mother," and "openness in father-child communication evaluated by the child" to manage their negative values. As they were not significantly different from zero, I constrained them to zero. This model showed optimal fit indices: $\chi^2(280)=300.53$, p=.19; RMSEA=.012(.000, .022), p=1.000; CFI=.984; SRMR=.065. Factor loadings across all the latent variables ranged from .316 to .914[30] and were all significant (p<.05). Implicit financial socialization factors affected the degree to which the child used

[30] Excluded the three factor loadings of the variables that had the residual variance constraint to zero. For these variables, the factor loading is automatically 1.

the parents as a financial model (only for the child and father points of view). Specifically, the "adoption of parental financial role modeling" reported by the child was predicted by the quality of father-child communication (β=.298; p=.026) and the family financial enmeshment reported by father (β=.322; p=.043). This last variable (family financial enmeshment reported by father) also predicted the "adoption of parental financial role modeling" reported by the father (β=.346; p=.024). Subjective financial well-being was instead predicted by the "adoption of parental financial role modeling" reported by the child (β=.299; p<.001). The emerging adults' personal income was predicted by family financial enmeshment reported by the child (β= -.332; p<.001). The same variables (family financial enmeshment reported by the child) also predicted the child's economic dependence on parents (β=.133; p=.050).

Finally, the control variables had significant relations with at least one financial well-being variable. Gender significantly predicted subjective financial well-being (β=.154; p<.001): males had higher level of subjective financial well-being than females. Living arrangement predicted economic dependence on parents (β=.402; p<.001): emerging adults living independently from their parents received more Euros per month from their parents. Finally, emerging adults' age predicted economic dependence (β=.178; p<.001) and personal income (β=.445; p<.001).

Model 2: dyadic level of analysis by CFA (mother-child)

The second model included only variables reported by the mother or the child and these variables were analyzed at the dyadic level of analysis (see Figure 4.2). The fit indices were good: χ^2 (141)= 239.180, p<.001; RMSEA = .037(.028 .044), p=.998; CFI=.928; SRMR=.060. Factor loadings across all the latent variables ranged from .458 to .917 and were all significant (p<.01). Both the implicit financial socialization factors (mother-child communication and family financial enmeshment) affected the adoption of parental financial role modeling, respectively β=.539 (p<.001) and β=.216 (p=.004). In turn, the adoption of parental financial role modeling affected subjective financial well-being (β=.434; p<.001). Personal income was negatively predicted by family financial enmeshment (β=-.392; p<.001), while financial dependence had no significant predictors. Finally,

control variables affected financial well-being variables. Economic dependence was predicted from all the control variables: gender (β=.089; p=.045) living arrangement (β=.402; p<.001) and age (β=.181; p<.001). Specifically, economic dependence on parents increased when the child was male, older and lived without their parents. Furthermore, personal income is positively predicted by age (β=.433; p<.001), and subjective financial well-being is affected by gender (β=.170; p<.001), being higher for males than females.

Model 3: dyadic level of analysis by CFA (father-child)

The model of the father-child dyad shows an identification problem due to the dyadic latent factor of father-child communication. This difficulty in fitting a second order factor constituted by the two one-level latent factors of father and child is probably due to the highly different views that the two informants had on the construct. As shown in Table 4.6, father-child communication is the construct that had the lowest level of inter-rater agreement. I obtained an identified model (see Figure 4.6) measuring father-child communication using the one-level multiple-informant factor structure instead of the two-level multiple-informant factor structure, both proposed by Alfieri and Lanz (2015).

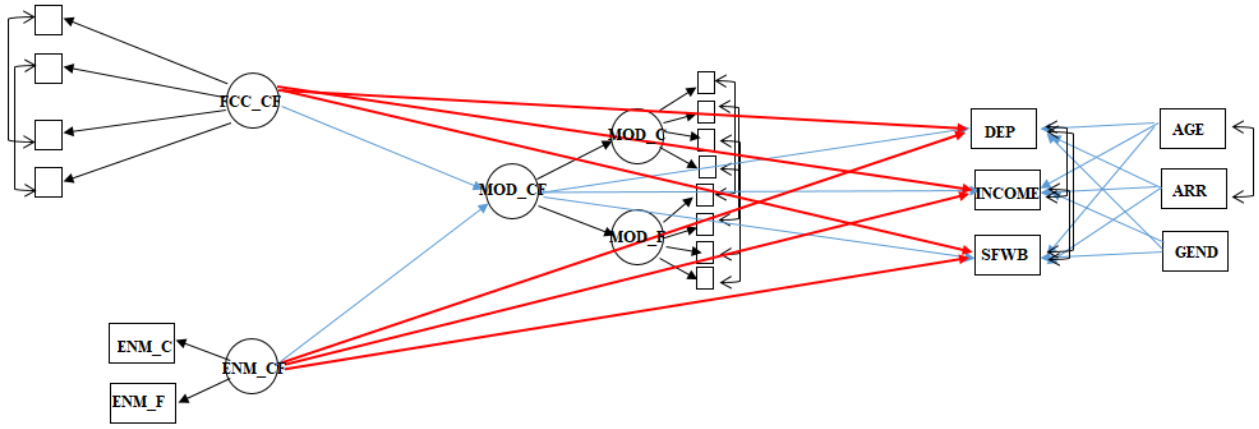

Figure 4.6. *Father-child dyadic CFA model (Model 3).*
FCC= father-child communication; ENM= enmeshment; MOD= adoption of parental financial role modeling; DEP= economic dependence on parents; INCOME= personal income; SFWB= subjective financial well-being; AGE=emerging adults' age; ARR=emerging adults' living arrangement; GEND= emerging adults' gender. When variables are reported by more than one informant, the letter after the underscore indicates if the variable is reported by the child (C) or the father (F). When variables are analyzed at child- father level, the letters CF are reported after the underscore. The father-child communication latent factor is obtained with the one-level structure instead of the two-level structure reported in Figure 4.2.

This model had sufficiently good fit indices: $\chi^2(143)=253.180$; p<.001; RMSEA=.038(.031, .046); p=.994; CFI=.897; SRMR=.072. Factor loadings across all the latent variables ranged from .343 to .930 and were significant (p<.01). Both the implicit financial socialization factors (father-child communication and family financial enmeshment) affected the adoption of parental financial role modeling, respectively β=.322 (p=.010) and β=.523 (p=.008). The only implicit financial socialization factor that affected financial well-being was family financial enmeshment, which was related to personal income (β= -.447; p=.002). Subjective financial well-being was instead predicted by the adoption of parental financial role modeling (β=.463; p=.002). Finally, the control variables affected the financial well-being variables. Specifically, the child's age predicted both personal income (β=.475; p=.280) and economic dependence (β=.164; p=.001). Economic dependence was also predicted by living arrangement (β=.402; p<.001). Subjective financial well-being was higher in males than females (β=.153; p<.001).

Model 4: dyadic level of analysis by agreement (mother-child and father-child)

Unlike the previous model, this was a path analysis model as no latent factors were estimated in this model (see Figure 4.3). Fit indices were optimal: $\chi^2(26)$= 20.267, p=.779; RMSEA=0(.000, .024), p=1.000; CFI=1.000; SRMR =.035. Model results showed that only the father-child agreement about family enmeshment was a significant predictor of subjective financial well-being (β=.175; p=.002). However, objective financial well-being's measures (personal income and economic dependence) were not affected by any agreement level. These variables were instead predicted by the control variables: child's age predicted personal income (β=.542; p<.001) and economic dependence (β=.132; p=.006). Again, emerging adults who left the parental house were more economically dependent on parents (β=.401; p<.001) and males perceived themselves to have higher subjective financial well-being than females did (β=.150; p<.001).

Even if parent-child agreement about the adoption of parental financial role modeling significantly affected subjective financial well-being only for the father-child dyad, the mother-child dyad has an almost equal predictive power (β=.108, p=.66) to the father one. To test if father-child agreement about the adoption of parental financial role modeling explained significantly more variance of subjective financial well-being than mother-child agreement, I re-ran this fourth model, but this time constrained the regression path of father-child agreement to be equal to the regression path of mother-child agreement (only for the agreement about adoption of parental financial role modeling). The new obtained model [$\chi^2(27)$=20.586, p=.805; RMSEA=0(.000, .022); p=1.000; CFI=1.000; SRMR=.035] was not significantly different from the previous one: $\Delta_{\chi^2}(1)$= .319; p= .57. In this constrained model, both mother-child agreement about adoption of parental financial role modeling (β=.132; p<.001) and father-child agreement (β=.152; p<.001) were significant predictors of the subjective financial well-being.

Model 5: group level of analysis by CFA

In this model (see Figure 4.4) all three informants' reports were included and analyzed at the family level (i.e., the second order factor consists in the family perspective about the construct). This

model had a good[31] fit: $\chi^2(326)=391.371$, p=.007; RMSEA=.020(.011, .026), p=1.000; CFI=.951; SRMR=.071. Factor loadings across all the latent variables ranged from .312 to .909[32] and were all significant (p<.05), except for the factor loading of the first-level factor "father-child communication evaluated by the father" on the second-level factor "family communication quality" (factor loading=.527; p=.124). Again, this was probably due to the low level of agreement between father's and child's view on their communication quality.

In this family model, both the implicit family socialization factors affected the adoption of parental financial modeling. Specifically, good family communication (β=.399; p=.004) and a high level of family financial enmeshment (β=.551; p<.001) increased the probability that the child used the parents as financial models. In turn, this adoption of parental financial role modeling positively predicts the level of subjective financial well-being (β=.449; p=.006). An opposite trend was found for personal income, as it decreases when financial enmeshment increases (β= -.422; p<.001). Finally, the control variable had the usual influences: child's age predicted personal income (β=.484; p<.001) and economic dependence (β=.161; p<.001). Living arrangement affected economic dependence (β=.400; p=.001) and the gender affected subjective financial well-being (β=.154; p<.001).

Model 6: group level of analysis by agreement

The last tested model consisted of a path model aiming to verify if family-level agreement about family financial communication and the child's adoption of financial behaviors modeled by the parents affected the financial well-being measures (see Figure 4.5). The model had an optimal fit: $\chi^2(8)=5.991$, p=.648; RMSEA=0(.000, .042), p=.980; CFI=1.000; SRMR=.024]. Only family agreement on the adoption of parental financial role modeling has a significant impact on financial well-being, specifically the subjective dimension (β=.228; p<.001).

[31] As for Model 1, in order to identify the model I had to add some constraints. Specifically, I had to constrain to zero the residual variances of the following two variables: "openness in mother-child communication", "openness in father-child communication" both evaluated by the child.

[32] Except for the two variables whom residual variances were constraint to zero. Their factor loadings are automatically equal to 1.

The child's age still predicted economic dependence (β=.138; p=.004) and personal income (β=.542; p<.001). Living arrangement predicted economic dependence (β=.401; p<.001), and gender predicted subjective financial well-being (β=.154; p<.001).

4.4. Discussion

The current study aimed to investigate the impact of the two implicit family socialization factors (interpersonal communication and family financial enmeshment) as well as of the child's adoption of parental financial role modeling on the child's objective and subjective financial well-being. These relationships have been tested controlling for the impact of children's age, living arrangement and gender on their financial well-being (see Figure 4.7).

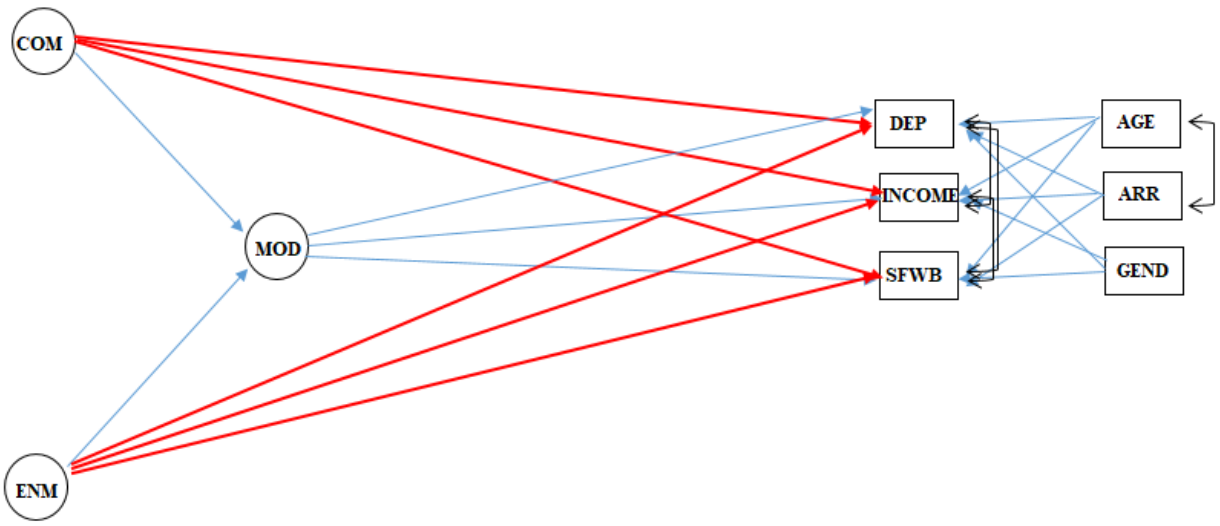

Figure 4.7. *Graphical representation of the relationship I aimed to test at different levels of analysis.* COM= parent-child communication; ENM= enmeshment; MOD= adoption of parental financial role modeling; DEP= economic dependence on parents; INCOME= personal income; SFWB= subjective financial well-being; AGE= emerging adults' age; ARR= emerging adults' living arrangement; GEND= emerging adults' gender.

These relations have been studied using a Multiple Informant Methodology, which consists in collecting information about the same construct and the same unit of analysis from multiple informants. I collected multiple-informant data for the following variables (see Table 4.7): mother-

child communication (dyadic unit of analysis) was reported by both mother and child (embedded informants). The same was true for the father-child communication (dyadic unit of analysis) that was reported by both father and child (embedded informants). Family financial enmeshment had instead a group unit of analysis and was reported by three embedded informants (child, mother, and father). Finally, the child's adoption of parents as financial models had an individual unit of analysis (the child) and was reported by a mixed group of informants: one informant was embedded (the child), while two informants (mother and child) were non-embedded with respect to the unit of analysis.

Table 4.7. Research scenarios performed in the current study

Unit of analysis	Informants								
	Embedded			Non-embedded			Mixed		
Individual (adoption of parents modeling)	I	/	/	I	D	G	I (CFA)	D (CFA, IRA)	G (CFA, IRA)
Dyadic (parent-child communication)	I (CFA)	D (CFA, IRA)	G (CFA)	I	D	G	I	D	G
Group (family financial enmeshment)	I (CFA)	D (CFA, IRA)	G (CFA, IRA)	I	D	G	I	D	G

Note. I= individual level of analysis; D=dyadic level of analysis; G=group level of analysis; CFA= Confirmatory Factor Analysis; IRA: Inter-Rater Agreement. Shaded cells represent MIM scenarios. Scenarios with red borders represents the research scenarios performed in this chapter.

Each unit of analysis can be analyzed at different levels (individual, dyadic and group). The dyadic or group level of analysis (models 2-6) was necessary to make the research a properly multiple-informant research. Model 1 instead consisted of the individual-level analysis of a multiple informant dataset.

The dyadic or group level analysis was conducted with different methods: Confirmatory Factor Analysis (CFA) and Inter-Rater Agreement (IRA). CFA allows for decomposing the observed variables' variance into different sources of variation. Classic test theory affirmed that the observed score (X) does not coincide with the true score (T) in which the researcher is interested, but includes also a portion of error (E). This error depends both on random factors (that change at each measurement) and systematic factors (that affect the observed score in the same way at each measurement). The two main systematic factors are the informant's unique prospective (or bias) and the instrument used to measure the construct.

When CFA is used with a single informant's report, it allows for controlling only for random error. Instead, when the same information is collected from more informants, the possibility to obtain a measure more near to the true score improves, as the systematic error variance due to the informant's bias can be controlled too (van Dulmen & Egeland, 2011). Finally, multiple informant data – if analyzed at the item level – also allow for controlling for systematic error variance due to the instrument (e.g., creating a latent factor on which all the observed scores obtained with the same item across informants load or correlating these items each other; Bauer et al., 2013).

CFA is applicable even when the adopted methodology is different from MIM. For example, in Model 1 I analyzed data at the individual level using CFA, in order to control for random error variance. While CFA is a technique not specific for MIM, the IRA indices make sense only in a multiple informant framework. IRA indices measure how much values assigned to the same item are equal across informants. To use IRA indices, the MIM requirements have to be strictly met (i.e., informants have to report about the same construct referring to the same unit of analysis). Instead, the use of CFA did not imply these requirements. For example, CFA allowed analyzing the communication construct at family level even if informants were referring to different units of analysis. In this sense, they are less flexible of CFA.

In Table 4.7, I summarized the different research scenarios performed (scenarios in red borders) among the possible research scenarios offered by single-informant (white cells) and multiple

informant methodology (shaded cells). The procedure adopted to analyze data was specified (CFA vs. IRA) for each scenario. In order to realize these different research scenarios, six SEM models were run. Actually, the same model was tested (see Figure 4.7), but the operationalization of its latent constructs was different. The synthesis of all the obtained results was here discussed in two ways. First, I focused on six SEM models' goodness of fit and R-squared, in order to compare the six performed models with respect their model fit and the percentage of financial well-being's variance they explained (see Table 4.8). Later I focused on the variables' relations detected across the different models.

Table 4.8. Comparing the six models for fit indices and R-squared

	CFA				Agreement	
	Model 1	Model 2	Model 3	Model 5	Model 4	Model 6
Chi-square	(280)=300.53, p=.19	(141)=239.18, p<.001	(143)=253.18, p<.001	(326)=391.37, p=.01	(27)=20.59, p=.80	(8)=5.99, p=.65
RMSEA	.012	.037	.038	.020	0	0
CFI	.984	.928	.897	.951	1	1
SRMR	.065	.060	.072	.071	.035	.024
DEP R^2	.255 (p<.001)	.245 (p<.001)	.228 (p<.001)	.221 (p<.001)	.209 (p<.001)	.202 (p<.001)
INC R^2	.335 (p<.001)	.355 (p<.001)	.374 (p<.001)	.356 (p<.001)	.312 (p<.001)	.306 (p<.001)
SFWB R^2	.194 (p<.001)	.213 (p<.001)	.204 (p<.001)	.211 (p<.001)	.105 (p<.001)	.082 (p<.01)

Note. DEP= economic dependence; INC= personal income; SFWB=Subjective Financial Well-being.

Comparing the six models (i.e., different levels and ways to analyze the same data), the best model fit indices were found for Model 4 and 6 (agreement models). Their perfect fit is probably due to the simplicity of the theoretical model they tested (i.e., path analysis model vs. CFA as well as lower number of parameters to estimate), and not to the explanatory power of their predictors. Indeed

the agreement models were the two models with the lowest R-squared values (i.e., that explain less variance of financial well-being's variables).

Overall, the CFA models explained more financial well-being variance than the agreement models. Specifically, economic dependence's R-square had the highest value in Model 1 (individual-level), income's R-square had the highest value in Model 3 (father-child dyadic level) and subjective financial well-being's R-square had the highest value in Model 2 (mother-child dyadic level). Higher R-squared values do not necessary coincide with more precise estimates. For example, economic dependence's R-square had the highest value in Model 1 (individual-level) probably because this is the only model in which the relation between family enmeshment and economic dependence is significant. The fact that this relation disappears in the other models suggests that this is not a "true" relation among constructs, but that it was detected because of sources of variance that were not well managed. I suppose that, in this case, the relation is caused by the systematic error variance due to the informant that is not controlled in the individual level model. Specifically, both variables of the significant relation (family enmeshment and economic dependence) are reported by the child. Probably, in the child's bias, the lack of differentiation between his/her and parents' financial conditions is in some ways coincident with economic dependence. When family financial enmeshment is evaluated also by mother and/or father – who do not share this bias – the systematic error variance due to the child's bias is controlled and the relation between the two variables disappears. For this reason, I argue that the most reliable results are the results of Model 5 (group level of analysis using CFA), as more sources of error variance are controlled than other models. The risk of using the individual level of analysis is double: the first is to find relations that are not "true" (as just explained). At the same time, there is also the opposite risk: at the individual level of analysis, the different non-controlled sources of variance can hide "true" relations. For example, as shown by Model 1, the variables reported by mothers were never predictive. If the researcher had used as informants only the mothers, he/she would not find any relations. When the mother's point of view was joined with other family members' points of view (i.e., Model 2 and 5), and consequently her

bias removed from the latent variables, her contribution became significant, also mother's variables were also involved in significant relations. For these reasons, in the following section I'm going to present relations among variables considering the results obtained in higher-level of analysis models more reliable than the results obtained in lower-level of analysis models. The findings about variables' relations obtained across the six SEM models are synthesized in Table 4.9.

Significant predictors of the child's adoption of parental role modeling

In the CFA models the implicit family socialization factors (parent-child communication and family financial enmeshment) have been tested as predictors of the "efficacy" of the socialization process (i.e., how much the child imitates the parents in his/her financial behaviors and decisions). Both socialization factors were significant predictors of the adoption of parental financial role modeling in all the four CFA models. To the best of my knowledge, this is the first study in which implicit family socialization factors were tested as predictors of the adoption of parental financial role modeling. This variable has been investigated only in relation to explicit family socialization factors (e.g., parental direct teaching; Shim et al., 2010). This study's results corroborate Gudmunson and Danes' (2011) idea that both implicit and explicit factors contribute to the child's financial socialization.

Table 4.9. Comparing the six models for significant regressions

	CFA				Agreement	
	Model 1	Model 2	Model 3	Model 5	Model 4	Model 6
COM → MOD	F → C (β=.298)	CM → CM (β=.539)	CF → CF (β=.322)	CMF → CMF (β=.399)	Non-tested	Non-tested
ENM → MOD	F → C (β=.322) F → F (β=.346)	CM → CM (β=.216)	CF → CF (β=.523)	CMF → CMF (β=.551)	Non-tested	Non-tested
COM → DEP						Non-tested
ENM → DEP	C → C (β=.133)					
MOD → DEP						
AGE → DEP	β=.178	β=.181	β=.164	β=.161	β=.132	β=.138
ARR → DEP	β=.402	β=.402	β=.402	β=.400	β=.401	β=.401
GEN → DEP		β=.089				
COM → INC						Non-tested
ENM → INC	C → C (β= -.332)	CM → C (β= -.392)	CF → C (β= -.447)	CMF → C (β= -.422)		
MOD → INC						
AGE → INC	β=.445	β=.433	β=.475	β=.484	β=.542	β=.542
ARR → INC						
GEN → INC						
COM → SFWB						Non-tested
ENM → SFWB					FC(a) → C (β=.172)	
MOD→ SFWB	C → C (β=.299)	CM → C (β=.434)	CF → C (β=.463)	CMF → C (β=.449)		CMF(a) → C (β=.228)
AGE → SFWB						
ARR → SFWB						
GEN → SFWB	β=.154	β=.170	β=.153	β=.154	β=.150	β=.154

Note. In the first column are reported the variables among which the relation was tested (COM= communication, MOD= adoption of parental financial role modeling; ENM= family financial enmeshment; DEP= economic dependence; AGE= child's age; ARR= child's living arrangement; GEN= child's gender; INC= personal income; SFWB= subjective financial well-being). In the other columns, the informant who reported that variable is specified: child (C), mother (M), and father (F). If the construct was analyzed at dyadic or family level, respectively two or three letters are reported. Finally, the (a) indicates that the agreement was estimated among the informants' scores. Shaded cells indicate that the considered regression path was not significant.

The relation among socialization factors and the child's adoption of parental financial role modeling have not been studied in the agreement models (Model 4 and 6). As explained, in performing agreement estimates, new variables are created and the relations expected among these new variables do not necessary correspond to those expected for the original variables. In other words, there is no reason to expect that *agreement* about interpersonal communication/family financial enmeshment causes the *agreement* about the child's adoption of parental financial role modeling.

Significant predictors of economic dependence on parents

The explained variance of the child's economic dependence on parents in the run models is mainly due to the control variables. Specifically, economic dependence strongly depends on the child's living arrangement. When the child lives outside the family home, he/she is more economically dependent on parents. This is probably because living out of the parental house implies more expenses for children (e.g., rent, food, bills) and, consequently, a higher need of money than children living with parents. The same reason probably explains also the positive relation between economic dependence and child's age. Theoretically, economic dependence on parents should decrease with the child's growth (Schoeni & Ross, 2004). The opposite relation has been obtained probably because in Italy emerging adults live with parents longer. Specifically, among Italians aged 18-24, 98.3% of males and 87.1% of females live with parents (ISTAT, 2014). Consequently, in the first period of their emerging adulthood they have fewer expenses. Becoming older, they have more expenses and this probably explains why they receive more money from parents. Finally, gender was a significant predictor of economic dependence only in Model 2 (mother-child dyadic level of analysis). This relation cannot be considered trustworthy for two reasons: it appeared only in one model and it had a very low β coefficient (.089).

No predictors other than control variables were identified. Indeed, the relation between family financial enmeshment and economic dependence was significant only in the individual model when both variables were reported by the child. As already explained, this relation was probably caused by the systematic error variance due to the informant that is not controlled in the individual level model.

Significant predictors of the personal income

Even if growing up the children become more financially dependent on their parents, they also have higher income. The relation between age and personal income is significant across all the tested models. This scenario suggests that, even if Italian emerging adults receive a higher salary as they become older, this salary is not sufficient to cover all the expenses that the emerging adults have to face. In other words, it seems that both the child's income and expenses increase with age, but the amount of expenses they face increases more quickly than their personal income.

Interestingly, personal income is predicted also from variables other than control ones. Specifically, family financial enmeshment was a significant predictor of personal income in all the CFA models. When the fusion among the child and parents' financial conditions increases, the child's personal income decreases. This relation can be read in two directions. In the first case, it is possible to suppose that if the child grew up in a family in which he/she received the implicit message "what is mine is yours," he/she will less moved to look for a job or a satisfactory income. On the other hand, it is possible that only when the child gets a satisfactory salary is the family ready to state "what is mine is only mine, and what is your is only yours." This study's cross-sectional data do not allow for the determination of the real direction of the relationship. Note that this relation disappear when "family financial enmeshment" is substituted with parent-child or family agreement about this construct. So, it is the level (high/low) of financial enmeshment present in a family, and not the agreement that family members have on its level, that affects personal income.

Significant predictors of subjective financial well-being

According to the scoping review presented in the first chapter, only 6.82% (3 out of 44) of the studies investigating emerging adults' financial well-being measured both objective and subjective financial well-being. The current study shows the importance of studying both sides of the construct, as they have completely different predictors. Specifically, among the control variables, only gender significantly affected subjective financial well-being: males had a higher level of subjective financial well-being than females.

However, among the other variables only the child's adoption of parental financial role modeling is a significant predictor of subjective financial well-being: the more the child's financial behavior is similar to the parents', the higher the child's subjective financial well-being is. The fact that the adoption of parental financial role modeling affects only subjective and not objective financial well-being suggests that following parental examples does not made the child richer but increases the child's positive perception of his/her financial condition, making him/her feel more financially safe and satisfied. Probably, similar factors are activated by family agreement about the degree to which the child is adopting the parents as a model. Indeed, higher family agreement on this variable increases the child's subjective financial well-being. Interestingly, this relation is not found when agreement is performed at a dyadic level (mother-child and father-child). It seems that also agreement among parents is necessary to make agreement about the child's adoption of parental financial role modeling a relevant predictor of the child's subjective financial well-being. The opposite situation is found for agreement about family financial enmeshment. This is a significant predictor of the child's subjective financial well-being only when agreement is estimated at the dyadic level (first at the father-child level and, imposing a constraint, at the mother-child dyadic level too). It is sufficient to agree with just one parent about how differentiated parents' and the child's financial conditions are in order to have higher subjective financial well-being. Is not clear why this relation disappears at the family level (when the agreement between mother and child is also considered).

Limitations

I identified four main limitations in the current study. The main problem concerns the high amount of missing. The low participation rate for family dyads and/or triads is a real issue in the multiple informant study. The best practices to manage missing are FIML and MI. We decided to adopt MI solution as it was the only way to estimate IRA (i.e., all informants' scores are needed to estimate level of agreement among them). At the same time, this choice could have decreased the statistical power of our analysis (Graham, Olchowski, & Gilreath, 2007).

The second limitation concern the way in which the subjective financial well-being was estimated in the model. Even if I explained how the use of CFA helps to measure nearer to the true score, I measured subjective financial well-being as an observable variable rather than a latent factor loaded on by 10 items. This choice was made in order to focus on the analysis of multiple informant variables (i.e., variables reported by mother, father and child).

Third, the family financial enmeshment construct was investigated for the first time, using an instrument developed ad hoc. I was conscious of this risk before starting the study and for this reason I performed a dozen cognitive interviews with emerging adults as well as emerging adults' parents in order to verify that the test was interpreted as expected. I was worried that the overlapping circles presented in the test could be confused with financial dependence (e.g., my child's financial condition is overlapped with mine because I give him the money he has), but this risk was disconfirmed, as family financial enmeshment is not related to economic dependence in the current study. This result can be considered a sort of discriminant evidence in favor of the proposed family financial enmeshment scale.

The last detected limitation is related to the multiple informant methodology itself. Across the whole chapter, I affirmed that using CFA with multiple informant data allows for controlling the systematic error variance due to the informants' bias. Actually, this is true only if the involved informants do not share the same bias. If all the informants share the same bias, the variance due to this bias is confounded with the variance due to the trait (Kramer et al., 2003). As the three informants included in the research belonged to the same family, it is possible that they share some kinds of bias that I was not able to detect.

Future studies

The study I performed is only a first step to the family financial socialization research. Many studies can be planned to deepen the family socialization model.

First, the mediating role of the child's adoption of parental financial role modeling should be tested. As said, I proposed the child's adoption of parental financial role modeling as a mediator between family socialization and financial well-being, but I did not test its mediating role in order to not divert from the focus of the current study (multiple informant methodology). At the same time, investigating if the child's adoption of parental financial role modeling is a mediator could help with the interpretation of the current results. Specifically, in the current study, implicit financial socialization did not impact on subjective financial well-being, but only on the adoption of parental financial role modeling, which, in turn, affected subjective financial well-being. As in previous studies (Sorgente, Lanz, Schilirò, & Terranova, 2016), a direct impact of implicit financial socialization (i.e., parent-child relation quality) on subjective financial well-being was found, and it is possible that in the current study this link disappears because the child's adoption of parentally modeled behavior works as a full mediator. This hypothesis should be tested.

Starting from the obtained results, I also formulated other hypotheses in the current discussion section that can be tested in future studies. For example, I supposed that the number of expenses that the child has to face can be a mediator of the relation between the child's economic dependence and their living arrangement as well as between the child's economic dependence and their age.

Furthermore, other future studies can be imagined extending the application of multiple informant methodology to dyads, techniques as well as variables not considered in this study. Specifically, a dyad that I did not consider is the mother-father dyad, while a technique useful to manage multiple informant data that I did not report here is the multilevel analysis. Indeed, this study's dataset has a potential hierarchical structure where the single subjects are the first level and the family is the second one. The application of MIM here made could be extended also to variables that I did not treat as multiple informant variables. Specifically, economic dependence on parents was collected only from the child, but also the parents can be considered key informants of this construct (i.e., they are the ones who give the money to the child so they know the amount of money received by the child). Even if the multiple informant methodology is usually applied to measures considered

"subjective," also "objective" measures are affected by error variance and can benefit from multiple informants. Furthermore, the application of MIM could be extended to the measure of subjective financial well-being too. Even if, for the internal perception (like subjective perception of financial well-being) the perceiver is considered the best informant (van der Ende, 1999), the parents' reports could be informative as well because they could infer how the child perceives and evaluates his/her financial condition from his/her speak and behavior. This is true above all in Italy where parents spent much time with their emerging adult children.

Finally, I suggest that, in the future, a study that includes both implicit and purposive family financial socialization should be performed in order to jointly test their impact as well if and how they influence each other (Gudmunson & Danes, 2011).

Conclusion

The current study investigated the impact that implicit financial socialization factors had on the child's financial outcomes, using the multiple informant methodology. Multiple informant methodology can be performed using CFA models or agreement indices.

Four CFA models were tested, revealing that the communication quality that the child has with mother and father as well as family financial enmeshment positively affected the degree to which the child adopted his/her parents as financial models. Such adoption, in turn, positively affects the child's subjective financial well-being. Objective financial well-being (child's personal income) is, however, negatively affected by family financial enmeshment. Finally, the family financial socialization seems to not affect the child's economic independence from parents.

The same multiple informant dataset was analyzed estimating inter-rater agreement by r_{RG} index. This different point of view on multiple informant data identified new relations: when mother, child and father agree on the grade in which the child is adopting the parents as financial models, the child has higher subjective financial well-being. Furthermore, the child's subjective financial well-

being is also increased by agreement between the child and one parent (the mother and the father) about the degree to which the child's financial condition coincides with the parents'.

This study offers new insights for future research. First it demonstrates the richness that a multiple informant dataset offers. Analyzing the same data at different levels, I showed that higher levels of analysis – controlling for more sources of variation – identify relations among variables that are more trustworthy than the ones detected adopting a single informant methodology (i.e., affected by the informants' bias). Second, each multiple informant variable can be investigated with different points of view. The researcher can be interested in obtaining a more valid measure of the constructs (CFA models) or he/she can be interested in the agreement level that exists among family members. In this second case, the focus of the researcher moves from the content of the variables (e.g., interpersonal communication) to the similarity of informants' perspectives. The question in this case become "For a child, is it positive to perceive the world in the same way as his/her parents?"

These new insights about the potentiality of MIM are useful for all developmental research, regardless of the specific variables under investigation. Moreover, insights that are specific for the literature on emerging adults' financial well-being concern financial well-being measures and family financial socialization factors. First, this study's results showed the importance of measuring both objective and subjective financial well-being, as they turned out to be affected by different predictors. Consequently, practitioners aiming to promote emerging adults' financial well-being should consider which aspect of financial well-being they want to see improved and accordingly build their interventions. Second, the current research found that variables relevant for emerging adults' financial well-being are more numerous than expected. As found in the scoping review (chapter 1), most of the research about financial well-being investigated financial well-being predictors that concern financial and individual aspects (e.g., financial attitudes, financial behavior). In cases in which family financial socialization is investigated, researchers moved to consider also the non-individual unit of analysis (e.g., parental financial teaching) but mainly remaining on financial topics. This study confirms Gudmunson and Danes (2011)'s hypothesis: the child's financial socialization also happens through

implicit process – which not necessarily refer to the financial domain – that are transmitted by the family's interaction and relationship (e.g., interpersonal communication). The study of this implicit level's impact on the child's financial outcomes should be a new research trend in the emerging adult financial well-being literature.

Conclusion

The general aim of this research work was to enrich the literature of emerging adults' financial well-being using research methodologies and statistical techniques never applied in this research field. Nowadays the scientific community has a more complex view of "financial well-being" and "transition to adulthood" than before. Financial well-being is not only objective but also subjective, and the transition to adulthood is no longer an easy and quick step, but a process lasting around a decade. This broader view challenges researchers in developing methodologies and techniques able to capture the complexity. Thanks to the new methodologies and techniques applied in the presented studies, I have learned that if anything, the issues of "financial well-being" and "transition to adulthood" are even more complex than this new consensus suggests. The studies presented in this thesis generated new theoretical content about financial well-being and the transition to adulthood as well as presented new research tools that future researchers could adopt.

First, adopting the **scoping methodology** (chapter 1) I mapped all the studies already done about emerging adults' financial well-being, integrating the psychological, economic and sociological views of this construct. Specifically, the integration of 44 studies investigating emerging adults' financial well-being showed that the distinction between objective and subjective financial well-being is not enough to capture all the complexity of this construct. First, it is important to recognize that financial well-being is a sub-dimension of a bigger construct (financial wellness), as well as that subjective financial well-being should not be reduced to "how satisfied are you with your financial situation?". Subjective financial well-being does not coincide with financial satisfaction, but has more facets: experience, emotional evaluation, and cognitive evaluation (or financial satisfaction). *Experience* consists of the individual's perception of his/her own financial condition. It does not require an explicit judgment/evaluation of the person, but only consists of one's perception/description of an experienced situation. For example, the individual can perceive that at times, he/she has no money to buy the things that he/she needs, but he/she is not reporting how this

situation affects him/her. Rather, *evaluation* consists of a judgment that an individual conducts of their own financial experience. This evaluation is emotional when it concerns the positive or negative feelings caused by personal financial experiences, while it is cognitive (i.e., financial satisfaction) when it consists of the degree of satisfaction or dissatisfaction that one has with his/her financial condition at that moment. With a more complex view of financial well-being it is also easier to grasp why financial well-being does not depend only on individual and financial predictors (e.g., financial behavior), but also on variables belonging to non-individual levels (e.g., family relations) or non-financial (e.g., religiosity) domains.

This broader view of financial well-being does not belong only to emerging adults' financial well-being but is generalizable to all adults as well. However, what is specific for emerging adults is the way in which the construct is operationalized (e.g., student loans, money received from family).

If the scoping review generated a more elaborate view of the concept of financial well-being's definition, components and predictors, the second study (chapter 2) offered a more elaborate view of the transition to adulthood. Studying the transition to adulthood by **Latent Transition Analysis** means to consider this stage of life as characterized by different aspects that are simultaneously relevant for emerging adults' life (adulthood markers) and that verifying how they weave together (i.e., Latent Class Analysis) as well as how they change over time (i.e., transition probabilities) is necessary to capture the complexity of the transition towards adulthood. Even though previous studies (e.g., Eliason, Mortimer, & Vuolo, 2015; Schoon, Chen, Kneale, & Jager, 2012) have already used Latent Class Analysis as a statistical technique to simultaneously analyze the five objective adulthood markers (completion of education, finding full-time career work, leaving the parental home, entry into marriage, and becoming a parent), the study presented in this thesis is the first that considers the transition to adulthood as a process that requires subjective as well as objective changes (i.e., subjective sense of acquisition of adult identity as well as reaching adult roles). Furthermore, the presented study is the first that measures how this adulthood configuration (i.e., the combination of the adulthood markers) changes over time. It offers a number of new insights about the transition to

adulthood. First, this study revealed that the subjective sense of acquisition of adult identity does not necessarily depend on the achievement of the objective marker of adulthood. Indeed, this study, identified a subgroup of people (42.2% of 150 members of class 1 at time 1) that, subjectively perceived themselves to be adults even though they had not yet reached any objective adulthood marker. Second, this study revealed that the transition to adulthood is not necessarily a progressive acquisition of new adult roles, but that the micro-transitions that happen during the transition to adulthood can also generate steps back (i.e., losing of adult roles that had previously been reached).

Finally, this study revealed the relationship that these transitions over time have with the financial well-being that emerging adults perceive. Previous studies hypothesized that financial well-being determines the nature and pace of the transition the subject makes (Clarkberg, 1999) and that, at the same time, these transitions determine perceived financial well-being (Switek, 2013), but no studies were able to test the real direction of the relation because they were cross-sectional studies. Performing a cross-lagged conditional LTA model, it was possible to verify the real causal direction of the relationship (Little, Card, Preacher, & McConnell, 2009). Interestingly, results showed that financial well-being affects the transition to adulthood but not vice versa. Specifically, the way in which emerging adults perceive their financial condition affects the decisions they make regarding their future, specifically influencing emerging adults' choice regarding continuing their education.

With this result, the second chapter offers a new insight also on the financial well-being construct. In this thesis' scoping review it emerged that the main trend for the study of emerging adults' financial well-being is to verify what its predictors are. Thus, financial well-being is usually investigated as an *outcome*. The results of the LTA conditional model showed that financial well-being also plays a relevant role as a *predictor* of emerging adults' life outcomes.

The new methodology applied in the third chapter helped to reach a more complex view of the operationalization of financial well-being. The previous studies tended to oversimplify the problem of how to measure financial well-being; indeed, 81.81% of the studies included in the scoping review measured this construct using non-validated tests/instruments. Furthermore – as the contemporary

view of validity suggests (e.g., Zumbo, 2009) – a test is not validated per se, but rather one can validate the inferences one makes from the score obtained using that test in a specific place and time. For this reason, the third study adopted a **test development and validation methodology based on the contemporary view of validity**. Specifically, this methodology consisted of three macro steps: (1) item development; (2) test development; and (3) test score explanation, which generated the Subjective Financial Well-being Scale (SFWBS). The contemporary view of validity suggests not only the adoption of new research methodologies but also **new statistical techniques (based on structural equation modeling)** to collect validity evidence (Zumbo, 2005): Confirmation Factor Analysis, measurement invariance models, correlations among latent variables, Multiple Indicators Multiple Causes models, composite reliability, and so on.

The SFWBS is thus a result of a complex process where feedback coming from review of the literature, qualitative data (interviews with emerging adults and experts of emerging adults' financial well-being), and quantitative data (pilot study and validation study) were combined.

The 25 items that compose the scale came from previous studies that used one or more of these items to measure financial well-being. The fact that not all the items load on the same factor and that there are items that belong to factors having been demonstrated to be non-valid measures of the construct (e.g., lack of convergent and criterion validity evidence) suggests that previous studies which adopted these items were measuring something different from what they expected.

Even though the focus of this third study was how to measure financial well-being, its results also offered new evidence about what financial well-being is. The study's findings confirmed that subjective financial well-being is more than financial satisfaction, and that financial experience, cognitive evaluation, and emotional evaluation are all relevant aspects of financial well-being, even if they are not empirically distinct. Finally, this study revealed that financial well-being, at least in the Italian context, is more related to family of origin income than personal income.

The central role of family of origin in the child's financial life emerged many times during this PhD research work. First, the scoping review suggested that variables related to the family of origin

(e.g., family relations) can predict the child's financial well-being; second, the contextualization of emerging adults' financial well-being in the Italian context showed that parents are still highly present in child's financial life. Then, there was the fact that financial well-being depends more on family of origin income than personal income. All these results suggested that a more complex view of emerging adults' financial well-being requires collection of data from not only emerging adults, but other individuals – such as parents – who have relevant information. Emerging adults' financial well-being is not a matter in which only the emerging adult is involved. Parents still play an active role in their lives, including in their financial issues. The fourth and last study of the current research project aimed to capture this complexity adopting the **multiple informant methodology**. Specifically, the relevance of the emerging adults' family of origin has been assessed in two ways: first by studying family financial socialization, and second by collecting information about this socialization process from the mother and the father of the emerging adult as well as the emerging adult themselves. The results of the study confirmed that considering the family of origin is important for the study of emerging adults' financial well-being. Specifically, it is important because results showed that family financial socialization factors such as the quality of communication that the child has with his/her mother and father as well as family financial enmeshment (i.e., the degree in which the child's and parents' financial condition are not differentiated) affect the degree to which the child adopts the parents as financial models. This, in turn, affects his/her subjective financial well-being. Furthermore, objective financial well-being (measured as personal income) is directly affected by family financial enmeshment.

Second, considering the family is not important only because family variables are predictive of financial well-being, but also because family members can be relevant informants regarding what is going on in the child's financial life. Specifically, when variables are collected from the three family members and analyzed at the family level identification of "true" relations among variables and not relations due to the shared systematic error variance between predictor and outcome is more likely. Finally, collecting information from parents as well as their emerging adult children allows testing

whether a shared view of life made the difference in emerging adults' financial well-being. Specifically, the fourth study showed that if the child and the father share the same ideas about family financial enmeshment, as well as if the child, the mother and the father perceive in the same way the degree in which the child adopt the parents as financial models, the child has a higher level of subjective financial well-being.

The most recurrent concept in this conclusion is "complexity". This is because more complex methodologies and techniques more successfully capture the complexity of the reality. Specifically, through the four studies here presented, it was possible to get a more elaborate view about (1) what financial well-being is, (2) what transition to adulthood is, (3) how financial well-being can impact life choices, (4) how financial well-being should be contextualized according to place and time and then measured, (5) how much family of origin affects the child's financial well-being.

"Complex doesn't always equal complicated. […]
Embracing complexity, you have better chance to find simple answer, and it's often different than the simple answer that you started with."
(Eric Berlow)

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