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ORIGINAL RESEARCH

Are Financial Well-Being and Financial Stress the Same Construct? Insights from an Intensive Longitudinal Study

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Abstract
Since the 2008 economic crisis, research on financial well-being has grown exponentially. Most of the studies have investigated the predictors of financial well-being, but there is still no consensus on the conceptualization of financial well-being itself. As of yet, little is known about the relationship between subjective financial well-being and subjective financial stress. Some scholars believe those two constructs are two sides of the same coin, while others consider them to be two different phenomena. The current study aims to contribute to disentangling the construct of financial well-being from the construct of financial stress. We conducted an intensive longitudinal study, collecting data for 14 consecutive days from 158 emerging adults. Participants had to report their level of financial well-being and financial stress each evening. Findings suggest that the two constructs are not coincident for the following reasons: they exhibit low-to-moderate associations at both the within- and between-level and they were not similarly affected by the same predictors. Furthermore, we showed that subjective financial well-being and subjective financial stress fluctuate considerably from one day to the next. Further research is needed to determine the source of this daily variability.

Keywords Financial well-being · Financial stress · Intensive longitudinal design · Daily diary · Fluctuation

1 Introduction

In recent decades, individuals all over the world are reporting financial concerns as their biggest cause of stress (Kaur & Singh, 2022). Financial turbulence around the globe (stock market fluctuation, uncertain job market, 2008 economic crisis, economic instability due to the COVID-19 pandemic, Russia-Ukraine war) has increased financial uncertainty and the need for prudent management of finances. As a consequence, the number of studies investigating individual financial well-being increased exponentially, and in the last five years many reviews on financial well-being have been published (Bashir & Qureshi, 2022;

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Brüggen et al., 2017; Ghazali et al., 2020; Kaur et al., 2021; Kaur & Singh, 2022; Nanda & Banerjee, 2021; Sorgente et al., 2022; Sorgente & Lanz, 2017; Wilmarth, 2021). These reviews indicated that most social science scholars, scientists, and financial planners have focused on investigating the predictors of financial well-being, providing evidence for the important role played by multiple psychological, societal, economic, and behavioral factors (Kaur & Singh, 2022).

Despite this progress in understanding of the *predictors* of financial well-being, there is still no consensus on *conceptualization* of financial well-being itself (Riitsalu & van Raaij, 2022). In the current study, we aim to contribute to disentangling the construct of financial well-being from the construct of financial stress. Some scholars believe that financial well-being corresponds to the absence of *stress* related to money management (Netemeyer et al., 2018) and, as consequence, they consider the constructs of "financial well-being" and (lack of) "financial stress" equivalent. Other scholars suggest that "financial well-being and financial stress are two related but different concepts" (Brüggen et al., 2017; p. 230), in agreement with the distinction between stress (illness) and well-being (wellness) in health sciences (Sorgente et al., 2022). Despite this debate, to the best of our knowledge, no study has tried to empirically investigate if these two constructs actually overlap.

The current study aims to fill this research gap. The study was carried out on a sample of emerging adults (i.e., people aged 20–30 years; Arnett, 2014) who reported their level of financial well-being and financial stress day-by-day for two weeks. This intensive longitudinal data collection allowed us to assess the fluctuations of financial well-being and financial stress over time and to evaluate (1) whether the two constructs fluctuate in parallel – despite in the opposite direction – within-level, (2) if their between-level means are strongly associated, and (3) if the two constructs are influenced by the same external variables. Such evidence will help us to understand whether financial well-being and financial stress coincide.

2 Literature Review

The expression "financial well-being" indicates a positive economic condition from both an objective and subjective point of view. The term *objective financial well-being* refers to the material assets owned by an individual (income, property), while the term *subjective financial well-being* indicates the perception that the individual has of his own objective economic condition (Sorgente & Lanz, 2017). It is important to distinguish subjective and objective financial well-being, as people with the same objective level of financial well-being may have different perceptions of their economic condition (i.e., different levels of subjective financial well-being; Brüggen et al., 2017).

The expression "financial stress" indicates a condition of economic difficulty, characterized by not being able to support one's expenses (Kim & Garman, 2003). As with financial well-being, it is possible to distinguish an objective and a subjective side of financial stress (Sinclair & Cheung, 2016). If the objective side of financial well-being consists of the economic resources that the individual owns (e.g., house) or earns (e.g., income), the objective side of financial stress consists of the economic resources that the individual spends (e.g., expenses, debt; e.g., Hanratty et al., 2007). On the other hand, whereas the subjective dimension of financial well-being consists of a positive view of one's financial condition, which generates satisfaction (e.g., feeling of satisfaction about one's financial condition), the subjective dimension of financial stress consists of a negative view of one's financial

condition, which generates worries (e.g., feeling stressed and worried about one's financial condition; Heckman et al., 2014).

While the objective side of the two constructs is more easily distinguishable (e.g., income different from debt), the subjective side (the positive vs. negative perception of one's financial condition) may generate the hypothesis that *subjective* financial well-being and *subjective* financial stress are not two different constructs, but just two sides of the same coin. For example, in the seminal paper by Shim et al. (2010) the "subjective financial well-being" construct has been measured through three items: I am satisfied with the way I pay my bills; I have difficulty paying for things (reversed); I am constantly worried about money (reversed). Two (items 2 and 3) out of three items are measures of "subjective financial stress" (financial difficulties, worry about money) but authors have implicitly assumed that reversing these items, they are measuring the subjective financial well-being. In other words, they are assuming that the (lack of) subjective financial stress coincides with the subjective financial well-being. This paper has currently been cited around 1,000 times and its three items to measure the subjective financial well-being have been adopted in dozens of papers (e.g., Damian et al., 2020; Mao et al., 2017; Sirsch et al., 2020).

While these scholars are implicitly assuming that subjective financial well-being and subjective financial stress are the same construct, other scholars (e.g., Sorgente et al., 2022) have called for empirical evidence aiming at evaluating the degree to which subjective financial well-being and subjective financial stress actually coincide, in order to open an explicit debate about the relationship between these two constructs. The current study is the first attempt to empirically test the degree of overlap between subjective financial well-being and subjective financial stress.

2.1 About the Relationship Between Subjective Financial Well-being and Subjective Financial Stress

To the best of our knowledge, an explicit debate about the degree of overlap between subjective financial well-being and subjective financial stress is missing. At the same time, within the growing literature about financial well-being and financial stress, it seems possible to identify three different implicit positions that scholars assume when they refer to these constructs. We identified scholars who assume a *full* overlap between the two constructs, others who assume a *partial* overlap, and others who assume that subjective financial well-being and subjective financial stress are two completely different constructs (*absence* of overlap).

Among the first group of scholars, we include the authors (e.g., Prawitz et al., 2006) who have proposed scales of subjective financial well-being that (also) contain items that measure subjective financial stress, as an indicator of the absence of financial well-being. The example of Shim et al. (2010) reported above belongs to this group. Other scholars instead assumed a *partial* overlap between the two constructs, considering subjective financial stress to be one of the different sub-components of subjective financial well-being. According to a recent review by Aubrey et al. (2022), many definitions of financial well-being as well as scales adopted to measure the subjective financial well-being consider the financial stress as one of the sub-dimensions of the financial well-being construct. For example, Netemeyer et al. (2018) measured the subjective financial well-being as composed of (absence of) stress related to the management of money today and a sense of security in one's financial future, while Nasyra et al. (2021) measured the subjective financial well-being as composed of financial literacy, financial behavior and (lack of) subjective

financial stress. Integrating different studies, Aubrey et al. (2022) concluded that the subjective financial well-being is a multidimensional construct composed of seven dimensions; one of these dimensions (emotional evaluation) consists in the degree in which the individuals do not feel stressed and worried for their financial life.

Finally, some authors seem to assume an *absence* of overlap between subjective financial well-being and subjective financial stress because they have published studies in which they have measured subjective financial well-being and subjective financial stress as two different constructs to estimate their relationship. For example, a recent systematic review (Bashir & Qureshi, 2022) concluded that financial stress is usually tested as a construct different from financial well-being and that it can act as predictor or outcome of the financial well-being itself. In particular, most of the studies conceptualized the subjective financial stress as a predictor of the subjective financial well-being (Fan & Henager, 2022; Mahdzan et al., 2019; Mokhtar & Husniyah, 2017; Sabri et al., 2013), finding a moderate negative relationship between the two constructs. Only one study instead conceptualized the subjective financial well-being as an antecedent of the subjective financial stress. Choi et al. (2020) investigated the role of subjective financial well-being as a mediator of the relationship between job insecurity and subjective financial stress.

We believe that the presence of different implicit assumptions about the degree of overlap between subjective financial well-being and subjective financial stress may impoverish the scientific literature about these constructs. This overlap indeed has important consequences on the conceptualization of these constructs, their measurements and the research questions scholars decide to address. At the same time, literature available is not sufficient to disentangle the relationship between subjective financial well-being and subjective financial stress. Most of the studies are indeed cross-sectional, allowing to only perform between-subjective comparison. We believe that intensive longitudinal studies are instead needed to empirically test the degree of overlap between subjective financial well-being and subjective financial stress and open a more explicit debate about the inter-relation between these two constructs.

2.2 The Use of Intensive Longitudinal Studies to Investigate the Relationship between Subjective Financial Well-being and Subjective Financial Stress

The term "intensive longitudinal" method refers to longitudinal research designs that have enough repeated measurements (at least five; Bolger and Laurenceau, 2013) to model a distinct change process for each subject and that have made the measurements intensively, i.e., at short intervals of time, such as every few hours or on a daily basis (Cotter & Silvia, 2019). When measuring multiple variables in the same study, intensive longitudinal studies allow researchers to better understand the link between them. In fact, while in a cross-sectional study the relationship between variables can be studied only by adopting a between-subjects approach (e.g., subjects who have high levels of variable A also have high levels of variable B), intensive longitudinal designs allow for the investigation of the relationships between variables using a within-subjects approach (e.g., on the days when the subject increases on variable A, his level of variable B also increases).

We believe this kind of research method can offer evidence about the degree to which subjective financial well-being and subjective financial stress overlap in three different ways:

(A) Within-level association: the within-level association provides information about the degree to which the temporal fluctuation of one variable (i.e., individual deviation from his/her own average level in a specific measurement occasion) is associated with the temporal fluctuation of another variable on the same measurement occasion. In other words, the within-level association is a measure of how much the two constructs change together within each measurement occasion. The more the fluctuations of the two constructs correlate, the greater the overlap between them. In other words, collecting data about both subjective financial well-being and subjective financial stress within the same intensive longitudinal study can facilitate understanding of whether subjective financial well-being and subjective financial stress are the same construct (e.g., fluctuations of the two constructs across the days are strongly correlated) or two different constructs (e.g., absent-to-moderate correlations between their fluctuations). The strength of the relationship will be evaluated according to Cohen (1988) guidelines. Specifically, $r = 0.10$, $r = 0.30$, and $r = 0.50$ were recommended to be considered small, medium, and large in magnitude, respectively.

(B) Between-level association: the between-level association provides information about the degree to which the average level reported by participants on a variable across all the measurement occasions (e.g., subjective financial well-being) is associated with the average level reported on the other variable (e.g., subjective financial stress). In other words, the between-level association allows for investigation of how much the average levels of the two constructs are associated among individuals. Research (e.g., Choi et al., 2020; Fan and Henager, 2022; Mahdzan et al., 2019; Mokhtar and Husniyah, 2017; Sabri et al., 2013) has consistently found a negative relation between subjective financial well-being and subjective financial stress (i.e., subjects reporting higher level of subjective financial well-being are expected to report lower level of subjective financial stress). What is up for debate is the degree of overlap between the two variables, which can be inferred by the effect size of such a relationship. A between-level association with a strong effect size (i.e., $r \geq 0.50$) may suggest that subjective financial well-being and subjective financial stress are the same construct, while a absent-to-moderate association (i.e., $0.00 < r < 0.50$) would suggest that they are two different constructs.

(C) Being affected by the same predictor: an intensive longitudinal study allows one to test for predictors of variables both at the within-subjects and between-subjects level. Predictors at the within-subjects level can explain the momentary fluctuations of each variable, while predictors at the between-subjects level can explain the variability across participants of the mean levels of each variable. As the objective side of both financial well-being and financial stress is a well-recognized predictor of the subjective side of those constructs (e.g., Hsieh, 2003; Loibl et al., 2022; Shim et al., 2009; Valentino et al., 2014), we suggest that testing the power of objective financial well-being and objective financial stress to predict both the subjective financial well-being and subjective financial stress may offer some evidence about the degree of overlap between the subjective side of the two constructs. In particular, if subjective financial well-being and subjective financial stress are actually the same construct, we may expect them to be influenced similarly by the same predictors; instead, finding subjective financial well-being and subjective financial stress to be differently influenced by the same predictor may suggest that they are two different constructs.

Before conducting the current study, we examined whether previous intensive longitudinal studies had already collected evidence about the degree of overlap between the subjective financial well-being and subjective financial stress. According to a recent review (Sorgente et al., 2022), only one intensive longitudinal study (Totenhagen et al., 2018) measured both subjective financial well-being and subjective financial stress, but the authors did not investigate the relationship between the two constructs and modeled them separately. To the best of our knowledge, the current study is the first longitudinal study investigating both constructs intensively in order to study their inter-relation. We propose this study as a pilot study which can start shading light about the degree of overlap between subjective financial well-being and subjective financial stress. Evidence from this study should be considered as preliminary for two reasons. First, any single study has limited external validity (Howitt & Cramer, 2020). Replications are needed to evaluate the stability of findings. Second, the current study is performed with a sample composed only by emerging adults (i.e., people aged 18–30 years old; Arnett, 2014). This choice has been based on the evidence that the construct of financial well-being specifically (Riitsalu et al., 2023) and constructs related to money in general (Sesini & Lozza, 2022) may have different meanings across different stages of life. Consequently, scholars (e.g., Salignac et al., 2020; Sorgente and Lanz, 2019; Wilmarth, 2021) are calling for age-specific studies when financial well-being is investigated. Among the different stages of life, we decided to focus on emerging adults because a recent review (Kaur et al., 2021) found that this is the life stage most investigated when financial well-being is studied: "the large quantity of literature revolves around financial concerns of young or emerging adults. Studying FWB [financial well-being] of emerging adults is important as this life stage is the most critical one when many life possibilities open up and individuals make enduring commitments" (p. 227).

2.3 The Current Study

In the current study we intensively collected data regarding objective and subjective financial well-being as well as objective and subjective financial stress for 14 consecutive days from a sample of emerging adults, with the aim of investigating the degree of overlap between subjective financial well-being and subjective financial stress. In particular, we aimed to test:

(A) The relationship between subjective financial well-being and subjective financial stress at the within-subjects level, where a stronger within-level association would indicate greater overlap between the two constructs;
(B) The relationship between subjective financial well-being and subjective financial stress at the between-subjects level, where a stronger between-level association would indicate greater overlap between the two constructs;
(C) The power of objective financial well-being and objective financial stress to predict subjective financial well-being and subjective financial stress at both the within-subjects and between-subjects levels, where a similar predictive relation of the predictors with subjective financial well-being and subjective financial stress would indicate greater overlap between the two constructs.

We do not formulate any hypothesis about these three research aims because previous literature reached inconsistent results about the degree of overlap between subjective

financial well-being and subjective financial stress (i.e., full overlap, partial overlap, absent overlap). Furthermore, this is the first study assessing this relationship through an intensive longitudinal design, so the current study needs to be considered as a pilot study with an exploratory purpose.

3 Method

3.1 Procedure

We secured approval of the Institutional Review Board at our home institution before data collection began. Participant recruitment was done using both convenience sampling and snowball sampling. To ensure a diverse sample, we used a variety of recruitment techniques, such as university and student mailing lists, our own participant pools, and snowball recruiting initiated through colleagues, students, and acquaintances who were asked to forward the link to the survey to emerging adults (i.e., people aged between 20 and 30 years old) they know. After reaching a sufficient number of contacts (about 200), details were sent by email to the potential participants in order to inform them about the research's objectives, duration, and reward. In particular, we explained that for 14 consecutive days, every evening (from 7 pm to 10 pm), the participants would complete a short questionnaire lasting two minutes, in which they would be asked to report information on their levels of (objective and subjective) financial well-being and (objective and subjective) financial stress. We furthermore specified that, before the intensive data collection, each participant had to complete a longer general information (e.g., socio-demographics, income, occupation, etc.) questionnaire (i.e., *baseline*). Finally, each subject was informed that they had been randomly assigned a number from 1 to 90. This number was used to assign rewards to the subjects for completing the daily questionnaires. In particular, at the end of each day, the "gold number" (i.e., a randomly extracted number from 1 to 90) drawn from a national lottery on that day was recorded. Participants who had one of the 14 numbers drawn in the 14 days of intensive data collection would receive a € 10 Amazon voucher. The numbers drawn were communicated only at the end of the 14 days of data collection in order not to influence the levels of financial well-being and financial stress reported during the study. The 14 daily questionnaires were sent to the participants either via email or via a WhatsApp message (based on the preferences expressed by the participant). All questionnaires were handled through the Qualtrics platform, which allows users to view the questionnaire online from both computers and smartphones. The matching of the different questionnaires completed by the same person was carried out through the use of an identification code, to preserve participants' privacy.

3.2 Participants

A total of 165 Italian emerging adults agreed to take part in the study and signed an informed consent form, but the final sample consisted of 158 participants, i.e., those who completed at least three days out of 14 (78.6% of missingness at the respondent level). This decision was made based on the statistical technique we used to analyze the data, which allows for obtaining a reliable estimation of parameters even if the majority of occasions (80–85% of the total entries) are characterized by missing data (Asparouhov et al., 2018). Overall, collected data consist of around 2212 observations (158 participants x 14 days).

The 158 participants were aged between 20 and 30 years (M = 25.09; SD = 2.46) and were mainly female (70.3%). About half of the participants (44.9%) were university students, while 25.9% were both students and workers; finally, 19.6% were workers who had completed their studies. The remaining 9.6% of participants reported to be unpaid trainees, job seekers, or Neither in Employment nor in Education or Training (NEETs). Furthermore, half of the participants still lived with their parents (52.5%) while the other half (47.5%) of participants had left the parental home and lived alone, with roommates, or with their partner. Although the majority of the sample was in a romantic relationship (62.4%), only a small portion were cohabiting (7.0%) or married (1.3%). None of the participants had a child.

3.3 Measures

3.3.1 Daily Subjective Financial Well-Being

As done in previous studies (e.g., Totenhagen et al., 2018), the daily subjective financial well-being was evaluated using a single item. We selected the item from a longer scale (MSFWBS; Sorgente and Lanz, 2019) usually administered to assess the subjective financial well-being of emerging adults and added "for the past 24 hours" at the end of the statements to make it refers to the *daily* financial well-being. Specifically, each evening the participants had to respond to the question: "I am satisfied with my financial situation for the past 24 hours" on a 5-point Likert scale (1 = Absolutely false; 5 = Absolutely true). Over the 14 days, participants reported a level of subjective financial well-being of 3.19 on average. This level significantly varied both between respondents (between-level variance: 0.637) and across the different measurements from the same participant (within-level variance: 0.542).

3.3.2 Daily Subjective Financial Stress

Single-item scale to assess subjective financial stress of emerging adults have been already used in previous studies (e.g., Britt et al., 2016). These sample items have been adapted to the daily framework. Specifically, to report their perception of financial stress, participants answered the question "During the past 24 hours, how much has your economic and financial life stressed you out?" on a 5-point Likert scale (1 = Absence of stress; 5 = Maximum stress). Over the 14 days, participants reported a level of subjective financial stress of 2.12 on average. This level significantly varied both between respondents (between-level variance: 0.708) and across the different measurements from the same participant (within-level variance: 0.586).

3.3.3 Daily Objective Financial Well-Being

In agreement with previous intensive longitudinal studies (Sorgente et al., 2022), the daily objective financial well-being was operationalized as the amount of money earned during the day. To facilitate recall of the exact amount of money earned each day, participants had a list of possible sources of earnings (job, pocket money/support from parents, loan, cash gift, economic winnings such lottery, investments, assets, reimbursement) for which they had to indicate whether a specific kind of earning had occurred in the last 24 h. Then, only for selected categories, participants had to indicate the exact amount of money they earned

for each category separately. The different answers were summed in order to obtain the total number of euros each participant had received in the last 24 h. As a specific amount of earned money in a day (e.g., 30€) has a different meaning according to how much the individual is used to earning per day on average (e.g., 3€ vs. 300€ per day), we weighted the total number of euros each participant earned in the last 24 h to calculate their average daily earnings. Average daily earnings were estimated by dividing the participants' monthly income by 30 days. In particular, we first summed all the sources of monthly income (i.e., salary, economic support from parents or others, scholarships, government support, assets) that the emerging adults reported receiving in the baseline questionnaire. This *monthly* income (e.g., 1,000€) was divided by 30 to estimate the emerging adult's average *daily* earnings (e.g., 33.33€). For days on which the emerging adult earned more than his average (e.g., 50€), the "daily objective financial well-being" variable was coded as 1, while for days on which the emerging adult earned less than his average (e.g., 20€) the "daily objective financial well-being" variable was coded as 0.

On average, participants reported earning an amount of money representing "daily objective financial well-being" (i.e., daily earnings higher than one's own average daily earnings) on 1.79 (SD = 1.70; range = 0–9) days out of 14 days. A total of 277 such events were reported by the entire sample across the 14 days, with a daily average of 19.79 events (range = 12–32; SD = 4.73).

3.3.4 Daily Objective Financial Stress

In agreement with previous intensive longitudinal studies (Sorgente et al., 2022), the daily objective financial stress was operationalized as the amount of money spent during the day. To facilitate recall of the exact amount of money spent each day, participants had a list of expense categories (expenses for food, shopping, home, transportation, leisure and friends, recreational or cultural activities, subscription services, hobbies and sports, electronics, financial expenses, wellness and beauty, health, family members, education, work, animals, other) for which they had to indicate whether they had spent money for a specific kind of expense in the last 24 h. Then, only for selected categories, participants had to indicate the exact amount of money they spent for each category separately. The different answers were summed in order to have the total number of euros each participant had spent in the last 24 h. As a specific amount of spent money in a day (e.g., 30€) has a different meaning according to the economic circumstances of the individual (e.g., an individual having a monthly salary of 300€ vs. 3,000€), we weighted the total number of euros each participant spent in the last 24 h by the money available to each participant. The latter was estimated by summing all the sources of monthly income (i.e., salary, economic support from parents or others, scholarships, government support, assets) that the emerging adults reported having in the baseline questionnaire. *Monthly* income (e.g., 1,000€) was divided by 30 to estimate the *daily* amount of money (e.g., 33.33€) the emerging adult could spend per day on average. For days on which the emerging adult spent more than their average earnings (e.g., 50€) the "daily objective financial stress" variable was coded as 1, while for days in which the emerging adult spent less than their average earnings (e.g., 20€) the "daily objective financial stress" variable was coded as 0.

On average, participants reported spending an amount of money representing a "daily objective financial stress" (i.e., an expense exceeding the one's own average daily earnings) on 4.93 (SD = 2.93; range = 0–14) days out of 14 days. A total of 765 such events

were reported by the entire sample across the 14 days, with a daily average of 54.64 events (range = 40–68; SD = 9.63).

3.4 Data Analysis

To achieve the study's aims we used the dynamic structural equation modeling framework (DSEM; Asparouhov et al., 2018) and conducted the analysis using Mplus software (version 8.8). Specifically, in the present study we used a multilevel VAR(1) model to simultaneously describe the temporal dynamics (i.e., within-level change) of subjective financial well-being and subjective financial stress (aim 1) and to estimate their relationship at the between-subjects level (aim 2). For a detailed description of such models, please refer to Hamaker et al. (2018). On a statistical level, mlVAR models are based on the decomposition of variance of the observed indicators into *between-person variance*, which represents the stable, trait-like variation between persons, and *within-person variance*, the temporal deviations (e.g., day-to-day fluctuation) from the mean. In our study, subjective financial well-being and subjective financial stress are the two variables collected across 14 repeated occasions (days). The model was estimated using 4000 iterations, two chains, and a thinning of two. The model's convergence was checked using the proportional scale reduction criterion (PRC), which is expected to be stable and close to 1 (Hamaker et al., 2018).

An extension of the mlVAR(1) model to accommodate exogenous predictors was used to investigate the impact of *objective* financial well-being and stress on *subjective* financial well-being and stress at the daily level (aim 3). The DSEM models we used in this study assume the stationarity of the process over time. This means that the dynamic parameters are supposed to be constant across measurement occasions (McNeish & Hamaker, 2020). For that reason, we detrended items following Borsboom et al.'s (2021) procedure, by fitting fixed-effects linear regressions (alpha = 0.05) with the day number as predictor of subjective financial well-being and subjective financial stress.

3.4.1 Transparency and Openness

Data are not publicly available. Materials and analysis codes have been made publicly available at OSF and can be accessed at: https://osf.io/tmynk/.

4 Results

Figure 1 depicts the mlVAR(1) model applied to our data to address the first two aims. After decomposing the variance of observed variables (subjective financial well-being and subjective financial stress) into within- and between-subjects variance, they were modeled with a within-person model and a between-person model respectively.

4.1 Aim 1: Estimating the Relationship Between Subjective Financial Well-Being and Subjective Financial Stress at Within-Level

In the within-person section of the DSEM model, three kinds of parameters were estimated: auto-regressive parameters, cross-lagged parameters, within-level association. Despite the main focus of our first aim corresponding to the within-level association

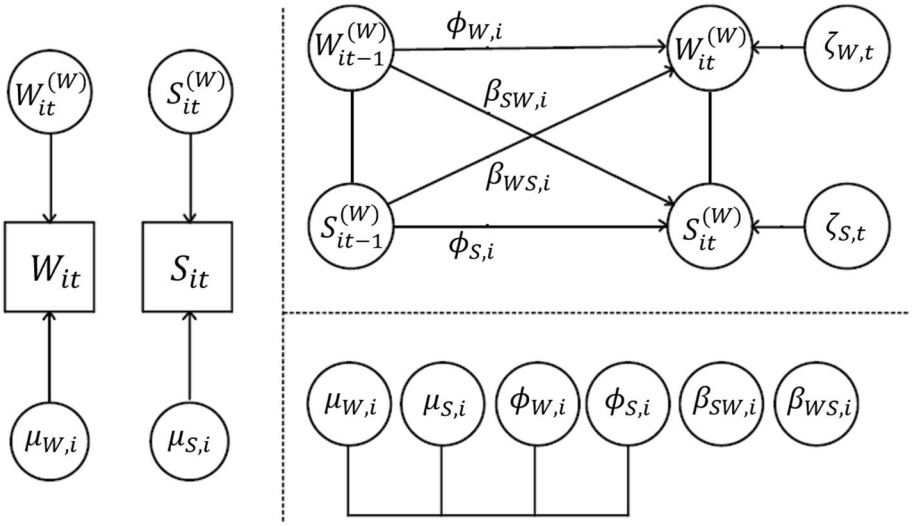

Fig. 1 Representation of the mlVAR(1) model with subjective financial well-being and subjective financial stress. *Note*. The left part of the diagram represents the variance decomposition of observed indicators (subjective financial Well-being (W), subjective financial Stress (S)) into within-subjects and between-subjects variance. On the top right, the VAR(1) model at the within-subjects level is shown. The bottom-right shows the between-level model in which the random effects of dynamic parameters are correlated. The squares represent observed indicators, the circles represent latent variables. Lines represent correlations and arrows represent regressions.

Table 1 Estimates and 95% credible intervals for the multilevel VAR (1) Model

Dynamic effect	Notation	Fixed effects (means)		Random effects (variances)	
		Est.	CI	Est.	CI[2]
Within-person mean W	$\mu_{W,i}$	−0.018	[− 0.161, 0.114]	**0.586**	**[0.438, 0.794]**
Within-person mean S	$\mu_{S,i}$	0.029	[− 0.114, 0.175]	**0.676**	**[0.512, 0.893]**
Autoregressive W	$\varphi_{W,i}$	**0.229**	**[0.147, 0.312]**	**0.102**	**[0.064, 0.152]**
Autoregressive S	$\varphi_{S,i}$	**0.210**	**[0.133, 0.293]**	**0.063**	**[0.033, 0.107]**
Cross-lagged S on W	$\beta_{WS,i}$	−0.028	[− 0.084, 0.027]	**0.010**	**[0.002, 0.031]**
Cross-lagged W on S	$\beta_{SW,i}$	−0.031	[− 0.092, 0.024]	**0.010**	**[0.001, 0.036]**
Residual W	$\zeta_{W,t}$	**0.506**	**[0.473, 0.545]**	–	–
Residual S	$\zeta_{S,t}$	**0.554**	**[0.518, 0.594]**	–	–
Covariance W with S	Cov ($\mu_{W,i}$, $\mu_{S,i}$)	**−0.203**	**[− 0.232, −0.177]**	–	–
DIC(21) = 9853.89					

W = subjective financial well-being; S = subjective financial stress; DIC(df) = Deviance Information Criterion (degrees of freedom); CI = credible intervals. Bold parameters are significantly different from zero.

[2]The CI of random effects cannot include zero as specified by priors

between subjective financial well-being and subjective financial stress, we are going to present and interpret all models' parameters in order to offer a complete explanation of the model to the readers. Details about these parameters are reported in Table 1.

In the within-level model, the temporal deviations of subjective financial well-being and subjective financial stress at time t ($W_{it}^{(W)}$and $S_{it}^{(W)}$) were regressed on themselves at the previous measurement occasion ($W_{it-1}^{(W)}$ and $S_{it-1}^{(W)}$) to obtain two autoregressive effects, representing the individual stability of both subjective financial well-being ($\varphi_{W,i}$) and subjective financial stress ($\varphi_{S,i}$) over time. We found that the fixed effects of the autoregressive parameters were significant for both constructs, as demonstrated by their Credible Intervals (CI, see Table 1) that didn't contain zero. The parameter estimates revealed that the stability of both subjective financial well-being ($\varphi_{W,i}$ =0.229; CI[0.147, 0.312]) and subjective financial stress ($\varphi_{S,i}$ =0.210; CI[0.133, 0.293]) were relatively small. These results indicate that the subjective financial well-being and subjective financial stress perceived on one day was only slightly affected by the subjective financial well-being and subjective financial stress perceived the day before respectively. In other words, the perception of subjective financial well-being and stress were relatively stable at the daily level within our sample.

Second, the within-level model estimates cross-lagged relationships between subjective financial well-being and subjective financial stress. These cross-lagged parameters ($\beta_{WS,i}$ and $\beta_{SW,i}$) represent the regression of the temporal deviations from the mean of subjective financial well-being and subjective financial stress at time t ($W_{it}^{(W)}$and $S_{it}^{(W)}$) on each other at t-1 ($W_{it-1}^{(W)}$ and $S_{it-1}^{(W)}$). These parameters reflect the predictive relationship, or the spill-over effect, of subjective financial well-being on subjective financial stress ($\beta_{SW,i}$), and vice-versa ($\beta_{WS,i}$) (Hamaker et al., 2020). We found that the CIs of both the $\beta_{SW,i}$ (CI[− 0.084, 0.027]) and $\beta_{WS,i}$ (CI[− 0.092, 0.024]) parameters included zero, thus indicating the absence of any significant predictive relationship between subjective financial well-being and stress from one day to the following day. Finally, the within-level model estimates the concurrent relationship between subjective financial well-being and subjective financial stress on a day-to-day level. This within-level association (aim 1) is of primary relevance to understanding the degree of overlap between subjective financial well-being and subjective financial stress. The correlation between within-person means (Cov ($\mu_{P,i}$, $\mu_{S,i}$) = − 0.203; CI[− 0.232, −0.177]) indicates that in the days on which participants experienced an increase in subjective financial well-being, they also perceived a decrease in subjective financial stress and vice-versa. Importantly, the effect size of the relationship is small.

As reported in Fig. 1, the within-level model also estimates the residual variances ($\zeta_{W,t}$ and $\zeta_{S,t}$) of the two constructs that were significantly different from zero for both subjective financial well-being (0.506 [0.473, 0.545]) and subjective financial stress (0.554 [0.518, 0.594]).

4.2 Aim 2: Estimating the Relationship Between Subjective Financial Well-Being and Subjective Financial Stress at Between-Level

As shown in Fig. 1, in the between-person model we have six person-specific parameters, namely within-person means ($\mu_{W,i}$ and $\mu_{S,i}$), autoregressive effects ($\varphi_{W,i}$ and $\varphi_{S,i}$), and cross-lagged parameters ($\beta_{SW,i}$ and $\beta_{WS,i}$). Random effects of these parameters are reported in Table 1.

The mlVAR(1) model allows us to correlate the six random parameters each other. In the present study, we correlated only the parameters whose fixed effect was significantly different from zero; therefore, we required correlations just among autoregressive effects and within-person means. Results are reported in Table 2. The association we were mainly

Table 2 Correlation matrix of random effects from the multilevel VAR (1) Model

	$\mu_{W,i}$ [CI]	$\mu_{S,i}$ [CI]	$\varphi_{W,i}$ [CI]
$\mu_{S,i}$	**− 0.402 [− .575, − 0.275]**		
$\varphi_{W,i}$	− 0.056 [− 0.137, 0.017]	− 0.010 [− 0.086, 0.062]	
$\varphi_{S,i}$	− 0.004 [− 0.072, 0.060]	0.007 [− 0.068, 0.081]	**0.036 [0.005, 0.075]**

W = subjective financial well-being; S = subjective financial stress; CI = credible intervals. Bold parameters are significantly different from zero

interested in (aim 2) was the between-level association between subjective financial well-being and subjective financial stress. As expected, individuals with higher levels of subjective financial well-being reported lower levels of subjective financial stress and vice versa (− 0.402). Interestingly, the effect size of the relationship is moderate.

We also found a significant positive association (0.036) between the autoregressive effect of financial well-being and the one of the financial stress, indicating that individuals with more stable levels of financial well-being also had more stable levels of financial stress and vice versa. No significant associations were found between within-person means ($\mu_{W,i}$ and $\mu_{S,i}$) and autoregressive effects ($\varphi_{W,i}$ and $\varphi_{S,i}$).

4.3 Aim 3: Investigating the Impact of Objective Financial Well-Being and Objective Financial Stress on Subjective Financial Well-Being and Subjective Financial Stress

Figure 2 depicts the extension of the mlVAR(1) model applied to our data to answer the third aim. In this extended model, we included an exogenous variable, representing an objective indicator of financial well-being or financial stress (O_{it}), that was decomposed into a within-person component ($O_{it}^{(W)}$), representing its variability across days, and a between-person component ($\mu_{O,i}$)indicating its variability across people. Then, the within-person component of the objective indicator was included as a predictor of daily subjective financial well-being and daily subjective financial stress, and the between-person component was included as a predictor of the random effects of daily subjective financial well-being and subjective financial stress. The same model was run separately for both the considered predictors, objective financial well-being and objective financial stress.

4.3.1 Examining the role of Objective Financial well-being as Predictor

In examining the role of objective financial well-being as a predictor, first, we investigated whether objective financial well-being had an impact on daily subjective financial well-being and daily subjective financial stress. To do so, the objective financial well-being variable was included as a predictor of subjective financial well-being and subjective financial stress at both the within and between levels. At the within level, the predictor represents the variability across days of the extraordinary earnings received by individuals; in other words, it allows us to differentiate the days on which participants earned more than their average from days on which they didn't receive above-average earnings. At the

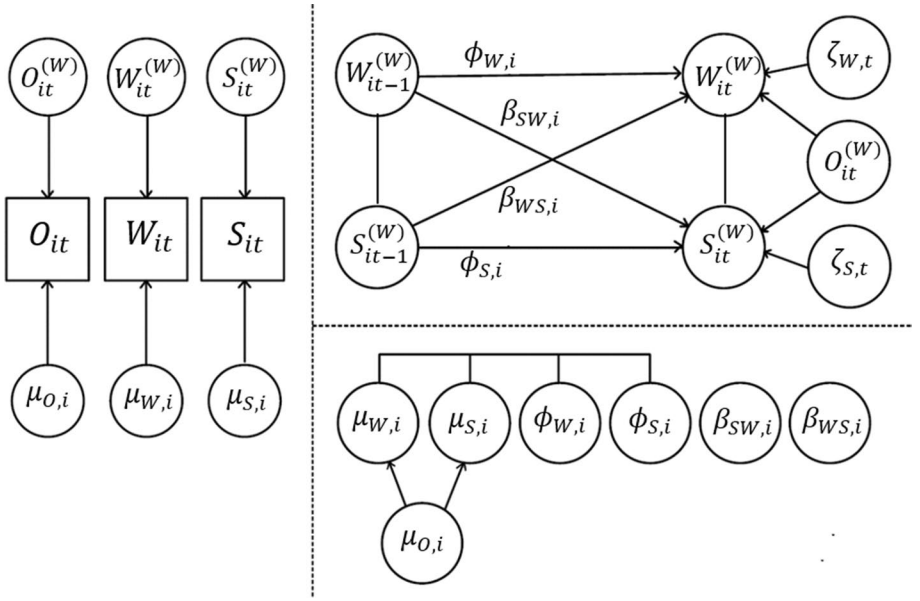

Fig. 2 Representation of the extended mlVAR(1) model with objective (O) financial well-being (or stress) as predictor of subjective financial well-being and stress. *Note* The left part of the diagram represents the variance decomposition of observed indicators (subjective financial Well-being (W), subjective financial Stress (S)) into within- and between-variance. On the top right, the VAR(1) model at the within-subjects level is shown. The bottom-right shows the between-level model in which the random effects of dynamic parameters are correlated. The squares represent observed indicators, the circles represent latent variables. Lines represent correlations and arrows represent regressions.

Table 3 Estimates and 95% credible intervals for the extended mlVAR (1) Model

Parameter	Predictor: Objective financial well-being		Predictor: Objective financial stress	
	Est.	CI	Est.	CI
Within-level				
$O_{it}^{(W)}$on$W_{it}^{(W)}$	**0.338**	**[0.215, 0.465]**	**−0.260**	**[− 0.337, − 0.191]**
$O_{it}^{(W)}$on$S_{it}^{(W)}$	−0.064	[− 0.176, 0.045]	**0.350**	**[0.267, 0.433]**
Between-level				
$\mu_{O,i}$on$\mu_{W,i}$	−0.022	[-2.241, 2.112]	0.122	[− 0.783, 1.029]
$\mu_{O,i}$on$\mu_{S,i}$	−0.077	[-2.342, 2.143]	0.306	[− 0.620, 1.259]
	DIC(30) = 11300.760		DIC(30) = 12651.925	

W = subjective financial well-being; S = subjective financial stress; DIC(df) = Deviance Information Criterion (degrees of freedom); CI = credible intervals. Bold parameters are significantly different from zero

between-level, the predictor represents the variability across people of the average extraordinary earnings received by each individual across the 14 days, thus allowing us to identify individuals who received above-average earnings more often than others. Results (Table 3) showed that at the within-level, objective financial well-being was a significant predictor of daily subjective financial well-being (0.338; CI[0.215, 0.465]), but didn't impact subjective

financial stress. This means that when participants had an above-average earnings day, they had an increase in their subjective financial well-being, but there was no significant change in their perception of financial stress. At the between level, objective financial well-being was not a significant predictor of any of the two subjective indicators. In other words, the average daily perception of subjective financial well-being and stress experienced by individuals across the 14 days was not directly associated with the number of above-average earnings days people had.

4.3.2 Examining the role of Objective Financial Stress as Predictor

Next, we examined the role of objective financial stress as a predictor of daily subjective financial well-being and daily subjective financial stress. At the within level, the predictor represents the variability across days of individuals' extraordinary expenses, allowing us to distinguish the days on which participants spent more than their average earnings from days on which they didn't. At the between-level, the predictor represents the variability across people of the average number of days of extraordinary expenses for each individual across the 14 days, allowing us to distinguish individuals who spent beyond their means more often than others. As reported in Table 3, at the within-level, objective financial stress was a significant predictor of both subjective financial well-being and subjective financial stress. Specifically, when participants had a day on which they spent more than their average daily earnings, they had a decrease in subjective financial well-being (− 0.260; CI[− 0.337, − 0.191]) and an increase in subjective financial stress (0.350; CI[0.267, 0.433]). As for the other predictor, the number of days of extraordinary expenses participants had didn't impact their average daily subjective financial well-being or stress.

5 Discussion and Conclusion

To the best of our knowledge, this is the first study to investigate the degree of overlap between subjective financial well-being and subjective financial stress. In previous studies, scholars have implicitly assumed a full (e.g., Shim et al., 2010) or a partial (e.g., Aubrey et al., 2022) overlap between the two constructs, while others have suggested that they are two distinct phenomena, i.e., absence of overlap (e.g., Brüggen et al., 2017). However, no previous studies have investigated the relationship between these two constructs with the aim of understanding whether and how much they are overlapped. To collect evidence regarding that issue, we conducted an intensive longitudinal study collecting data for 14 consecutive days about daily financial well-being and daily financial stress. Findings of this study offered important insight into the relationship between financial well-being and financial stress as well as the dynamics of change of these constructs on a daily level.

5.1 Financial Well-Being and Financial Stress are not the Same Construct

Within a dynamic structural equation model framework, there are three ways to infer how strongly two constructs are overlap. The first two consist of evaluating whether the two constructs present high associations at both the within-subjects and between-subjects levels, respectively; the third one is to evaluate whether the two constructs are similarly

affected by the same predictors. In both cases, evidence we collected in the current study suggests that subjective financial well-being and subjective financial stress are not the same construct (i.e., absence of overlap between the two constructs).

First, at the within-level the two constructs were slightly and negatively associated when assessed on the same day, but the effect size of this relation was small (i.e., < 0.30). This indicates that the fluctuations of the two constructs over several days were only weakly overlapping; in other words, experiencing an increase or a decrease in ones' average perception of financial well-being on a specific day has only a marginal effect on the subjective perception of financial stress within the same day and vice versa. Thus, daily subjective financial well-being and daily subjective financial stress can be considered to be unique constructs that change over time independently. This weak concurrent association is the first clue that subjective financial well-being and subjective financial stress are not the same construct.

Second, we found that at the between-level, subjective financial well-being and subjective financial stress had a moderate association, indicating that people reporting a higher average level of subjective financial well-being tended to also report a lower average level of subjective financial stress across the 14 days. This is a second clue that the two constructs do not overlap; indeed, the strength of the relationship is moderate ($r < 0.50$) and not strong as expected if the two measures were assessing the same construct.

Finally, in order to evaluate the degree of overlap between subjective financial well-being and subjective financial stress, we evaluated whether they were affected by the same predictor in a similar way. While at the between-subjects level we did not find any difference between subjective financial well-being and subjective financial stress, at the within-level those two constructs were differently predicted by objective financial well-being. In particular, at the between level we found that both objective financial well-being and objective financial stress were not associated with the subjective side of both constructs. In other words, individuals who received earnings above their average more often than others (i.e., their objective financial well-being was better on those days) or who exceeded their financial means more often than others (i.e., their objective financial stress was greater on those days) did not report average levels of daily subjective financial well-being and stress significantly different from others.

Instead, at the within level, while daily objective financial stress (i.e., having had an extraordinary expense) led to a decrease in subjective financial well-being and an increase in subjective financial stress, daily objective financial well-being (i.e., having had extraordinary earnings) only affected the daily perception of subjective financial well-being (that increased), but did not result in any change in the subjective perception of financial stress. The different impact that objective financial well-being had on subjective financial well-being and subjective financial stress, respectively, is a third piece of evidence suggesting that subjective financial well-being and subjective financial stress do not coincide.

Taken together, these findings suggest that the constructs of subjective financial well-being and subjective financial stress does not coincide and actually have two different levels of functioning. Indeed, subjective financial well-being is strongly rooted in the situational context, as its change at the daily level is directly activated by extraordinary earnings or expenses. Conversely, subjective financial stress is more related to individuals' perception of being in a risky financial situation. Thus, any extraordinary expense acts a trigger, while a single day of above-average earnings is not enough to change their perception of their financial circumstances. Other evidence consistent with this is Kramer et al. (2019), who investigated a group of low-income US citizens and found that receiving economic support from the government only reduced perceived financial stress when citizens received money

in four payments spread throughout the year and not when they received the same amount of money in a lump-sum payment. In other words, a payment only reduced the perception of financial stress when the individual did not perceive that earning as a random event, but as something that will systematically happen again. The evidence that the perceptions of financial well-being and financial stress have different predictors corroborates that they are different phenomena.

Furthermore, the different effects that objective financial well-being and objective financial stress had on individual subjective perceptions confirms what the economic literature generally refers to as "negativity bias" (Baumeister et al., 2021). As reported by the Nobel-prize winner Daniel Kahneman, "the aggravation that one experiences in losing a sum of money [objective financial stress] appears to be greater than the pleasure associated with gaining the same amount [objective financial well-being]" (Kahneman & Tversky, 1979; p. 279). In other words, we found that daily objective financial stress, unlike daily objective financial well-being, can affect both subjective financial well-being and subjective financial stress because, due to the negativity bias, economic losses affect individuals' perception more than economic earnings do.

5.2 Financial Well-Being and Financial Stress at Daily Level

Although the focus of the paper was on investigating the degree of overlap between subjective financial well-being and subjective financial stress, the DSEM model here estimated offered thoughtful insights regarding the individual functioning of the two constructs which we believe are worthy of interpretation and discussion.

First, this study suggests that both subjective financial well-being and subjective financial stress present relevant changes from one day to another, as indicated by auto-regressive effects with an effect size smaller than what has been found for other constructs assessed at the daily level, such as positive and negative affect (Hamaker et al., 2018). In other words, the level of subjective financial well-being and stress reported by emerging adults in our sample was weakly affected by the level they reported the previous day (stability). These findings suggest that subjective financial well-being and subjective financial stress are situational constructs that consistently fluctuate from one day to another, thus confirming the importance of studying daily subjective financial well-being and daily subjective financial stress (Sorgente et al., 2022), and looking for sources of variation of subjective financial well-being and stress at the daily level.

Interestingly, at the within-level we also found that subjective financial well-being and subjective financial stress were not significantly associated when assessed on two consecutive days (i.e., cross-lagged effects). In other words, any association between the two constructs assessed on two consecutive days was not significant.

Finally, thanks to the DSEM framework, we have been able to examine the between-person variability of the dynamic effects. Findings revealed that there were significant differences among emerging adults in our sample, both in daily subjective financial well-being and subjective financial stress, and in the stability and mutual influence of the two constructs. The only source of between-person variation we took into consideration in the current study was objective financial well-being and objective financial stress. Future studies should further investigate the sources of such between-person variability by exploring other individual factors (e.g., financial literacy, intolerance of uncertainty, personality traits), or contextual conditions (e.g., family of origin financial stability, being in a stable

romantic relationship) that could explain different activations of daily subjective financial well-being and daily subjective financial stress.

Taken together, results from this study highlight the importance of investigating financial well-being and subjective financial stress intensively in a situational context, as these constructs have relevant fluctuations across measurement occasions and can be influenced by external factors, but they also highlight the importance of recognizing the complexity of such constructs and their functioning.

5.3 Limitations and Future Studies

We believe the current study has three methodological aspects that need to be considered and that can be improved in future studies: variable assessment, time frame, and participants. The first limitation consists of the way in which the variables under investigation (subjective financial well-being, subjective financial stress, objective financial well-being, objective financial stress) were measured. In particular, for each of these variables we had to adapt items from previous studies, as validated measurement scales adoptable in intensive designs were not available. The limitation of such an approach to measurement is that we used just one item to measure each construct. Recent guidelines suggest adopting multi-item scales in intensive longitudinal studies as well to assess the reliability of scores (Mielniczuk, 2023).

The second methodological consideration is the time frame we adopted. We assessed financial well-being and stress on a daily basis (every 24 h) because this is what most of the previous studies on this topic have done (for a review see Sorgente et al., 2022). Results demonstrated the adequacy of this design, by detecting significant fluctuations of the two constructs from one day to another. However, we believe future studies should investigate the relationship between financial well-being and stress using an event-contingent design instead of an interval-contingent design (Bolger & Laurenceau, 2013). In other words, instead of asking participants to fill the questionnaire every twenty-four hours (i.e., an interval-contingent design), researchers could ask participants to fill out the questionnaire each time they have an earning or an expense (i.e., event-contingent design). Likely we could find a stronger relationship between the objective and the subjective side of the construct if the perception (i.e., subjective) is self-reported right after the earning/expense event (i.e., objective).

Finally, findings from the current study are based on a sample of emerging adults. Despite our decision is justified by previous studies (e.g., Salignac et al., 2020; Sorgente and Lanz, 2019; Wilmarth, 2021) which have stressed the importance of studying financial well-being and financial stress on samples homogeneous for age, results should not be generalized to other ages. Furthermore, our findings revealed a quite consistent heterogeneity in the financial perceptions of emerging adults; therefore, future studies should investigate which individual financial-related variables can explain differences in the average levels of subjective financial well-being and stress but also in the instability of the constructs over time.

These limitations together with the exploratory purpose of the current study make our findings just the first step towards the comprehension of the relationship between subjective financial well-being and subjective financial stress. Future studies should replicate this intensive longitudinal study adopting validated instruments, an event-contingent design, and testing the dynamic model across different stages of life.

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