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RESEARCH PAPER

One (Financial Well-Being) Model Fits All? Testing the Multidimensional Subjective Financial Well-Being Scale Across Nine Countries

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Abstract
A multidimensional model of emerging adults' subjective financial well-being was proposed (Sorgente and Lanz, Int Journal of Behavioral Development, 43(5), 466–478 2019). The authors also developed a 5-factor scale (the Multidimensional Subjective Financial Well-being Scale, MSFWBS) intending to measure this construct in the European context. To date, data using this instrument have been collected in nine countries: Austria, Canada, Finland, India, Italy, Portugal, Romania, Slovenia, and Turkey. In the current study, data from these countries were analysed to test the validity of this model internationally. In particular, using an international sample of 4,475 emerging adults, we collected the following kinds of validity evidence for the MSFWBS: score structure, reliability, generalizability, convergent, and criterion-related evidence. Findings suggest that the MSFWBS (1) yields valid and reliable scores, and (2) works well in individualistic and economically developed countries, producing comparable scores. Implications for researchers and practitioners are discussed.

Keywords Subjective financial well-being · Emerging adulthood · Cross-national · Approximate measurement invariance · Validation

Financial well-being can be defined as a positive financial condition that includes both an objective and a subjective side. The *objective* dimension refers to personal economic resources, such as income and assets (e.g., house, car), while *subjective* financial well-being corresponds to individuals' emotional and cognitive evaluation of their financial condition, that is, their subjective experience of that condition (Iannello et al., 2021). It is an important well-being domain, as it contributes to general well-being and life satisfaction (Brüggen et al., 2017).

In the last decades, financial well-being as a research agenda is widespread across disciplines because individuals all over the world are reporting financial concern as their

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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) has increased financial uncertainty and the need for prudent management of finance. As a consequence, the number of studies investigating individual financial well-being has showed an exponential increase and in the last years many reviews on financial well-being have been published (Bashir & Qureshi, 2023a, 2023b, 2023c; Brüggen et al., 2017; Ghazali et al., 2020; Kaur & Singh, 2022; Kaur et al., 2021; Nanda & Banerjee, 2021; Riitsalu et al., 2023; She et al., 2023; Sorgente & Lanz, 2017; Sorgente et al., 2022; 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 factors (Kaur & Singh, 2022). These factors include financial knowledge, psychological factors (impulsiveness, materialism, and time orientation), societal factors (social influence, parental socialization, and relative income), economic factors (income and net worth), and behavioral factors (credit card usage, retirement planning, saving, spending, and compulsive buying behaviour).

Despite this important knowledge development about the relationship financial well-being has with other constructs, there is still no consensus on conceptualization and operationalization of the financial well-being itself (Riitsalu & van Raaij, 2022). In particular, the definition as well as the assessment of financial well-being still widely differs across studies (see Riitsalu & van Raaij, 2022 and Sorgente & Lanz, 2017 for a review). Despite these inconsistencies, it is evident that two trends prevail over the vagueness in how to conceptualise and operationalize financial well-being.

The first one recognizes that financial well-being cannot be reduced to objective measures (Kaur & Singh, 2022; Riitsalu & van Raaij, 2022). While originally financial well-being was often considered synonymous with income or other objective indexes and ratios (savings, asset allocation, inflation protection, tax burden, housing expenses, and credit), scholars nowadays agree that these strictly objective measures may not be a complete representation of financial well-being. Financial well-being is also made up of individuals' perceptions of their own financial situation (Brüggen et al., 2017), as people with the same amount of objective financial well-being may have different perceptions of their financial well-being. As reported by Kaur and Singh (2022), most of the "recent conceptualisations of the term FWB [financial well-being] identify and embrace this subjective aspect." (p. 2).

The second trend in the conceptualization and operationalization of financial well-being recognizes that *subjective* financial well-being itself is a complex construct which cannot be reduced to just one dimension (Comerton-Forde et al., 2018). A more dated conceptualization of subjective financial well-being defined this construct as the satisfaction with the present financial condition (e.g., Xiao et al., 2009). Consequently, the assessment of this construct was obtained through uni-dimensional measurement scales, such as the 10-item In-charge financial distress/financial well-being scale (Prawitz et al., 2006) or ad hoc items merged in just one score (e.g., Shim et al., 2010). Instead, more recently developed assessment tools recognized the complex nature of subjective financial well-being by conceptualizing and measuring different dimensions of this construct. For example, in 2015, the federal Consumer Financial Protection Bureau in the United States released a new self-reported financial well-being scale measuring four aspects of the construct: (1) perception of control over finances; (2) capacity to absorb a financial shock; (3) financial freedom to make choices to enjoy life; and (4) being on track to meet one's financial goals. In 2018, Netemeyer et al. operationalized subjective financial well-being as a two-dimension construct: current money management stress (i.e., stress related to the management of money

today) and expected future financial security (i.e., a sense of security in one's financial future). Finally, in 2020, D'Agostino et al. defined and assessed financial well-being as the combination of the following five dimensions: inner well-being (general satisfaction and happiness), relative assessment (perceived comparison with society and with oneself), time (comparison of the individual's actual financial situation with the past and with expectations for the future), financial security (ability to maintain the desired living standard), and financial freedom (possibility to afford things that people would like to have/do). A recent study (Vieira et al., 2023) has also proposed the hypothesis that subjective financial well-being can be considered as "a second-order reflexive construct" (p. 196) which can be specified at a higher-level of abstraction starting from the different dimensions it is composed. However, this hypothesis has not been extensively tested so far. Therefore, it is not possible to reach a conclusion regarding the second-order hypothesis. Current literature (e.g., Bashir & Qureshi, 2023a; Kaur et al., 2021; Riitsalu et al., 2023; She et al., 2023) still defines subjective financial well-being as a multidimensional construct, without including any hierarchical structure.

We believe that the next trend in the conceptualization and operationalization of subjective financial well-being will be the adaptation of this construct to the specific stage of life of the individual. The instruments described above assume that the same definition and operationalization of subjective financial well-being can equally be applied to all adults (people aged over 18 years). Instead, other scholars (e.g., Sorgente & Lanz, 2017; Wilmarth, 2021) have stressed the importance of recognizing the peculiarities of the financial domain of life during specific stages of life. In the current study, we focus on the conceptualization and operationalization of subjective financial well-being during the transition to adulthood.

1 Financial Well-Being During the Transition to Adulthood

Arnett (2014) defined "emerging adults" as individuals aged 18–29 years old, who are not adolescents anymore, but are not yet adults. To become an adult, emerging adults have to obtain most, if not all, of the five markers of adulthood (completion of education, finding full-time career work, leaving the parental home, entry into marriage, and becoming a parent; Billari & Liefbroer, 2010). The achievement of these markers of adulthood implies the ability to deal with money (e.g., repayment of student loans, financial independence from parents, management of one's personal income). In other words, having a good level of financial well-being signifies the achievement of financial self-sufficiency (Butterbaugh et al., 2019), which is an important milestone on the road to adulthood (Arnett, 2014). Furthermore, we believe it is worth focusing on the conceptualization and operationalization of financial well-being of emerging adults, also because emerging adults are a generation strongly affected by the 2008 economic crisis (Brüggen et al., 2017) and, nowadays, by the current economic crisis due to the COVID-19 pandemic (Dhongde, 2020). The development of a theoretical model of emerging adults' financial well-being is a first step in understanding how to help this generation to thrive financially.

Sorgente and Lanz (2017) systematically reviewed the literature on emerging adults' financial well-being, recognizing that both the objective and subjective side of the construct have characteristics that are specific for this stage of life. They found that *objective* financial well-being should be operationalized to include elements specific to the transition to adulthood (such as financial independence from parents, and student loan debt), rather

than only income. Regarding the *subjective* side of financial well-being, they found that some authors (e.g., Norvilitis et al., 2003) recognized the specificities of this stage of life, but a structured theoretical model of emerging adults' subjective financial well-being was missing.

Sorgente and Lanz (2019) thus sought to overcome this limitation by proposing a 5-factor model of emerging adults' subjective financial well-being, grounded in theoretical and empirical evidence. According to this model, emerging adults' evaluation and perception of their financial condition is based on five different components: a *meta-cognitive* component which consists of emerging adults' general evaluation of their satisfaction and feelings in relation to their financial condition, a *behavioural* component which consists of their perception of their personal ability to manage material resources, a *materialistic* component which involves emerging adults' evaluation of the sufficiency of their material resources, a *relational* component where their own financial condition is compared with their peers', and a *temporal* component which comprises emerging adults' expectations about their future financial situation. Sorgente and Lanz (2019) also presented a 25-item scale called "The Multidimensional Subjective Financial Well-being Scale" (MSFWBS), designed to measure these five components of the construct. The scale has been previously shown to have a 5-factor structure, with each factor (respectively named general subjective financial well-being, money management, having money, peer comparison, and financial future) corresponding to one of the model's theoretical components. Sorgente and Lanz (2019) tested the model with samples of Italian and Portuguese emerging adults, confirming the proposed 5-factor structure.

To date, the MSFWBS (Sorgente & Lanz, 2019) has been adopted in nine different countries (Austria, Canada, Finland, India, Italy, Portugal, Romania, Slovenia, and Turkey). In the current study, we analysed the data collected using the MSFWBS in all of these countries with the aim of verifying whether the 5-factor model of emerging adults' subjective financial well-being is valid internationally and if the model is sufficiently invariant across countries to allow cross-national comparisons.

Furthermore, given the financial challenges of the present pandemic era, it is even more important for researchers and practitioners to be able to monitor emerging adults' financial well-being using an instrument that can be adopted internationally. In particular, it could be used by researchers to investigate emerging adults' subjective financial well-being in different countries as well as by practitioners and policy makers to design financial interventions and to monitor changes in emerging adults' subjective financial well-being over time.

2 One (Financial Well-Being) Model Fits All?

The literature suggests that theoretical models of financial well-being should be adjusted not only in light of individuals' stage of life, but also in light of the culture individuals belong to and the socio-economic conditions of the country they live in. According to Wilmarth (2021), taking *culture* into account is particularly important for understanding subjective financial well-being, as this subjective component of the construct is most affected by cultural and personal factors. For example, a systematic review of studies conducted in Malaysia (Ghazali et al., 2020) demonstrated that some psychological factors that usually affect subjective financial well-being in individualistic cultures (e.g., self-esteem) were not influential in Malaysia, whereas culture-specific factors (e.g., the Islamic practice called "*wasatiyyah*"; Ramlee et al., 2019) did influence it.

Other authors, instead, stressed that financial well-being is related to the *socio-economic* conditions of the country in which individuals live. Recently, Mahendru and his colleagues (Mahendru, 2021; Mahendru et al., 2022) argued that there is a need to build new theoretical models of subjective and objective financial well-being specifically suited to developing countries' situations. In particular, Mahendru (2021) stated that the "majority of the work studying financial well-being has been undertaken in the developed countries" (p. 1), but "the diverse socioeconomic, environmental conditions create disagreement on a single definition [of financial well-being] for developed and developing countries, thereby calling for separate conceptualization for developing countries" (p. 10). Furthermore, after conducting qualitative studies in India, Mahendru et al. (2022) identified some components of subjective financial well-being (e.g., perceiving financial security, experiencing improved quality of life) that are specific for people living in developing countries.

The importance of proposing context-specific models as well as context-specific measurement instruments was emphasized by Sorgente and Lanz (2019) as well. They proposed the MSWFSB as an instrument that could overcome the U.S.-centric bias of scales commonly adopted to measure emerging adults' subjective financial well-being. These scales (e.g., Norvilitis et al., 2003) included items referring to student loan debt, which represents one of the biggest financial challenges for emerging adult students in United States. The MSFWBS, however, has been proposed for use in the European context, where student loan debts are unusual in most of the countries (Guille, 2002). To date, it has only been tested in Italy and Portugal (e.g., Iannello et al., 2021; Sorgente & Lanz, 2019), two countries very similar both from the cultural and socio-economic point of view. In the current study, we aimed to assess the validity of the model and of the scale across several countries.

3 The Current Study

The current study aimed to test Sorgente and Lanz's (2019) model of subjective financial well-being across nine countries[1] (Austria, Canada, Finland, India, Italy, Portugal, Romania, Slovenia, and Turkey) diverse in their cultures and socio-economic conditions, using several different kinds of validity evidence for the MSFWBS.

First, to assess whether the five dimensions of subjective financial well-being (general subjective financial well-being, money management, having money, peer comparison, and financial future) held across different countries, we tested the 5-factor model of the MSFWBS (*score structure evidence*) and each factor's internal consistency (*reliability evidence*) separately for each country. Furthermore, we compared the original 5-factor model with two alternative models proposed in literature: the 1-factor model (e.g., Prawitz et al., 2006) and the second-order model (Vieira et al., 2023).

Second, to assess whether the MSFWBS model was sufficiently equivalent across countries and to conclude that (1) the construct has the same meaning across countries and that (2) the MSFWBS scores can be compared across countries, we tested the measurement invariance of this model across countries (*generalizability evidence*).

[1] We also included data collected in Italy and Portugal as these data do not correspond to data already used in previous publications (Iannello, 2021; Sorgente & Lanz, 2019). Consequently, testing again the 5-factor model of the MSWFBS in these two countries allowed collecting new evidence about the score structure validity of the model. Furthermore, it is important to include these countries in the study also to test the generalizability evidence (i.e., invariance of the model) on a wider set of countries.

Finally, to assess whether MSFWBS factors are associated with the other constructs as suggested by the literature on subjective financial well-being (e.g., Brüggen et al., 2017; Lanz et al., 2020; Newman et al., 2008), we tested the relationships between these five factors of emerging adults' subjective financial well-being and measures of objective financial well-being (*convergent evidence*) and life satisfaction (*criterion-related evidence*). According to previous research, regarding objective financial well-being indicators, emerging adults' subjective financial well-being is positively related to their personal income (Newman et al., 2008), while it has an ambiguous relationship with economic independence from parents, as the financial assistance received from parents is considered to be a factor that can play a role in either "facilitating or hindering successful development in emerging adulthood" (Padilla-Walker et al., 2012, p. 51). Regarding life satisfaction, different studies (e.g., Brüggen et al., 2017; Iannello et al., 2021) provide converging evidence that subjective financial well-being is a positive antecedent of life satisfaction and general well-being. The current study aimed to cross-culturally collect these different kinds of validity evidence (score structure evidence, reliability evidence, generalizability evidence, convergent evidence, criterion-related evidence) for the MSFWBS across nine countries (Austria, Canada, Finland, India, Italy, Portugal, Romania, Slovenia, and Turkey).

4 Method

4.1 Participants

Emerging adult respondents included in the current study ($N = 4475$) ranged in age from 18 to 29 years old ($M = 22.84$, $SD = 3.02$) and were mainly female (63.0%). They lived in nine different countries: Austria ($n = 568$), Canada ($n = 279$), Finland ($n = 1{,}000$), India ($n = 392$), Italy ($n = 666$), Portugal ($n = 335$), Romania ($n = 317$), Slovenia ($n = 379$), and Turkey ($n = 539$). Approximately a third of the respondents (35.0%) were employed full-time or part-time. Regarding relationship status, 24.7% were cohabiting or were married, while the others were single or not living with their partner. Finally, 11.4% of the sample had one or more children. Table S1 in the Supplementary Materials (SM) displays a detailed description of the sample by country in relation to demographic characteristics (gender and age) and traditional markers of adulthood (leaving the parental home, completing education, being employed, having a stable relationship, and being a parent; Billari & Liefbroer, 2010).

These participants were drawn from a dataset developed for a broader research initiative, Emerging Adults' Financial Well-Being Worldwide. The research project focuses on developing a network of scholars studying emerging adults' financial life with the aim of sharing data and knowledge, which could help build international models and theories of financial development. The full cross-sectional sample collected by this group of researchers included over 6,000 emerging adults from twelve countries. For the present study, we only included data from nine countries as the other three countries involved in this project (Lithuania, United States, Hungary) did not integrated the MSFWBS in their survey. From the 9-country dataset we further excluded participants ($n = 251$) who completed only the demographic questions, and retained the remaining 4,475 emerging adults who responded to at least one item of the MSFWBS. This inclusion criterion is based on the estimation method we used to manage missing data: full information maximum likelihood,

as including also the cases with incomplete data increases the precision and accuracy of parameter estimates (Enders & Bandalos, 2001).

Respondents who completed items from the MSFWBS significantly differed from those who completed only the demographic questions in terms of the country they lived in as well as relational and parental status. In particular, emerging adults who completed only the demographic questions were more likely to live in Italy, Portugal, and Austria [$\chi^2(8) = 470.13$; $p < 0.001$; Cramer's $V = 0.31$], to not have a stable relationship (i.e., cohabitation or marriage) [$\chi^2(1) = 8.38$; $p = 0.004$; Cramer's $V = 0.04$] or children [$\chi^2(1) = 13.58$; $p < 0.001$; Cramer's $V = 0.05$]. There were no differences across the two groups in terms of gender [$\chi^2(1) = 3.04$; $p = 0.08$], age [*Wald test*$(1) = 0.18$; $p = 0.67$], living arrangement [$\chi^2(1) = 0.01$; $p = 0.92$], nor educational [$\chi^2(1) = 2.84$; $p = 0.09$] and occupational status [$\chi^2(1) = 1.37$; $p = 0.24$].

4.2 Procedure

The survey was initially developed in Italian and then translated to English to share the materials across countries. Next, all measures that were unavailable in the target languages were translated to the respective languages by the authors of this paper and their local collaborators. Data were collected independently across countries. Most of the countries adopted a convenience and sometimes also a snowballing procedure to sample the participants. The only exception was Finland where an online web panel was used to collect data from a sample that represents the general population for age, gender, and geographic area. In Table S2 of the SM, we reported more details about each country's data collection, specifying when and how data were collected. Each country shared the data with the Italian team, which was responsible for merging the different datasets.

4.3 Measures

Data collection in each country also included variables other than the ones used in the current study. We present here only the measures relevant to this study's aim.

Subjective Financial Well-being. Emerging adults' subjective financial well-being was assessed with the Multidimensional Subjective Financial Well-Being Scale (MSFWBS; Sorgente & Lanz, 2019), composed of 25 items evaluated on a 5-point scale (1 = *absolutely false*; 5 = *absolutely true*). This scale measures the five different dimensions of emerging adults' subjective financial well-being (cognitive, behavioral, materialistic, relational, and temporal) through five sub-scales. General subjective financial well-being was measured with 10 items (e.g., *I'm happy with my financial situation*), satisfaction with one's money management style was measured with four items (e.g., I *am satisfied with the way I spend my money*), sense of having sufficient money was measured with three items, which need to be reverse-coded (e.g., *Sometimes I miss the money to buy things I need*), assessment of finances in comparison with one's peers was measured with three items (e.g., *My financial situation is better than my peers*), and confidence about one's financial future was measured with five items (e.g., *I'm on the right track to meet my financial goals*).

The full measure and its translations in all the languages adopted across the nine countries (English, German, French, Finnish, Italian, Portuguese, Romanian, Slovenian, and Turkish) are publicly available here: https://osf.io/ptbg5/.

Objective Financial Well-being. As suggested by previous publications (e.g., Lanz et al., 2020), when investigating emerging adults' objective financial well-being it is important to measure both their personal income and their level of economic independence from their parents. We measured emerging adults' *personal income* using a 12-point scale (1 = *0€ per month*; 12 = *over 5,000€ per month*).[2] When asked about personal income, emerging adults were encouraged to think about different sources of income such as personal salary, scholarships, money received from people other than their parents, state contributions (e.g., unemployment benefits, disability pension), and so on. This measure of personal income was not included in the Turkish survey and was differently formulated in Canadian and Finnish surveys. Consequently, data from these three countries are not available for this variable. *Economic independence from parents* was measured using a 5-point Likert scale item (*Who usually pays for your expenses?*), ranging from 1 (*I am still totally dependent on my parents*) to 5 (*I am totally independent from an economic point of view*). This item was administered in all of the countries except Canada.

Life satisfaction. Emerging adults' life satisfaction was assessed using the 5-item Satisfaction with Life Scale (SWLS; Diener et al., 1985). While in all of the countries the same five items were administered (e.g., *The conditions of my life are excellent*), different response scales were adopted. In most countries, the original 7-point scale (1 = *strongly disagree*; 7 = *strongly agree*) was adopted, while in Slovenia and Austria, a 5-point scale (1 = *strongly disagree*; 5 = *strongly agree*) which was also used in previous research in both countries (e.g., Zupančič et al., 2018) was adopted. Consequently, before using participants' responses to this scale's items, we standardized their responses separately for each country.

4.4 Data Analyses

All models were run in Mplus and missing data were managed by the full information maximum likelihood method. After verifying the distribution of responses to MSFWBS items (some items had a kurtosis higher than |1|), we decided to adopt the Maximum Likelihood estimation with robust standard errors (Rhemtulla et al., 2012) in all models run to collect the different kinds of validity evidence for the MSFWBS. Data, as well as Mplus input and output files adopted for the current study, are publicly available here: https://osf.io/ptbg5/

Score structure evidence. We collected evidence about the structure of the MSWFSB by separately testing three alternative factorial models for each country. The first model we tested was the original 5-factor model proposed in the validation paper of the MSFWBS (Sorgente & Lanz, 2019). We expected to confirm this model based on evidence collected in previous studies (Iannello et al., 2021; Sorgente & Lanz, 2019). At the same time, we believe the evidence for this 5-factor model become stronger when comparing it with alternative models proposed in literature for the financial well-being construct, namely the 1-factor model (e.g., Prawitz et al., 2006) and the second-order model (Vieira et al., 2023). The second model we tested was a 1-factor model, i.e., a model in which all of the 25

[2] In countries in which the currency was other than the euro, the response options were converted to the national currency (e.g., rupees for India).

items of the MSFWBS load on the same factor. Results from this model inform about the plausibility of financial well-being as a unidimensional construct. As financial well-being is a multidimensional concept (Comerton-Forde et al., 2018), we did not expect a good fit for this model. Finally, we tested a second-order factor model of the MSFWBS in order to explore whether a hierarchical structure exists, and that the subjective financial well-being construct can be specified at a higher-level of abstraction. In particular, in this model we estimated five first-order factors (corresponding to the original five factors proposed by Sorgente and Lanz (2019) and we used them as indicators of a high-level factor that should correspond to the general construct of "subjective financial well-being". Overall, the model can be represented as a hierarchical structure, where the observed variables (i.e., items) load on the first-order factors, and the first-order factors contribute to the second-order factor. We do not have any hypothesis about this model since existing evidence (Vieira et al., 2023) is still not sufficient to formulate hypotheses.

For these three alternative models (5-factor, 1-factor, second-order factor), the goodness of model fit was evaluated with the following indices: the root mean square error of approximation (RMSEA); the standardized root mean square residual (SRMR), which indicate good fit when lower than 0.08; as well as the comparative fit index (CFI) and the Gamma hat, which indicate good fit when higher than 0.90 (Marsh et al., 2004). It is important to stress that fit indices are affected not just by model fit, but also by other aspects of the model, such as sample size and number of variables (Fan & Sivo, 2007). In particular, we used these indices taking in consideration that CFI and RMSEA are less reliable than other indices due to the presence of 25 observed variables in our model; CFI indeed tended to suggest worse model fit as the number of observed variables increased (Kenny & McCoach, 2003; Peterson et al., 2020). On the other hand, RMSEA tends to reward models with a large number of observed variables (Breivik & Olsson, 2001; Fan & Sivo, 2007). Furthermore, we recognized that Gamma hat, according to simulation studies (Fan & Sivo, 2007), is more trustworthy than other indices as its values seem to be unaffected by model types, sample size conditions, and number of observed variables. The following analyses were run including only the countries for which an adequate model fit was found.

Reliability evidence. We measured the reliability of each MSFWBS's factor adopting the composite reliability (ω; Raykov, 2001).

Generalizability evidence. We tested whether the measurement model of the MSFWBS was invariant across countries. This evidence verifies that the instrument maintains the same regression relations between any observed item score and the respective factor score in the CFA model across different groups, in order to infer that the observed test scores convey the same psychological meaning in the respective populations (invariant items' factor loadings) and justify cross-population comparisons (invariant item intercepts; Dimitrov, 2010).

When the comparison is done across few nations, the *exact* measurement invariance is usually tested (e.g., Sorgente & Lanz, 2019); however, this approach "can be problematic when applied to large-scale and widely diverse cultural groups" (Byrne & van de Vijver, 2017, p. 541). In these cases, the *approximate* measurement invariance using the maximum likelihood alignment method (Asparouhov & Muthén, 2014) is recommended. We first tried to adopt the exact measurement invariance and, after confirming it was not the best approach to use, we proceeded with the approximate measurement invariance. As suggested by Asparouhov and Muthén (2014), we first conducted an analysis of approximate measurement invariance with *free* alignment optimization, but we switched to the *fixed*

alignment optimization in case Mplus produced an error indicating that the free alignment model may be poorly identified. Results of this analysis consist of the parameters (i.e., factor loading and intercepts) that are non-invariant across the groups under investigation (i.e., countries). If the non-invariant parameters are less than 25% of the total number of parameters derived from alignment, the results are considered trustworthy (Asparouhov & Muthén, 2014), and consequently it is possible to compare MSFWBS's latent means across groups.

Convergent and criterion-related evidence. Finally, we verified that the MSFWBS's latent factors were related to emerging adults' objective financial well-being (convergent validity) and life satisfaction (criterion-related validity). In order to test relations between *latent* variables (i.e., free from measurement error), we ran a CFA model in which both the five factors of the MSFWBS (general subjective financial well-being, money management, having money, peer comparison, financial future) and the one latent factor of the SWLS (life satisfaction) were estimated. Furthermore, in this model we included indicators of personal income and economic independence as two observed variables, as each indicator was composed of just one item. Finally, we computed correlations among all the constructs measured in the model (i.e., the six latent factors and the two observed variables).

This model was run on the pooled sample (i.e., emerging adults from all of the countries for which the MSFWBS structure was confirmed) because a multi-group analysis was not feasible due to some countries (i.e., Canada, Finland, Turkey) not having one or two variables included in the model. At the same time, in order to verify if the unbalanced cross-national samples merged in the pool sample affected the results we obtained, the same model was run again adopting balanced samples (i.e., extracting the same number of emerging adults from each country). Furthermore, in order to verify that evidence of convergent and criterion-related validity were valid for each country, we ran again—separately for each country—the model where the five latent factors of the MSFWBS were related to emerging adults' personal income, economic independence, and life satisfaction.

5 Results

5.1 Score Structure Evidence

5.1.1 Comparing the Three Alternative Structures of MSFWBS

In Table 1 we report the fit indexes values obtained for each country when testing the three alternative models of the MSFWBS: The 5-factor model, 1-factor model, and second-order factor model. As expected, the 1-factor model yielded a poor fit to the data from each country, confirming that subjective financial well-being should not be considered a unidimensional construct. The other two alternatives (5-factor model and second-order factor model) seemed to be acceptable, at least for some countries, but the 5-factor model performed better (i.e., better fit indices) than the second-order one. In particular, the 5-factor models had, for all countries, higher CFI and lower SRMR values than those of the second-order factor models. Furthermore, for Portugal and Slovenia, Gamma hat and RMSEA values also indicated that the five-factor model fits data better than the second-order factor model. As these three alternative models are nested within each other, the comparison of fit indices was a sufficient method to select the best model (West et al., 2012). Consequently, the

Table 1 Testing three alternative models of the MSFWBS (5-factor, 1-factor, second-order factor model) separately for each country

	χ^2	*df*	*p*	Gamma	CFI	RMSEA [90% CI]	*SRMR*
5-factor model							
Austria ($n=568$)	935.71	265	< 0.001	0.91	0.90	0.07 [0.062 0.071]	0.06
Canada ($n=279$)	620.98	265	< 0.001	0.91	0.91	0.07 [0.062 0.076]	0.06
Finland ($n=1000$)	1605.51	265	< 0.001	0.91	0.85	0.07[0.068 0.074]	0.08
India ($n=392$)	1034.48	265	< 0.001	0.85	0.77	0.09 [0.081 0.092]	0.10
Italy ($n=666$)	1104.80	265	< 0.001	0.91	0.90	0.07 [0.065 0.073]	0.06
Portugal ($n=335$)	746.68	265	< 0.001	0.91	0.88	0.07 [0.067 0.080]	0.07
Romania ($n=317$)	567.23	265	< 0.001	0.93	0.92	0.06 [0.053 0.067]	0.07
Slovenia ($n=379$)	645.17	265	< 0.001	0.93	0.90	0.06 [0.056 0.068]	0.05
Turkey ($n=539$)	800.18	265	< 0.001	0.93	0.92	0.06 [0.056 0.066]	0.05
1-factor model							
Austria ($n=568$)	2158.31	275	< 0.001	0.80	0.71	0.11 [0.106 0.114]	0.10
Canada ($n=279$)	1080.17	275	< 0.001	0.83	0.80	0.10 [0.096 0.109]	0.07
Finland ($n=1000$)	2527.29	275	< 0.001	0.85	0.75	0.09 [0.087 0.094]	0.09
India ($n=392$)	1661.58	275	< 0.001	0.80	0.59	0.11 [0.108 0.119]	0.12
Italy ($n=666$)	2735.29	275	< 0.001	0.77	0.71	0.12 [0.112 0.120]	0.11
Portugal ($n=335$)	1353.25	275	< 0.001	0.80	0.73	0.11 [0.102 0.114]	0.09
Romania ($n=317$)	1490.26	275	< 0.001	0.77	0.67	0.12 [0.112 0.124]	0.11
Slovenia ($n=379$)	1477.69	275	< 0.001	0.80	0.69	0.11 [0.102 0.113]	0.09
Turkey ($n=539$)	2120.31	275	< 0.001	0.80	0.74	0.11 [0.107 0.116]	0.10
Second-order factor model							
Austria ($n=568$)	1053.38	270	< 0.001	0.91	0.88	0.07 [0.067 0.076]	0.07
Canada ($n=279$)	690.84	270	< 0.001	0.91	0.90	0.07 [0.068 0.082]	0.07
Finland ($n=1,000$)	1803.01	270	< 0.001	0.91	0.83	0.07 [0.072 0.079]	0.08
India ($n=392$)*	1159.70	271	< 0.001	0.85	0.73	0.09 [0.086 0.097]	0.11
Italy ($n=666$)	1264.54	270	< 0.001	0.91	0.88	0.07 [0.070 0.079]	0.08
Portugal ($n=335$)	817.81	270	< 0.001	0.88	0.86	0.08 [0.072 0.084]	0.08
Romania ($n=317$)	608.93	270	< 0.001	0.93	0.91	0.06 [0.056 0.070]	0.08
Slovenia ($n=379$)	728.52	270	< 0.001	0.91	0.88	0.07 [0.061 0.073]	0.07
Turkey ($n=539$)*	890.14	271	< 0.001	0.93	0.91	0.06 [0.060 0.070]	0.07

Note CFI—Comparative Fit Index; RMSEA—Root Mean Square Error of Approximation; SRMR—Standardized Root Mean Square Residual; CI—Confidence Interval; *df*—degrees of freedom

*In these models the residual variance of the "general subjective financial well-being" factor needs to be fixed at 1 in order not to make it lower than zero

5-factor model (i.e., the original model of the scale) was selected as the best fitting model and adopted for the following analyses in the current study.

5.1.2 The 5-Factor Model of the MSFWBS

Even if the original 5-factor model of the MSFWBS was the one that best fit the data, it did not work equally well across the nine countries. In six out of nine countries (Austria,

Canada, Italy, Romania, Slovenia, and Turkey), all of the indices reached sufficient levels, fully confirming the 5-factor model of emerging adults' subjective financial well-being.

The same model in Finland and Portugal reached a sufficient level of goodness of fit only for three (RMSEA, SRMR, Gamma hat) out of four indices. Considering that (a) CFI values are expected to be lower when testing models with many items (Peterson et al., 2020), (b) CFI values for Finland and Portugal are very close to the cut-off (0.90), and (c) that other criteria used to evaluate the model (e.g., factor loadings' size and statistical significance; see Table S3 of the SM) confirmed the adequacy of the model, we considered the 5-factor model to be adequate in these two countries as well.

In contrast, the results (i.e., CFI, Gamma hat, RMSEA, and SRMR all indicating model misfit) suggest that this 5-factor model does not work in India, and consequently we excluded India from subsequent analyses. Note that analyses reported from now on were performed on a sample of 4083 emerging adults (i.e., we excluded the 392 Indian participants from the original sample of 4475). In the following pages and tables, we refer to this new sample ($N = 4083$) as "total sample without India" in order to differentiate it from the original one ($N = 4475$).

Before investigating other kinds of validity evidence (reliability, generalizability, convergent, and criterion validity) for the 5-factor model of the MSFWBS, we ran again this 5-factor model on the "total sample without India" and confirmed the goodness of fit of the 5-factor model of subjective financial well-being: χ^2 (265) = 4778.12; $p < 0.001$; Gamma hat = 0.93; CFI = 0.90; RMSEA = 0.06 [0.063 0.066]; SRMR = 0.05. Factor loadings and correlations among the five factors are reported in Tables S3 and S4 of the SM for each of the countries in which the MSFWBS model held as well as for the "total sample without India".

5.2 Reliability evidence

Separately for each country, we verified that each factor of the MSFWBS was sufficiently reliable ($\omega > 0.60$; Bagozzi & Yi, 1988). As reported in Table 2, the five factors were also reliable when estimated on the "total sample without India".

5.3 Generalizability Evidence

We first attempted to collect generalizability evidence for the MSFWBS adopting the *exact* measurement invariance. The configural model sufficiently fit the data [χ^2 (2120) = 7081.76; $p < 0.001$; Gamma hat = 0.91; CFI = 0.895; RMSEA = 0.07 [0.066 0.069]; SRMR = 0.06]. When we constrained factor loadings to be equivalent across countries, we found that metric invariance did not hold because the metric model fit [χ^2 (2261) = 7823.39; $p < 0.001$; Gamma hat = 0.90; CFI = 0.882; RMSEA = 0.07 (0.068 0.071); $p < 0.001$; SRMR = 0.08] was too different from the configural model one (i.e., ΔCFI > 0.010; Chen, 2007). As suggested by Dimitrov (2010), we proceeded with testing the partial metric invariance and released four factor loadings (item 13 for the Romanian sample, and items 5, 10, 12 for the Finnish sample) in order to reach a partial metric invariant model [χ^2 (2257) = 7670.30; $p < 0.001$; Gamma hat = 0.90; CFI = 0.885; RMSEA = 0.07 (0.067 0.070); $p < 0.001$; SRMR = 0.08] that was sufficiently similar to the configural one (ΔCFI = 0.010). Finally, we tested the partial scalar invariance constraining intercepts to be equivalent across groups for items that had invariant factor loadings. As this model [χ^2 (2392) = 10,681.99; $p < 0.001$; Gamma hat = 0.87; CFI = 0.824; RMSEA = 0.08 (0.081 0.084); $p < 0.001$;

Table 2 Composite reliability value for each factor of the multidimensional subjective financial well-being scale

	General financial well-being	Financial future	Money management	Having money	Peer comparison
Austria	0.92	0.81	0.86	0.83	0.84
Canada	0.94	0.86	0.92	0.83	0.85
Finland	0.88	0.76	0.82	0.75	0.74
Italy	0.94	0.78	0.81	0.86	0.83
Portugal	0.92	0.75	0.85	0.85	0.73
Romania	0.92	0.83	0.87	0.82	0.70
Slovenia	0.90	0.75	0.88	0.83	0.81
Turkey	0.95	0.82	0.86	0.79	0.80
Total sample without India	0.93	0.80	0.85	0.84	0.79

SRMR = 0.09] was extremely different from the previous one (ΔCFI = 0.061), we concluded that a sufficient level of scalar invariance was not reachable adopting the *exact* measurement invariance.

As the *approximate* measurement invariance model with the alignment method has the same fit as the configural model (Asparouhov & Muthén, 2014) and our configural invariance model held with reasonable fit, we were justified in moving on to test the *approximate* measurement invariance, starting with the free alignment approach. As we obtained an Mplus error indicating that the free alignment model may be poorly identified, we switched to the *fixed* alignment optimization, fixing the means of factors belonging to the Portuguese sample at 0. Results of this model are presented below.

Noninvariance results. Evidence of noninvariance pertinent to both the factor loadings and item intercepts by country is reported in Table 3. There are many more noninvariant item intercepts than there are noninvariant factor loadings, "a pattern that is certainly consistent with the usual results found in tests for invariance" (Byrne & van de Vijver, 2017, p. 546).

In reviewing these results, we found five items particularly important (one for each factor of the scale). For those items, both the factor loadings and item intercepts are completely invariant across the eight countries: item 16 of the "subjective financial well-being" factor ("I'm satisfied with my present financial situation"), item 25 of the "money management" factor ("I am satisfied with the way I manage my financial situation"), item 23 of the "having money" factor ("Sometimes I do not have the money to buy what I need (R)"), item 7 of the "peer comparison" factor ("My financial condition is worse than that of my friends"), and item 24 of the "financial future" factor ("I'm on the right track to meet my financial goals"). These five items would appear to be especially useful in making comparisons across the eight countries under investigation. Focusing on factor loadings, we found 13 out of 25 items which are invariant across countries (see Table 3). The other 12 items have non-invariant loadings in just one or two countries out of eight. The country with more non-invariant factor loadings (four out of 25) is Finland. Focusing on intercepts, we found 6 out of 25 items which are invariant across countries (see Table 3). The other 21 items have non-invariant intercepts in one to five countries out of eight. The country

Table 3 Non-invariant factor loadings and intercepts by country for the 25 items of the multidimensional subjective financial well-being scale

Items	Non-invariant factor loadings								Non-invariant intercepts							
	AU	CA	FI	IT	PT	RO	SI	TR	AU	CA	FI	IT	PT	RO	SI	TR
1									*	*						
2												*	*			*
3								*		*						*
4												*				
5			*							*			*			*
6				*												
7																
8										*						
9			*								*					*
10			*	*						*	*					
11												*	*	*		
12			*								*				*	
13						*		*				*	*	*		
14								*	*	*		*				
15		*								*				*		*
16																
17		*			*					*			*			
18									*		*	*	*		*	
19	*												*		*	
20		*								*				*		
21												*	*			*
22														*		*
23																
24																
25																

with more non-invariant intercepts (nine out of 25) is Canada. Taken together, the percentage of the non-invariant parameters was within the 25% cut-off (Asparouhov & Muthén, 2014) both for factor loadings (15 out of 200; 7.5%) and intercepts (46 out of 200; 23%). This suggests that the factorial model of emerging adults' subjective financial well-being is sufficiently invariant across countries and it is possible to compare factor means across countries. Due to the fact that most of the national samples in the current study were not representative, differences between their means have to be read with caution. For the sake of completeness, we reported and commented on these mean comparisons in the SM (see Table S5).

Alignment fit results. Given that the alignment method assumes a pattern of only approximate invariance in the data, evaluation of the model is based on the fitting functions in determination of the simplest model having the largest amount of noninvariance (Byrne & van de Vijver, 2017; Jang et al., 2017). In Table 4, we summarized the fitting functions of both the factor loading and intercept for each item in the MSFWBS, as well as the total contribution of each item to the final simplicity function considering both its factor loading

Table 4 Alignment fit statistics for the 25 items of the multidimensional subjective financial well-being scale across 8 countries

Items	Factor loadings		Intercepts		Factor loadings + intercepts
	Fit function contribution	R^2	Fit function contribution	R^2	Total contribution
1	− 4.267	0.986	− 9.030	0.744	− 13.297
2	− 10.755	0.564	− 11.861	0.886	− 22.617
3	− 8.262	0.145	− 14.817	0.782	− 23.079
4	− 7.449	0.793	− 9.373	0.742	− 16.822
5	− 11.759	0.175	− 15.874	0.795	− 27.633
6	− 9.828	0.597	− 10.382	0.941	− 20.210
7	− 2.820	1.00	− 2.866	1.00	− 5.686
8	− 6.990	0.565	− 10.635	0.897	− 17.625
9	− 8.908	0.659	− 14.408	0.879	− 23.316
10	− 11.707	0.586	− 13.299	0.848	− 25.006
11	− 11.244	0.477	− 18.837	0.446	− 30.082
12	− 9.612	0.728	− 14.452	0.120	− 24.064
13	− 14.019	0.000	− 15.755	0.045	− 29.774
14	− 10.765	0.000	− 14.355	0.543	− 25.121
15	− 9.118	0.170	− 16.854	0.759	− 25.972
16	− 6.326	0.700	− 7.482	0.965	− 13.808
17	− 12.130	0.000	− 13.207	0.765	− 25.337
18	− 9.657	0.000	− 14.874	0.138	− 24.531
19	− 6.422	0.803	− 14.224	0.556	− 20.645
20	− 11.698	0.000	− 13.067	0.717	− 24.765
21	− 7.780	0.837	− 16.645	0.755	− 24.425
22	− 3.365	0.992	− 13.285	0.455	− 16.650
23	− 2.808	1.00	− 2.839	1.00	− 5.647
24	− 6.060	0.742	− 10.786	0.749	− 16.847
25	− 4.820	0.966	− 4.978	0.987	− 9.797

and intercept. Smaller absolute values should be associated with items exhibiting the least amount of noninvariance. This is confirmed in our model as items with the smallest values for both factor loadings' (− 2.820 and − 2.808) and intercepts' (− 2.866 and − 2.839) fitting functions are items 7 and 23 (i.e., two of the five items that were completely invariant across all eight countries). Those are indeed the items with the lowest (− 5.633 and − 5.647 respectively) values for the total contribution as well. Vice versa, the largest factor loadings' fitting function (− 14.019) belonged to item 13 which is one of the three items non-invariant in two countries instead of just one. Instead, the largest intercept fitting function (− 18.837) belonged to item 11 (i.e., an item which had non-invariant intercepts in four countries out of eight). Interestingly, the largest value did not belong to item 18 (which had non-invariant intercepts in five countries out of eight). As reported in Byrne and van de Vijver (2017), such discrepancies could depend on the sample sizes of the countries which have non-invariant parameters for different items. Item 11 also showed the largest total contribution (− 30.082), though its factor loading was invariant across the eight countries.

Table 5 Pearson correlation coefficients representing evidence of convergent and criterion-related validity for the five factors of the multidimensional subjective financial well-being scale

	Personal income	Economic independence	Life satisfaction
General Financial Well-being	0.21 [0.17, 0.25]***	0.06 [0.02, 0.09]**	0.57 [0.54, 0.60]***
Financial Future	0.14 [0.10, 0.19]***	0.03 [− 0.01, 0.07]	0.54 [0.51, 0.57]***
Money Management	0.18 [0.14, 0.22]***	0.06 [0.02, 0.09]**	0.46 [0.43, 0.50]***
Having Money	0.23 [0.19, 0.28]***	0.01 [− 0.03, 0.04]	0.34 [0.30, 0.38]***
Peer Comparison	0.29 [0.24, 0.33]***	0.09 [0.05, 0.13]***	0.42 [0.38, 0.46]***

**$p < 0.01$, ***$p < 0.001$

95% Confidence intervals are reported in parenthesis

General financial well-being, financial future, money management, having money, and peer comparison are the five factors of the multidimensional subjective financial well-being scale

Results reported for the fitting functions of factor loadings and intercepts were coherent with their values of R^2 (see Table 4). Such values indicate the variation of these parameters (factor loadings and intercepts) across groups in the configural model that can be explained by variation in the factor means and variances across groups (Byrne & van de Vijver, 2017). R^2 value close to 1.00 implies a high degree of invariance, whereas a value close to 0.00 suggests a low degree of invariance (Asparouhov & Muthén, 2014). According to such values, the items 7 and 23 have the most invariant factor loadings and intercepts ($R^2 = 1$); indeed, these two items had the smallest fitting functions. Furthermore, item 13, which reported the largest fitting function for factor loadings had indeed an R^2 of zero. Such coherence was not found for item 11; instead, even if item 11 reported the largest fitting function for intercepts, it did not report the lowest R^2 for intercepts, which was instead attributed to item 13's intercept ($R^2 = 0.045$). Again, this discrepancy can be reasonably attributed to the sample size of non-invariant countries, as noted earlier.

5.4 Convergent and Criterion-Related Evidence

After confirming that the SWLS is a measure of life satisfaction that is cross-nationally invariant (see Table S6 of the SM), we ran an SEM model in which we estimated the Pearson correlation that each MSFWBS' factor had with emerging adults' personal income and level of economic dependence (convergent validity evidence), as well as with their life satisfaction (criterion-related validity evidence). This SEM model had good fit indices [χ^2 (438) = 5848.452; $p < 0.001$; RMSEA = 0.055[0.054–0.056]; CFI = 0.907; SRMR = 0.049] and its correlation coefficients are reported in Table 5. As expected, the scores of subjective financial well-being were positively related to personal income (Newman et al., 2008) and life satisfaction (Brüggen et al., 2017).

The relation between emerging adults' subjective financial well-being and their economic independence from parents was near zero. This was consistent with theory stating that financial assistance received from parents can have both positive and negative consequences for emerging adults' development (Padilla-Walker et al., 2012). In order to be sure that these results were not affected by having unbalanced samples across the different countries, we ran the same analysis again using balanced samples (279 participants per country) and we obtained almost identical results (see Table S7 in SM for more details).

Furthermore, in order to test whether convergent and criterion-related validity holds for each country, we estimated the Pearson correlation that each MSFWBS' factor had with convergent and criterion variables separately for each country. Results (see Table S8 in SM) showed that patterns of convergent and criterion-related validity correlations are very similar across countries, suggesting that these kinds of validity evidence seem to hold regardless of the country in which the MSFWBS is adopted.

6 Discussion

In the current study, we aimed to assess whether the 5-factor model of subjective financial well-being proposed by Sorgente and Lanz (2019) for European emerging adults, operationalized through the Multidimensional Subjective Financial Well-being Scale (MSFWBS), held across different European countries as well as across non-European countries. In particular, we collected score structure, reliability, generalizability, and convergent and criterion-related validity evidence to test the proposition that emerging adults' subjective financial well-being (i.e., subjective experience of one's financial condition) is composed of five components (meta-cognitive, behavioral, materialistic, relational, temporal).

First, we ran a series of CFAs separately for each country included in the study (Austria, Canada, Finland, India, Italy, Portugal, Romania, Slovenia, and Turkey) in order to compare three alternative models of the MSFWBS: 1-factor, 5-factor, and second-order model. We found that the 5-factor model (i.e., the original model) was the best fitting model across countries. In particular, such a model describes the subjective financial well-being of both European (Austria, Finland, Italy, Portugal, Romania, Slovenia) and non-European (Canadian and Turkish) emerging adults well. At the same time, the Sorgente and Lanz (2019) model was not confirmed with the Indian data. Many reasons could explain this misfit: translation issues, sample comparability, or differential applicability of item contents (Byrne & van de Vijver, 2017). The first two aspects (translation and sampling) are methodological issues that potentially can be improved in future data collections in India to verify if this makes the Indian results different from other countries. The third aspect (differential applicability of item contents), instead, opens a bigger issue to solve. We may not have found a good fit for India because India is the most different country in terms of culture and socio-economic conditions from the other countries under investigation and, consequently, the conceptualization of financial well-being could be different in this country. In particular, India has a collectivistic culture (Chadda & Deb, 2013) and it is classified as a developing economy (United Nations, 2014). As anticipated in the introduction, researchers have suggested that subjective financial well-being should be operationalized in a manner that takes into account the culture (Ghazali et al., 2020; Wilmarth, 2021) and economic condition (Mahendru, 2021; Mahendru et al., 2022) of the country in which people live. Furthermore, previous studies (e.g., Telzer et al., 2010) have demonstrated that individuals from collectivistic countries could have a completely different conception of money when it comes to relating with other people. In particular, Telzer et al. (2010) – in a study in which they scanned participants while they made decisions to contribute with money to their family and themselves – found that, whereas White participants showed more reward activity when gaining cash for themselves, Latino participants showed more reward activity when contributing to their family. This may explain why a big portion of the misfit detected in the Indian model was attributable to the *relational* dimension of the MSFWBS:

the "peer comparison" factor (i.e., most of the cross-loadings suggested by the "modification indexes" of the Mplus output indicated to make modifications related to this factor and its items). This is just a speculation and data available in the current study are not sufficient to demonstrate if and how cultural differences have affected our findings, but we believe our results stress the need to find ways to operationalize financial well-being in a manner that takes into account the culture (Ghazali et al., 2020; Wilmarth, 2021) and economic condition (Mahendru, 2021; Mahendru et al., 2022) of the country in which people live.

In sum, our findings suggested that the MSFWBS can be adopted in Austria, Canada, Finland, Italy, Portugal, Romania, Slovenia, and Turkey to measure emerging adults' subjective financial well-being because the expected structure of this scale fit the data from these countries (*score structure validity evidence*) well, and because the scale yielded reliable and valid scores. In particular, we found that the scale's factor scores were reliable—they had optimal levels of internal consistency (*reliability evidence*)—and were also valid, demonstrating a relation with other constructs (e.g., objective financial well-being, life satisfaction) as predicted by theory. In particular, *convergent validity evidence* is demonstrated by the relation MSFWBS factors had with personal income and economic independence, while *criterion-related validity evidence* was demonstrated by the relation MSFWBS factors had with life satisfaction.

Finally, we collected *generalizability evidence* demonstrating that the scale's factor scores have the same meaning (less than 25% of the factor loadings are non-invariant) and are comparable (less than 25% of the intercepts are non-invariant) across the different countries under investigation. When comparing MSFWBS latent factors' means across Austria, Canada, Finland, Italy, Portugal, Romania, Slovenia, and Turkey, we found that the MSFWBS is sensitive to change, as it can detect differences across groups that are expected to be different. As specified above, these differences have to be read with caution considering that most of the national samples in the current study were not representative.

As the results from this study suggested that MSFWBS provides valid and reliable scores to measure emerging adults' subjective financial well-being, we have provided in the SM (see Table S9) instructions for calculating such scores.

7 Financial Well-Being in Emerging Adulthood

Although the main focus of the current paper is on the psychometric properties of the MSFWBS, our findings also offer many insights concerning the financial well-being construct. On the one hand, our study shows that the five-dimensional model of emerging adults' subjective financial well-being is highly generalizable, as it appears to be valid in eight different countries. In particular, it seems that emerging adults evaluate their financial condition using a meta-cognitive perspective in which they evaluate how satisfied they are with their financial condition and the kinds of feelings (like security, worry) their financial circumstances generate in them ("*general subjective financial well-being" factor of the MSFWBS*). Emerging adults also evaluate their financial condition by considering how well they manage their money and how satisfied they are with this money management style ("*money management" factor of the MSFWBS*). Furthermore, emerging adults evaluate their financial circumstances by examining how often they experience financial strain, such as lack of money to do what they need. This dimension, after recording, corresponded to the "*having money" factor of the MSFWBS*. Finally, the evaluation that emerging adults make of their financial condition is also based on the comparison they make of

their financial possibilities with their peers' (*"peer comparison" factor of the MSFWBS)* and on how well they are doing at getting ready for the financial challenges they will likely face in the future (*"financial future" factor of the MSFWBS*). Interestingly, this model was originally developed for the European context (Sorgente & Lanz, 2019) as an alternative to U.S.-centric models and instruments that gave much relevance to student loan debt, which is a big issue for American emerging adults. At the same time, our findings indicate that the MSFWBS describes well the subjective experience of one's financial condition that emerging adults have outside Europe as well (i.e., Canada and Turkey). We can speculate that this generalizability of the MSFWBS model depends on items and factors that do not refer to emerging adults' financial practices (e.g., falling into debt, use of a credit card) that can be more or less frequent across countries (World Bank, 2018), but refer to the financial challenges of emerging adults from the developmental point of view (e.g., comparison with peers, attention to their future). As cross-cultural research on emerging adulthood has demonstrated (Arnett, 2011), this stage of life presents very similar developmental characteristics in individualistic, economically developed countries.

On the other hand, our study shows that this model cannot be considered a universal model, as the evaluations people make of their financial condition (i.e., subjective financial well-being) are affected by the culture and the economic conditions that characterize the country in which they live. This implies that there is a significant gap in the literature on financial well-being. Most of the research on financial well-being has been carried out in the U.S. (Sorgente & Lanz, 2017; Wilmarth, 2021), a highly neoliberal and individualistic context in which complete responsibility for financial development is placed on the individual. We can speculate that collectivistic countries could have a considerably different conception of financial development of emerging adults, according more relevance to group membership (Telzer et al., 2010) rather than peer comparison. Furthermore, differences in the conceptualization and operationalization of subjective financial well-being could also depend on the socio-economic circumstances of the place where emerging adults live. As stressed by Mahendru et al. (2022), to thrive financially in developing countries generates experiences that are specific to those countries. For example, in developing countries, people may evaluate their financial well-being by considering how much their quality of life is improving, because in these countries there are very large differences in quality of economic life among citizens. In contrast, in developed countries in which the level of life quality among citizens is generally sufficient, it is harder to obtain differences in objective financial circumstances that strongly affect subjective evaluations of one's quality of life.

8 Implications and Future Directions

This study has confirmed the 5-factor model of MSFWBS in eight different countries (Austria, Canada, Finland, Italy, Portugal, Romania, Slovenia, Turkey) and we believe this has several theoretical and practical implications. First of all, for Italy and Portugal, where the scale was already tested (Sorgente & Lanz, 2019), results from the current study corroborate previous findings, providing new evidence of validity. This should increase the trust of researchers towards the MSFWBS as a valid and reliable instrument to adopt for the assessment of Italian and Portuguese emerging adults' subjective financial well-being.

For all of the other countries in which the 5-factor model of the MSFWBS has been confirmed (Austria, Canada, Finland, Romania, Slovenia, Turkey), the current study offers international scholars a valid and reliable instrument to assess emerging adults' subjective

financial well-being (translated and adapted to each of the languages used in these countries). This is an important aspect, considering that scholars studying financial well-being are calling for validated instruments that are age-specific: "There is still a gap in the literature in using comprehensive financial and economic well-being measures with age specific components" (Wilmarth, 2021; p. 126).

Furthermore, the fact that the MSFWBS holds in all of these countries suggests that the multidimensional theoretical model proposed by Sorgente and Lanz (2019) describes well the subjective experience emerging adults have of their financial condition in economically developed countries. We believe this evidence is the main practical contribution that the current study is offering researchers and practitioners. Indeed, on one side researchers have a new lens to study and understand the financial challenges emerging adults are facing in individualistic and developed countries and, on the other side, practitioners can design financial interventions being more aware of the dimensions they have to take into account. Most current financial interventions focus on offering money management skills and financial knowledge to emerging adults (Ambuehl et al., 2014), but we have shown here how satisfaction with one's money management is only one aspect of personal financial well-being. Given the financial challenges of the present post-pandemic era, it is even more important for researchers and practitioners to be able to monitor emerging adults' financial well-being and having tools to help them thrive financially.

The fact that the MSFWB scale and theoretical model have not been confirmed in India is very informative as well. This brings researchers forward to the need for having a different model of financial well-being for collectivistic and developing countries. Until now this need was only hypothesized (Mahendru, 2021), while the current study provides the first empirical evidence of this need. We strongly believe that the main direction future studies on subjective financial well-being should take is the investigation of the subjective financial well-being in collectivistic and developing countries. Scholars need to first conduct qualitative studies (e.g., Mahendru et al., 2022) to understand how individuals living in collectivistic and developing countries conceptualize subjective experiences of their finances. Based on these findings, a new conceptualization of subjective financial well-being and new questionnaires should be developed to properly operationalize the subjective financial well-being construct for these populations.

8.1 Limitations of the Study

To the best of our knowledge, this is the first study in which an instrument measuring emerging adults' subjective financial well-being has been tested across different countries. Nevertheless, we need to interpret these findings in light of the following limitations. First, in most countries, the data were collected using a convenience sampling procedure, limiting the generalizability of the results of the current study and the meaningfulness of mean comparisons across countries. In particular, the convenience samples were unbalanced for variables such as gender (more females than males) and employment status (more unemployed than employed emerging adults), which usually make a difference when it comes to financial issues (e.g., Buchler et al., 2009; Zyphur et al., 2015). Furthermore, in some countries not all of the variables used in the current study were included in the survey that was administered. Finally, the set of countries included in the current study and the adopted methodologies did not allow us to determine whether the poor fit of the model to the Indian data is a result of a methodological issue (e.g., translation, sampling), its status

as a collectivistic country (cultural difference) and developing country (socio-economic difference), or both.

8.2 Conclusion

Sorgente and Lanz (2019) proposed an operationalization of emerging adults' subjective financial well-being through five different components (meta-cognitive, behavioural, materialistic, relational, and temporal). They developed the MSFWBS as an instrument to measure these components. The present study's findings suggested that the MSFWBS (1) yields valid and reliable scores; and (2) is highly reliable and valid in different countries (Austria, Canada, Finland, Italy, Portugal, Romania, Slovenia, Turkey), producing comparable scores. In the current global economic crisis, such an instrument is an important tool for researchers, practitioners, and policy makers for investigating emerging adults' subjective financial well-being across different nations and monitoring changes over time.

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Availability of Data and Material Data and materials (i.e. The Multidimensional Subjective Financial Well-being Scale and its translations in all the languages adopted across the nine countries: English, German, French, Finnish, Italian, Portuguese, Romanian, Slovenian, and Turkish) are publicly available here: https://osf.io/ptbg5/

Code Availability Mplus input and output files are publicly available here: https://osf.io/ptbg5/

Declaration

Conflicts of Interest/Competing Interests none

Ethics Approval Each of the country involved in the study followed ethical procedures in accordance with the Declaration of Helsinki. Details about received approvals are reported in the supplementary materials separately for each of the nine country involved in the study.

Consent to Participate Informed consent to participate in the study was obtained from participants.

Consent for Publication Participants gave their consent to publish their data.

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