

Sustainable Finance - Knowledge, Skills, and Attitudes that Can Make a Difference

Finanças Sustentáveis - Conhecimento, Habilidades e Atitudes que Podem Fazer a Diferença

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ABSTRACT

Many studies investigate the benefits of financial education with different areas of behavior, however, studies involving financial education and sustainability are still very scarce. This study focuses on proposing the items of the dimensions proposed by Couto, Maracajá and Machado (2022). This research has a qualitative character and an exploratory and descriptive nature, and the type of instrument proposed was a questionnaire containing items that underwent face and content validation by eleven specialists, five from the area of financial education and six from sustainability, through two rounds. The proposed instrument had 139 items distributed in 7 dimensions: financial education (FE), sustainability (S), personal and household budget (B), credit and indebtedness (CI), savings and investment (SI), consumption and waste (CW), and future and legacy (FL). After validation, a total of 137 items were maintained in the dimensions. This study advances in the proposed scope of the dimensions and forcefully includes the environmental pillar in the interaction between financial education and the tripod of sustainability.

Keywords: Financial education; Sustainability; Conceptual framework; Face and content validation.

Submitted: 20/06/2023

Accepted: 14/12/2023

RESUMO

Muitos estudos investigam os benefícios da educação financeira em diferentes áreas de comportamento, no entanto, estudos envolvendo educação financeira e sustentabilidade ainda são muito escassos. Este estudo concentra-se em propor os itens das dimensões propostas por Couto, Maracajá e Machado (2022). Esta pesquisa tem caráter qualitativo e natureza exploratória e descritiva, e o tipo de instrumento proposto foi um questionário contendo itens que passaram por validação de face e conteúdo por onze especialistas, cinco da área de educação financeira e seis de sustentabilidade, por meio de duas

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RESUMO

rodadas. O instrumento proposto tinha 139 itens distribuídos em 7 dimensões: educação financeira (EF), sustentabilidade (S), orçamento pessoal e doméstico (OD), crédito e endividamento (CE), poupança e investimento (PI), consumo e desperdício (CD), e futuro e legado (FL). Após a validação, um total de 137 itens foram mantidos nas dimensões. Este estudo avança no escopo proposto das dimensões e inclui de forma contundente o pilar ambiental na interação entre educação financeira e o tripé da sustentabilidade.

Palavras-chave: Educação financeira; Sustentabilidade; Estrutura conceitual; Validação de face e conteúdo.

Introduction

From rudimentary commercial transactions to the technological financialization experienced today, it is practically impossible to refute the guiding role of the economy in life in society, equalizing efforts and resources that would otherwise hardly converge. Such centrality also produces dichotomies arising from the premise of economic growth evidenced in the periodic economic crises (Speer, 2013), catastrophes, and environmental crimes (Kahn, 2007; Gibbs *et al.*, 2010; Faroque & South, 2020) and social abysses (Becker, 2013; Martine & Alves, 2015). This scenario brings up reflections about the unsustainable foundations on which the economy is based, as well as its consequent social and environmental influences and dysfunctions (Penz, 1986).

Currently, the economy and financial markets are practically inseparable and have reached a magnitude capable of dictating economic, environmental, and social directions (Moreno-Casas & Bagus, 2021). Most of the millions of individuals that make up society do not have the knowledge, skills, and access to the tools necessary to coexist in a system exclusively dependent on its workforce and mass consumption (Hayek, 1982).

In this way, the perceptions of the benefits resulting from the increase in the quality of life and the feeling of progress caused by the economic growth of the last seven decades (Lam, 2011) end up overshadowing the reflection of individuals about their contexts and discouraging the debate on the unsustainability of the rhythm economic. Thus, a mistaken concept of sustainability is built into people's

ideas, especially in the most socioeconomically vulnerable, that economic development and social and environmental sustainability principles are inversely proportional (Hayek, 1982).

If starting from the economic-financial interest, it is so difficult to consider the tripartite premise of sustainability (Lafferty & Meadowcroft, 2000; Dresner, 2002); nothing more propitious than using social science as a guideline to face the social lethargy that governs thoughts and limits people's actions (Wacquant, 2002). The relevance of aligning these two fields of knowledge is overcoming the instrumental approach of financial education, which does not guarantee anything other than the perpetuation of the current economic arrangement in force (Birochi & Pozzebon, 2016). Furthermore, prove the multiplier factor of financial literacy in the economy, society, and environment (Spaargaren, 2000; Cohen, 2005).

Critical and emancipatory financial education is based on shared values and practices that seek to combat humanitarian and social problems through empowerment, aiming at freedom and quality of life in the individual and collective spheres (Burkett & Sheehan, 2009; Cabraal, 2010). In line with sustainability, these objectives will be complemented and enhanced by the effort to preserve the essential conditions for human existence. The individual with no autonomy to handle their finances and consumption in the current world fails to understand that money, *per se*, cannot guarantee a secure future, much less a prosperous legacy.

Research in financial education and sustainability comes up against conceptual consistency, the lack of exploration of dialogues external to traditional financial education, and the lack of instrumentation (Couto, Maracajá & Machado, 2022a). In this way, works committed to trimming these edges contribute to scientific progress, meeting social, economic, and environmental improvements. This study uses the dimensions proposed by Couto, Maracajá & Machado (2022b) as a basis.

It addresses the following problem: "" and aims to propose and validate an instrument with the main variables of knowledge, skills, and attitudes that involve this relationship. Face and content validation was carried out by eleven specialists, five from the financial education area and six from the sustainability area. Given the incipient panorama of investigation in the two areas studied, it becomes more relevant to advance conceptual approaches and instrumentation so that future studies have robustness and consistency in their applications.

Literature review

In educational and scientific research programs, the scope of financial education is defined according to the interests of the promoters or recipients (Huston, 2010), making the definition of topics and their extensions complex and subjective. When the intervention is punctual, the impacts produced are insignificant, with a drop in the learning curve (Fernandes, Lynch & Netemeyer, 2014). For this reason, any financial education program needs to be broad and consistent to promote significant social transformations (Birochi & Pozzebon, 2016).

Many studies have discussed mainly the benefits of financial education and literacy in the budget (Cole, Sampson & Zia, 2011; Ribeiro & Soares, 2016), the level of savings (Fan & Zhang, 2021), in investments (Hastings & Ashton, 2008; Veld-Merkoulova, 2011; Narula, 2022), risk management (Tavares *et al.*, 2020; Zhu & Xiao, 2021), credit acquisition and indebtedness behavior (Scheresberg, 2013; Cude, Chatterjee & Tavosi, 2020), in planning for retirement (Bucher-Koenen & Lusardi, 2011; Mitchell & Lusardi, 2015), in entrepreneurship (Burchi *et al.*, 2021), well-being and happiness (Xiao, Tang & Shim, 2008), in health and exercise (Ono *et al.*, 2021; Yuktadatta, Khan & Kadoya, 2021), in the empowerment of the poor (Mayoux, 2010), in information technology (Birochi & Pozzebon, 2016), in the consumption (Dwyer, 2009), and a multitude of investigations.

The potential of financial education in sustainable behaviors is capable of generating innovative solutions in consumption and credit behavior (Cohen, 2007), in services, especially financial ones (Anderson *et al.*, 2013), to support sustainable actions in micro and small businesses (Rahmandoust *et al.*, 2011; Ye & Kulathunga, 2019), in promoting sustainable economic growth (Bryant, 2013) and in assiduity and increased participation in capital markets (Van Rooij, Lusardi & Alessie, 2011). Another perspective analyzed is the contribution of financial education to the pressure of consumers on companies to develop innovations capable of improving the environmental performance of their products and services, with the objective of mitigating climate change and environmental damage (Luo & Cheng, 2022).

Financial literacy is indispensable for developing managerial skills, which imply achieving goals, not restricted only to the possession of financial resources (Caplinska & Danilevi a, 2019). The 2008 economic crisis explains that financial illit-

eracy promotes and makes it challenging to face crises (Swiecka *et al.*, 2020), generating more social and environmental problems. Thus, there is a need to investigate the relationship between financial education and sustainability in behavior and its main effects on indebtedness, savings, investments, consumption, production, and waste disposal and, mainly, on future expectations; it is in this perspective that this study focuses.

Methodological Proposal

This research aimed to propose and validate an instrument with the variables that make up the dimensions of the relationship between financial education and sustainability in behavior. The type of instrument proposed was the questionnaire, justified by the ability to measure various constructs through aggregated item scores, as well as by its advantages of time, cost, scope, convenience, standardization, anonymity, and minimization of bias in the interview process (Oosterveld, Vorst & Smits, 2019). This study has a qualitative-descriptive character (Gil, 2007; Creswell, 2009) and exploratory nature (Sampieri, Collado & Lucio, 2006), as we understand that conceptual and instrumental advances in the investigated fields strengthen further future statistical deepening.

The experts' face and content validation (Awang, Aji & Osman, 2018) sought to mitigate a possible low quality of data related to the design, adequacy, and writing of the items (Elangovan & Sundaravel, 2021). The study had two validation rounds with 11 participants, 6 of sustainability and 5 of finance. The first round took place between 04/01/2022 and 04/04/2022 and consisted of general consultation, allowing choices in the conceptual and instrumental approach. The second round occurred between 07/04/2022 and 07/07/2022, and the final instrument was proposed to be validated at this stage.

The refinements and reflections made possible by the support of two rounds strengthen the quality and reliability of the instrument and the research itself (Creswell, 2009), especially about variables, attributes, values, and relationships between variables (Morais, 2005). Two antecedent factors were considered: financial education and sustainability, four behavioral factors: personal/household budget,

credit and indebtedness, savings and investment and consumption and waste, and a consequent factor: future and legacy, as shown in Table 1.

Table 1. Dimensioned elements of the framework

| Factor | Dimension | Attributes |
|-------------------|-------------------------------|---|
| Antecedent | Financial education | Knowledge, understanding and awareness |
| | Sustainability | Knowledge, understanding and awareness |
| Behavior | Personal and household budget | Behaviors and practices |
| | Credit and indebtedness | Behaviors and practices |
| | Savings and investment | Behaviors and practices |
| | Consumption and waste | Behaviors and practices |
| Consequent | Future and legacy | Expectations and assessment of consequences |

Source: Couto, Maracajá & Machado (2022b)

The specialists evaluated the items through two factors: 1) degree of adequacy of the item to the dimension and 2) clarity of the statement; both used scales (Bermudes *et al.*, 2016). The Likert scale with five ranking points was chosen as it better suits the research objective (Appolinário, 2007), as shown in Table 2.

Table 2. Evaluation of items in the face and content validation

| Adequacy of the item on the scale | | | | |
|-----------------------------------|------------------|----------------|-------------------|-----------------|
| 1 = Inadequate | 2 = Not suitable | 3 = Reasonable | 4 = Very suitable | 5 = Perfect fit |
| Clarity of statement | | | | |
| 1 = Very bad | 2 = Bad | 3 = Reasonable | 4 = Good | 5 = Very good |

The cadence and order of the criteria continue to comply with the criteria of quality and reliability (Creswell, 2009). The criteria presented in Table 3 were adopted in decision-making on the item's maintenance, exclusion, and adequacy in the dimensions.

Table 3. Criteria for maintenance, exclusion, or adequacy of the item in the dimension

| Average result | Action |
|------------------|--|
| < 3 | Delete instrument item. |
| ≥ 3 e < 4 | Re-evaluate, rewrite and decide to keep or delete the item. |
| ≥ 4 | Keep item in the instrument and decide on its adaptation in case of suggestions. |

Using consistent criteria brings security and, at the same time, flexibility for the researcher to make research decisions. Once the detailed description of the methodological treatments is finished, the results will be presented and discussed in the following section.

Presentation and Interpretation of Results

The discussion will be divided according to dimensions for a better understanding and clarity of the results. The items evaluated in the second round of the survey will be presented with the averages obtained in the criteria of suitability and clarity of the item. After the appreciations and in sequence, the actions adopted will be presented, given the averages, comments, and suggestions, as well as the final result of each item.

FINANCIAL EDUCATION

This dimension aims to identify the levels of awareness, understanding, and knowledge of the fundamentals of financial education and has a total of 18 propositions, presented in Table 4. The studies that supported the constructs of this dimension were: Grable and Joo (1999), Bernheim, Garrett and Maki (2001), Lusardi and Mitchell (2007a), Orton (2007), Remund (2010), Atkinson and Messy (2012), Hastings, Madrian and Skimmyhorn (2013), Lusardi, Mitchell and Curto (2010), Huston (2010), Flores, Vieira and Coronel (2013), Zhu and Chou (2018), Lusardi and Mitchell (2011a; 2011b; 2014) Atkinson and Messy (2012) and Brown and Graf (2013).

The following constructs were addressed: understanding of the forms of money (FE1), the inflationary effect (FE2), the validity of currencies (FE4), the veracity of currencies (FE5), the National Financial System (FE6), the exchange rate (FE7 and FE8), means of payment (FE3), taxes (FE10), behavioral finance elements (FE11, FE13, and FE16), analysis of external factors (FE9), trust and learning ability (FE12 and FE15), citizenship (FE14 and FE17) and information security behaviors (FE18).

Table 4. Items proposed in the Financial Education dimension

| Initials | Proposed item | Average Adequacy | Average Clarity |
|----------|--|------------------|-----------------|
| FE1 | I know that money can take many forms, and each has advantages and disadvantages. | 4,36 | 3,73 |
| FE2 | I understand that the purchasing power of money can vary over time. | 4,55 | 4,73 |
| FE3 | I understand how most available payment methods work: cash, checks, credit, debit and prepaid cards, vouchers, coupons, pix, and other online payment methods, among others. | 4,64 | 4,64 |
| FE4 | I am aware that banknotes and coins can expire or become obsolete over time, and I know how to change them if necessary. | 4,82 | 4,55 |
| FE5 | I know how to identify genuine banknotes and coins and what to do if you find counterfeit money. | 4,55 | 4,36 |
| FE6 | I know which institutions make up the financial system, the role of each of them, and how to activate institutions and supervisory bodies when necessary. | 4,27 | 4,45 |
| FE7 | I know what an exchange rate is and how to apply it to convert values into different currencies. | 4,27 | 4,64 |
| FE8 | I understand that exchange rates vary depending on different factors, impacting the prices of many products and services of which I am a regular or potential consumer. | 4,45 | 4,45 |
| FE9 | I am aware that political, economic, and environmental issues are capable of interfering with my financial life. | 4,82 | 4,82 |

| | | | |
|------|--|------|------|
| FE10 | I am aware of the incidence and treatment of taxes applied to rents, rents, borrowing and investment income. | 4,55 | 4,27 |
| FE11 | I am aware that the choices I make for my career or investment influence my financial life. | 4,45 | 4,64 |
| FE12 | If I do not know a financial subject, I know where I can find the information, and I feel capable of learning. | 4,27 | 4,45 |
| FE13 | I am aware that certain financial products suit an individual according to personal/family, social, cultural, ethnic, and religious factors. | 4,82 | 4,64 |
| FE14 | I am aware that some essential formal financial products are universal rights. | 4,36 | 3,82 |
| FE15 | I feel prepared to evaluate information, manage and make financial decisions. | 4,45 | 4,64 |
| FE16 | I am aware that personality traits and emotions can affect investment decisions. | 4,64 | 4,55 |
| FE17 | I consider financial literacy essential for adult life and should be mandatory in primary education. | 4,82 | 4,64 |
| FE18 | I am careful with my personal information and access passwords, and I check information to avoid scams and fraud. | 4,73 | 4,91 |

According to Table 4, all the means of the adequacy of the criteria were high, and for this reason, there was no exclusion of items; however, the comments and suggestions of experts were taken into account to improve the writing of all sentences. There was a distribution of item FE10 in the dimensions “credit and indebtedness” and “savings and investment” and the division of items FE4 and FE17 for a better approach, as shown in Table 5.

Table 5. Financial Education dimension after validation

| Initials | Result | Action | Reevaluated item |
|----------|---|---------|--|
| FE1 | Six suggestions to the item's restructuring and an example of what "currency" is. | Rewrite | Money can take many tangible and intangible forms (currency, paper money, scriptural money, among others), each of which has advantages and disadvantages. |

| | | | |
|------|---|----------|---|
| FE2 | Adequacy of the initial verb to avoid response tendencies. | Rewrite | The purchasing power of money can vary over time. |
| FE3 | One suggestion to suppress repeated ideas. | Rewrite | I understand how most available payment methods work: cash, checks, credit, debit and prepaid cards, vouchers, coupons, pix, and other payment methods. |
| FE4 | Three comments about sentence construction and ambiguity in the item. | Split | Banknotes and coins can expire or become obsolete over time. I know how to exchange invalid and obsolete banknotes and coins when necessary. |
| FE5 | Two suggestions regarding the term "genuine.". | Rewrite | I know how to identify genuine (real, valid) banknotes and coins and what to do if you find counterfeit money. |
| FE6 | One suggestion regarding the construction of the sentence. | Rewrite | I can identify the public and private institutions that make up the National Financial System, their role, and how to activate them, if necessary. |
| FE7 | One suggestion about the item's relevance in the dimension: however, it is understood that exchange rates are part of the scope of financial education. | Rewrite | I know what exchange rates are and how to apply them to convert values into different currencies. |
| FE8 | One suggestion about the bias of the verb "understand.". | Rewrite | Exchange rates vary depending on different factors, impacting the prices of many products and services of which I am a regular or potential consumer. |
| FE9 | Two suggestions about the bias of the terms "I am aware" and the need to add the term "social.". | Rewrite | Political, economic, social, and environmental issues can interfere with my financial life. |
| FE10 | Two suggestions on the best suitability of the item in the dimensions "credit and indebtedness" and "savings and investment" separately. | Relocate | |

| | | | |
|------|---|---------|---|
| FE11 | Two suggestions on the need for greater sentence coverage. | Rewrite | Life decisions, career, personal life, lifestyle, credit, or investment influence financial life. |
| FE12 | Two suggestions on sentence construction. | Rewrite | I know where I can look for financial information and knowledge, and I feel capable of learning. |
| FE13 | Adequacy of the initial expression so as not to cause response tendencies, suggested in previous items. | Rewrite | Certain financial products suit individuals according to personal/family, social, cultural, ethnic, and religious factors. |
| FE14 | Five suggestions about the need for exemplification. | Rewrite | Some formal financial services are universal rights, such as accounts for receiving salaries and wages, access to a debit card, withdrawals and transfers between accounts, statements of movement, and clearing of checks, respecting the limits and rules established in current legislation. |
| FE15 | One suggestion as to the existence of three factors being evaluated in the item. | Rewrite | I feel able to evaluate information and make financial decisions. |
| FE16 | One suggestion about the sentence coverage. | Rewrite | Personality traits and emotions can affect financial decisions, such as borrowing and investing. |
| FE17 | Two suggestions about the existence of two factors being evaluated in the item and regarding the term "adult life." | Split | Financial literacy is essential for life. Financial education should be offered on a mandatory basis in primary education. |
| FE18 | Two suggestions regarding sentence construction. | Rewrite | I protect my personal information and access passwords, and check information to avoid being a victim of fraud and financial scams. |

This dimension increased from 18 to 19 items, which enabled better performance in capturing familiarity with financial education concepts to understand the individual's position in the economy; it is essential to understand the fundamentals of currency, its validity and veracity, the exercise of citizenship that involves knowledge of the National Financial System and its institutions, the concepts of exchange, taxes, inflation and the multiple means payment, behavioral elements in decisions, impact of external factors, trust, ability to learn and behaviors to protect sensitive information.

It is intended to confirm whether the level of knowledge in financial education positively affects budget control, habits and knowledge of credit, indebtedness, savings, investment, and consumption, and to what extent they can influence expectations for the future and legacy. It is also intended to verify what kind of relationship exists between the knowledge of financial education and the sustainability dimension and the production and disposal of waste, which is not yet verified in the literature.

SUSTAINABILITY

This dimension aims to identify levels of awareness, understanding, and knowledge about concepts of environmental education and sustainability. It had a total of 16 propositions, presented in Table 6. The studies used in the construction of this dimension were: Hines, Hungerford, and Tomera (1987), Dunlap *et al.* (2000), Kollmuss and Agyeman (2002), Dunlap and Van Liere (2008), Jickling and Wals (2008), Jones and Dunlap (2010), Steffen *et al.* (2015) and Hursh, Henderson and Greenwood (2015).

The following constructs were addressed: perception of environmental balance (S1), the influence of behavior on natural resources (S2), understanding of biodiversity (S3), distribution of water (S4) and food (S5), level of knowledge about the National Environment System (S6, S7, and S8), deforestation (S9), the importance of native populations (S10), sustainable behavior (S11), perception of social vulnerability (S12) and sustainable economy (S13, S14, and S15) perception of citizenship in sustainability (S16).

Table 6. Items proposed in the Sustainability dimension

| Initials | Proposed item | Average Adequacy | Average Clarity |
|----------|--|------------------|-----------------|
| S1 | I understand that a balanced environment is an indispensable factor for the perpetuation of human life. | 4,64 | 4,55 |
| S2 | I understand that consumption impacts the need for high energy levels and raw materials, which can cause the depletion of natural resources. | 4,55 | 4,73 |
| S3 | Man needs to respect and coexist in biodiversity, as he is just another form of life among the others. | 4,55 | 4,55 |
| S4 | I believe that water distribution, availability, and quality depend on the collective effort between public, private, and civil society. | 4,73 | 4,64 |
| S5 | Currently, we have the best methods, techniques, and food distribution channels, so there is no waste. | 4,27 | 4,45 |
| S6 | I know which institutions and bodies make up the National Environment System and the function of each one. | 4,73 | 4,73 |
| S7 | I believe that the institutions and bodies responsible for environmental crimes are prepared and have the necessary resources to carry out their work in the best possible way. | 4,27 | 4,64 |
| S8 | I know whom to turn to and how to report a suspected or environmental crime. | 4,64 | 4,64 |
| S9 | I am aware that deforestation promotes harm, such as destruction of biodiversity, erosion, soil impoverishment, desertification, rising temperatures, floods, and silting of rivers. | 4,55 | 4,82 |
| S10 | I believe that indigenous populations contribute to environmental preservation. | 4,55 | 4,45 |
| S11 | I believe that individual sustainable habits and actions can promote large-scale changes. | 4,45 | 4,55 |
| S12 | I believe that socially vulnerable people are more exposed to precarious environmental conditions. | 4,82 | 4,64 |

| | | | |
|-----|--|------|------|
| S13 | I believe that it is possible to develop an economy that respects natural limits and manages to promote social well-being. | 4,82 | 4,64 |
| S14 | It is possible to generate employment and income through environmental preservation, such as ecotourism. | 4,55 | 4,27 |
| S15 | Sustainable institutions increase the wealth of society. | 4,36 | 4,18 |
| S16 | I consider environmental education and education for sustainability essential for adult life and should be offered as a mandatory part of primary education. | 4,64 | 4,55 |

As shown in Table 6, all the means of the adequacy of the criteria were high, and for this reason, there was no exclusion of items, but there was a division of item S16, as it was understood that it measured two different factors. With the exception of items S3, S5, and S8, the others were rewritten according to the suggestions, as shown in Table 7.

Table 7. Sustainability dimension after validation

| Initials | Result | Action | Reevaluated item |
|----------|--|----------|---|
| S1 | Adequacy of the initial verb so as not to cause response tendencies, suggested in previous items. | Rewrite | A healthy and balanced environment is an indispensable factor for the perpetuation of human life. |
| S2 | Adequacy of the initial verb so as not to cause response tendencies, suggested in previous items. | Rewrite | The act of consuming, in general, influences the need for energy and raw materials, which can cause the depletion of natural resources. |
| S3 | One suggestion that S3 evaluates the same as S1. Suggestion not accepted, as this item evaluates "biodiversity". | Maintain | Man needs to respect and coexist in biodiversity, as he is just another form of life among the others. |
| S4 | One suggestion regarding the verb "I believe". | Rewrite | The distribution, availability, and quality of water depend on the collective effort between public, private, and civil society. |

| | | | |
|-----|--|----------|--|
| S5 | Relevant averages and no comments. | Maintain | Currently, we have the best methods, techniques, and food distribution channels, so there is no waste. |
| S6 | Adequacy to the sentence construction standards mentioned in previous items. | Rewrite | I can identify institutions that make up the National Environment System, the function of each of them, and how to activate them, if necessary. |
| S7 | Adequacy to the sentence construction standards mentioned in previous items. | Rewrite | The institutions and bodies responsible for investigating and punishing environmental crimes are prepared and have the necessary resources to carry out their work in the best possible way. |
| S8 | Relevant averages and no comments. | Maintain | I know whom to turn to and how to report a suspected or environmental crime. |
| S9 | One suggestion is that the item measures the same as S1 and S3. Suggestion not accepted since the item evaluates "deforestation." Adequacy to the sentence construction standards mentioned in previous items. | Rewrite | Deforestation promotes harm, such as destruction of biodiversity, erosion, soil impoverishment, desertification, rising temperatures, floods, and silting of rivers. |
| S10 | One suggestion regarding the verb "I believe" and another stating that the item is out of context. It was decided to change from "indigenous" to "native." | Rewrite | Native populations contribute to environmental preservation. |
| S11 | One comment to insert the term "collectives" and adequacy of the initial verb to not cause response tendencies, suggested in previous items. | Rewrite | Individual sustainable habits and actions are capable of promoting collective and large-scale changes. |

| | | | |
|-----|---|---------|--|
| S12 | One accepted suggestion to change the expression "precarious environmental conditions" for "environmental risks" and adequacy of the initial verb to not cause response tendencies was suggested in previous items. | Rewrite | Socially vulnerable people are more exposed to environmental risks. |
| S13 | Adequacy of the initial verb so as not to cause response tendencies, suggested in previous items. | Rewrite | It is possible to develop an economy that respects natural limits and manages to promote social well-being. |
| S14 | Five comments on the term "ecotourism". We opted for the removal of the term to give generalization to the item. | Rewrite | It is possible to generate employment and income through environmental preservation initiatives. |
| S15 | Three comments on the term "institutions" and "wealth". It was decided to specify the first term and replace the second. | Rewrite | Sustainable institutions, public and private, increase the well-being of society. |
| S16 | Three suggestions about the existence of two factors being evaluated in the item. The same action adopted in item FE17 was followed. | Split | Environmental education and education for sustainability are essential for life. Environmental education should be addressed consistently in basic education. |

This dimension increased from 16 to 17 items, improving the ability to access knowledge about environmental education and sustainability, which is due to previous exposure and awareness of the importance of environmental balance, natural resources, including biodiversity and water, a critical view of food distribution, of certain levels of knowledge about the National Environment System, the harm caused by deforestation, the role of native populations, the feasibility of a sustainable economy, the level of citizenship involved in sustainability, the perception of social vulnerabilities arising from unbalanced environmental factors and from the citizenship involved in sustainable behavior.

It is intended to confirm whether the level of knowledge of environmental education and sustainability interfere with consumption and in the production and disposal of waste, as well as in the expectations of the future and legacy. It is intended to verify what kind of relationship exists between the level of knowledge in environmental education and sustainability with the dimensions of financial education, budget, credit and indebtedness, and savings and investments.

PERSONAL AND HOUSEHOLD BUDGET

This dimension aims to identify the knowledge and practices about the personal/domestic budget and had a total of 22 propositions, presented in Table 8. For the proposition of the items, the following literature was used: Lusardi and Mitchell (2007b), Sehn and Feil (2018), Pereira (2011), Tomášková, Mohelská and Němcová (2011), Ribeiro and Soares (2016), Deaton (2019) and Kurowski (2021).

The following constructs were addressed: knowledge, planning, and control of income and income (B1, B2, B3, and B4), knowledge, planning, and control of income and variable income (B5), perception of income in the standard of living (B6), knowledge, planning, and control of expenses (B7, B8, B9, and B10), knowledge, planning, and control of fixed and variable expenses (B11), perception of expenses in the standard of living (B12), transaction cost practices (B13), use of budgeting methods and tools (B14), sharing ability (B15), analytical and decision-making ability (B17, B18, B19, and B22) and budget control (B16, B20, and B21).

Table 8. Items proposed in the Household/personal budget dimension

| Initials | Proposed item | Average Adequacy | Average Clarity |
|----------|--|------------------|-----------------|
| B1 | I understand that income is the money that goes into the budget (salaries and wages, rents, leases, income, among others). | 4,78 | 4,78 |
| B2 | I carry out realistic planning of future income | 4,78 | 4,78 |
| B3 | Record and compare budgeted versus realized revenues. | 4,78 | 4,78 |
| B4 | I look for ways to earn enough income to meet the period's expenses. | 4,78 | 4,44 |

| | | | |
|-----|---|------|------|
| B5 | I am aware that an individual's net income may fluctuate over time. | 4,67 | 4,33 |
| B6 | I understand that it is necessary to earn enough income to achieve the standard of living I desire now and in the future. | 4,67 | 4,56 |
| B7 | I understand that expenses are the outflows of money from the budget (spending on health, education, housing, food, leisure, taxes, and other financial obligations to be fulfilled). | 4,78 | 4,78 |
| B8 | I carry out realistic planning of future expenses. | 4,56 | 4,78 |
| B9 | Record and compare budgeted versus actual expenses. | 4,78 | 4,78 |
| B10 | I look for ways to adjust my expenses to the period's income. | 4,67 | 4,56 |
| B11 | I consider fixed and variable expenses and try to minimize the impacts of unexpected expenses. | 4,50 | 4,75 |
| B12 | I understand that it is necessary to spend intelligently and consciously to enjoy the standard of living that I want in the present and future. | 4,44 | 4,67 |
| B13 | I consider the financial transaction costs of each payment method before using them. | 4,67 | 4,67 |
| B14 | I use appropriate methods to manage personal/home finances. | 4,44 | 3,88 |
| B15 | I feel comfortable discussing household budgeting with others when necessary. | 4,22 | 4,44 |
| B16 | I know the importance of recording, filing, and tracking financial facts to build healthy financial habits. | 4,67 | 4,67 |
| B17 | I calculate, interpret and compare prices, products, and suppliers before making decisions. | 4,78 | 4,78 |
| B18 | I understand that my personal decisions and life choices influence the financial conditions and quality of life I will have in the future. | 2,91 | 4,82 |
| B19 | I set priorities, cut expenses, and change and adjust my financial plans when necessary. | 4,63 | 4,75 |

| | | | |
|-----|---|------|------|
| B20 | I check if mistakes were made when making payments and purchases, which can hurt my budget. | 4,56 | 4,78 |
| B21 | I periodically reassess the adequacy of the financial products held. | 4,56 | 4,44 |
| B22 | I consider my budgetary conditions and capabilities before making decisions. | 4,78 | 4,67 |

According to Table 8, the worst average for the adequacy criterion was B18 (2.91); the average value and the similarity with the EF11 resulted in the exclusion of the item in this dimension; as for the clarity of statement criterion, the worst average was for item B14 with 3.88, which implied the restructuring of the item. Also, B5 was divided into two sentences to cover the concepts of gross income and net income; for the others, the comments were taken into account, except for items B2, B8, B15, B19, and B20, which remained as brought in Table 9.

Table 9. Household/personal Budget dimension after validation

| Initials | Result | Action | Reevaluated item |
|----------|--|----------|---|
| B1 | Relevant averages and no comments. | Maintain | I understand that income is the money that goes into the budget (salaries and wages, rents, leases, income, among others). |
| B2 | Relevant averages and no comments. | Maintain | I carry out realistic planning of future income. |
| B3 | One comment suggests specifying "budgeted revenues" and "actualized revenues". | Rewrite | Record and compare budgeted (planned) versus actual (that have already happened or are happening) revenues. |
| B4 | Two suggestions for specifying "period". | Rewrite | I look for ways to earn enough income to meet expenses for a certain period (weekly, fortnightly, monthly, and yearly, among others). |

| | | | |
|-----|--|----------|---|
| B5 | Three suggestions for replacing the terms "float", "according to the period," and "income". Adequacy of the initial verb to not cause trends in the response suggested in previous items and division of the item to encompass the understanding of gross income and net income. | Split | I understand the difference between gross income and net income. An individual's net income can fluctuate over time for various factors. |
| B6 | One suggestion to differentiate the present and future sense of the sentence. | Rewrite | It is necessary to earn enough income to enjoy the standard of living that I want in the present and that I aspire to in the future. |
| B7 | Adequacy of the initial verb so as not to cause response tendencies, suggested in previous items. | Rewrite | Expenses are the outflows of money from the budget (spending on health, education, housing, food, leisure, taxes, and other financial obligations to be fulfilled). |
| B8 | Relevant averages and no comments. | Maintain | I carry out realistic planning of future expenses. |
| B9 | Item adequacy, following the pattern, suggested in B3. | Rewrite | Record and compare expenses (planned) versus actual expenses (which have already happened or are happening). |
| B10 | Item adequacy, following the pattern, suggested in B4. | Rewrite | I look for ways to adjust my expenses to the income of a certain period (weekly, fortnightly, monthly, and yearly, among others). |
| B11 | One suggestion to better adapt the concept of "fixed and variable expenses". | Rewrite | In my budget, I consider that for each period (weekly, fortnightly, monthly, annual, among others), there are expected expenses, which may have fixed or variable amounts, and unexpected ones. |

| | | | |
|-----|---|----------|---|
| B12 | Two comments suggest that the item measures the same as B6; however, B6 measures income and B12 expenses. | Maintain | I understand that it is necessary to spend intelligently and consciously to enjoy the standard of living that I want in the present and future. |
| B13 | One suggestion to exemplify "means of payment". | Rewrite | I take into account the costs of the financial transactions of each payment method before using them (cash, checks, credit, debit and prepaid cards, vouchers, coupons, pix, and other online payment methods, among others). |
| B14 | Five suggestions for exemplifying what would be "methods". We opted for the insertion of the term "tools". | Rewrite | I use methods and tools to improve the management of personal/domestic finances (notes, spreadsheets, and Apps, among others). |
| B15 | Relevant averages and no comments. | Maintain | I feel comfortable discussing household budgeting with others when necessary. |
| B16 | One suggestion for the insertion of the term "documents", adequacy of the initial verb so as not to cause response tendencies, suggested in previous items. | Rewrite | It is essential to record, archive records and documents, and track financial facts to build healthy financial habits. |
| B17 | One suggestion to insert the term "purchase" and a suggestion to restructure the sentence. | Rewrite | I try to calculate, compare and interpret prices, and analyze products and suppliers before making purchase decisions. |
| B18 | Item measures the same as FE11 | Delete | |
| B19 | Relevant averages and no comments. | Maintain | I set priorities, cut expenses, and change and adjust my financial plans when necessary. |
| B20 | Relevant averages and no comments. | Maintain | I check if mistakes were made when making payments and purchases, which can hurt my budget. |

| | | | |
|-----|--|---------|---|
| B21 | Two suggestions to exemplify what would be "financial products". | Rewrite | I periodically reassess the financial products I have (accounts, credit cards, limits and lines of credit, insurance, investments, among others). |
| B22 | One suggestion to specify "decisions". | Rewrite | I consider my budgetary conditions and capabilities before making any decision that impacts my budget. |

This dimension increased from 22 to 23 items, which will allow capturing the levels of knowledge, planning, and control of income and expenses, the adequacy of lifestyle to the budget, the methods and tools used in budget management, and the ability to talk about the budget with interested parties and the analytical and decision-making capacity applied to the elements of this dimension.

The intention is to confirm the extent to which budgeting practices are influenced by the level of financial education knowledge and to what time they can influence credit and indebtedness behaviors, savings and investment levels, and consumption habits. Additionally, it is intended to verify the relationship between budget control and knowledge of sustainability and the production and disposal of waste, as well as their influences on the future and legacy.

CREDIT AND INDEBTEDNESS

This dimension aims to identify knowledge, behaviors, and practices about credit and indebtedness and has a total of 19 propositions, presented in Table 10. The studies based on the constructs of this dimension were: Marques and Frade (2003), Levine (2005), Lyons, Rachlis and Scherpf (2007), Hill and Kozup (2007), Stango and Zinman (2008), Lusardi and Tufano (2009), Gathergood (2012), Agarwal and Mazumder (2013), Gerardi, Goette and Meier (2013), Scheresberg (2013), Zinman (2015), Silva, Silva Neto and Araújo (2017) and Cude, Chatterjee and Tavosi (2020).

The approach of the following constructs was chosen: understanding of interest rates (CI1), understanding of taxes (CI2), well-being and quality of life (CI3 and

CI13), compliance with deadlines and conditions (CI4, CI7, CI8, and CI17), vision for amortization (CI5), understanding of insolvency (CI9 and CI10), analytical and decision-making capacity in credit (CI6, CI14, CI16, and CI19), budget understanding and control (CI12 and CI15) and risk perception (CI11 and CI18).

Table 10. Items proposed in the Credit and Indebtedness dimension

| Initials | Proposed item | Average Adequacy | Average Clarity |
|----------|--|------------------|-----------------|
| CI1 | I know how to apply interest rates on loans and financing. | 4,64 | 4,82 |
| CI2 | I know the taxes that involve most credit operations. | 4,73 | 4,82 |
| CI3 | I recognize the relationship between current indebtedness and future financial well-being. | 4,73 | 4,55 |
| CI4 | I meet deadlines and commitments as agreed. | 4,82 | 4,82 |
| CI5 | I evaluate the benefits of amortization or early settlement of debts. | 4,73 | 4,82 |
| CI6 | When I need to take out some credit, I always research and compare the conditions in the public institutions before making decisions. | 4,73 | 4,64 |
| CI7 | I seek help, talk to creditors and try to negotiate terms in advance if I cannot honor the debt. | 4,82 | 4,82 |
| CI8 | I take steps to avoid delays in payments. | 3,36 | 4,73 |
| CI9 | I am aware of the implications of non-payment of debt and taxes on credit scores and access to public services. | 4,73 | 4,45 |
| CI10 | I prioritize certain debts in case they become unmanageable. | 4,82 | 4,82 |
| CI11 | I make informed and conscious decisions about the financial and social consequences and responsibilities of accepting to be a guarantor or guarantor of third-party credit operations. | 4,73 | 4,73 |
| CI12 | I believe carrying out, monitoring, and controlling the budget can avoid indebtedness. | 4,73 | 4,73 |
| CI13 | I think debts are capable of interfering with my quality of life. | 4,73 | 4,82 |

| | | | |
|------|---|------|------|
| CI14 | I assess my ability to pay before taking out loans. | 4,73 | 4,64 |
| CI15 | Budget control brings more peace of mind so that it is possible to choose the best conditions in case of need for indebtedness. | 4,73 | 4,64 |
| CI16 | I am able to differentiate and assess what type of credit can increase my income and wealth in the future of consumer credit. | 4,73 | 4,36 |
| CI17 | I do my best to maintain good payer evaluation (score) levels. | 3,55 | 4,64 |
| CI18 | I understand the risks and differences between formal and informal credit providers. | 4,73 | 4,82 |
| CI19 | It analyzes the pros and cons of the different lines and conditions of credit available, according to your objectives. | 4,64 | 4,64 |

According to Table 10, the worst evaluations in the adequacy criterion were for items CI8, with an average of 3.36, and CI17, with an average of 3.55, which ended up being suppressed in item CI4; as for the clarity of statements, although all items have reached relevant averages for maintenance, it was decided to rewrite CI3, CI4, CI6, CI9, CI11, CI12, CI13, CI14, CI16, and CI19, considering the comments and suggestions, verified in Table 11.

Table 11. Credit and Indebtedness dimension after validation

| Initials | Result | Action | Reevaluated item |
|----------|---|----------|---|
| CI1 | Relevant averages and no comments. | Maintain | I know how to apply interest rates on loans and financing. |
| CI2 | Relevant averages and no comments. | Maintain | I know the taxes that involve most credit operations. |
| CI3 | One suggestion for rewriting, including the concept of financial sacrifice. | Rewrite | Indebtedness in the present can sacrifice income and financial well-being in the future. |
| CI4 | Four suggestions to suppress CI4 and CI8 in a single sentence. | Rewrite | I do my best to fulfill deadlines and take measures to avoid payment delays, thus maintaining the best levels of good payer evaluation (score). |

| | | | |
|------|---|----------|---|
| CI5 | Relevant averages and no comments. | Maintain | I evaluate the benefits of amortization or early settlement of debts. |
| CI6 | One suggestion to rewrite the section "condition in institutions" and a suggestion to include "negotiation of conditions". | Rewrite | When I need to take out some credit, I always research and compare the conditions offered by different institutions and try to negotiate before making decisions. |
| CI7 | Relevant averages and no comments. | Maintain | I seek help, talk to creditors and try to negotiate terms in advance if I cannot honor the debt. |
| CI8 | Four suggestions to suppress CI4 and CI8 in a single sentence. | Delete | |
| CI9 | An unheeded suggestion is that CI9 measures the same thing as CI1 and CI2. A heeded suggestion to rewrite the sentence and improve understanding. | Rewrite | The non-payment of debts and taxes can influence the assessment of good payers (score) and even access to public services. |
| CI10 | Relevant averages and no comments. | Maintain | I prioritize certain debts in case they become unmanageable. |
| CI11 | One suggestion to rewrite the sentence. | Rewrite | There are financial and social risks and responsibilities in accepting to be a guarantor or guarantor of third-party credit operations. |
| CI12 | Adequacy of the initial verb to avoid response tendencies suggested in previous items. | Rewrite | The realization, monitoring, and control of the budget can avoid indebtedness. |
| CI13 | Adequacy of the initial verb to avoid response tendencies suggested in previous items and deletion of the word "my". | Rewrite | Debts are capable of interfering with the quality of life. |

| | | | |
|------|--|----------|---|
| CI14 | A suggestion for the inclusion of "funding". | Rewrite | I assess my ability to pay before taking on loans and funding. |
| CI15 | Relevant averages and no comments. | Maintain | Budget control brings more peace of mind so that it is possible to choose the best conditions in case of need for indebtedness. |
| CI16 | One suggestion to rewrite the sentence. | Rewrite | I can differentiate what type of credit can increase my income and wealth in the future from consumer credit. |
| CI17 | Item suppressed in CI4 | Delete | |
| CI18 | Relevant averages and no comments. | Maintain | I understand the risks and differences between formal and informal credit providers. |
| CI19 | Two suggestions for re-writing the sentence. | Rewrite | I analyze the pros and cons of the different lines and conditions of credit available according to my goals. |

Although the items in this dimension have been reduced from 19 to 17, it continues to measure, without loss of consistency, knowledge about interest rates and taxes, behavior in seeking credit and conditions, perceptions of quality of life and health, commitment to the maintenance of the agreed conditions, perception of the consequences and risks of indebtedness and default, the analytical and decision-making capacity in the acquisition of credit and the effects of the budget on the use of credit.

The objective is to confirm if the characteristics of indebtedness are rooted in the lack of basic knowledge of personal finance, budgetary control, and consumption habits and if they influence the levels of savings and investment and the expectations of the future and legacy. It is also intended to verify the relationship between credit and indebtedness with the sustainability dimension and the production and disposal of waste.

SAVINGS AND INVESTMENT

This dimension aims to identify knowledge, behaviors and practices about savings and investment and had a total of 24 propositions, presented in Table 12.

The following base literature was used: Lusardi (2000), Nugent and Yhee (2002) , Cagetti (2003), Santos and Santos (2005), Cole, Sampson and Zia (2011), Lusardi and Mitchell (2011b), Hibbert, Lawrence and Prakash (2012a), Torres and Barros (2014), Kaiser and Menkhoff (2017), Moreno-García, Santillán and Gutiérrez-Delgado (2017), Lyons and Kass-Hanna (2019), Trinh, Morgan and Sonobe (2020), Fan and Zhang (2021) and López-Rodríguez and López-Ordoñez (2022).

The following constructs were addressed: awareness of the differences between saving and investing (SI1), the importance of the emergency reserve (SI2), understanding of external factors (SI4), perception of risk and return (SI5, SI10, SI15, and SI16), conditioning factors savings and investment (SI6), sustainable behavior (SI7), inclination towards sustainable investments (SI8, SI9, SI14, and SI22), investment analysis and decision-making capacity (SI11, SI12, SI13, and SI19), budget practices (SI17), perception of asset pricing and variation (SI18), transaction costs (SI20), understanding of investment elements (SI21) and liquidity (SI3) and feeling of well-being (SI23 and SI24).

Table 12. Items proposed in the Savings and Investment dimension

| Initials | Proposed item | Average Adequacy | Average Clarity |
|----------|--|------------------|-----------------|
| SI1 | I know the difference between saving and investing. | 4,82 | 4,82 |
| SI2 | I am aware that an emergency reserve is essential to protect against financial shocks. | 4,73 | 4,82 |
| SI3 | I know that some investments are more liquid than others. | 4,73 | 4,00 |
| SI4 | Investments can be impacted by various external facts and market uncertainties such as environmental catastrophes, climate change, and international ones. | 4,73 | 4,45 |
| SI5 | I evaluate the relationship between risks and returns associated with different financial products. | 4,64 | 4,64 |
| SI6 | The greater an individual's financial education knowledge, the greater their level of savings/investment. | 4,73 | 4,82 |
| SI7 | I believe that the lower an individual's savings/investment levels, the less likely he or she will be to engage in sustainable actions. | 4,27 | 4,73 |

| | | | |
|------|--|------|------|
| SI8 | I believe that sustainable institutions' bonds and securities (shares, promissory notes, debentures, fund shares, among others) are more advantageous. | 4,45 | 4,45 |
| SI9 | Sustainable institutions are more successful and are better options for investors. | 3,55 | 4,73 |
| SI10 | I assess the risks of my investments. | 3,55 | 4,73 |
| SI11 | I evaluate performance and investment possibilities based on data and information from reliable sources and avoid dubious influences and sources of information. | 4,55 | 4,55 |
| SI12 | I understand the functioning and conditions of a private pension plan. | 4,64 | 4,82 |
| SI13 | I have private pension investments. | 2,91 | 4,36 |
| SI14 | There are many sustainable investment options available, and I know where to find them and how to purchase them. | 4,27 | 4,82 |
| SI15 | I know my level of tolerance for investment risks. | 4,64 | 4,82 |
| SI16 | Some investment risks can be minimized through diversification. | 4,73 | 4,82 |
| SI17 | I set savings goals, outline strategies, and strive to achieve them. | 4,55 | 4,64 |
| SI18 | I am aware that the value of investments in tangible and intangible assets can undergo positive and negative variations. | 4,55 | 4,82 |
| SI19 | I monitor my investments periodically and make adjustments when necessary. | 4,64 | 4,82 |
| SI20 | I am aware that some investment products have associated costs, such as administration, entry, exit, performance, brokerage fees, commissions, taxes, and charges. | 4,73 | 4,82 |
| SI21 | I understand that every investment involves risk, risk tolerance, investment horizon, liquidity, and investment objectives. | 4,73 | 4,82 |
| SI22 | I am willing to boost investments that improve social and environmental problems. | 4,73 | 4,82 |

| | | | |
|------|--|------|------|
| SI23 | Having some savings/investment decreases symptoms such as stress, anxiety, worry, and dissatisfaction and increases well-being and security. | 4,45 | 4,82 |
| SI24 | Those who have savings reserves are less exposed to vulnerabilities. | 4,64 | 4,73 |

As can be seen in Table 12, the worst means for the adequacy criterion were SI13 with 2.91, which resulted in its exclusion, and SI9 and SI10, both with 3.55. In the clarity of the statement, all means were considerably high, but as shown in Table 13, most items were rewritten, following previous standardizations and suggestions. Items SI9 and SI8 were suppressed in a single item, as well as SI10 and SI15, while SI14 was divided into two sentences for better understanding.

Table 13. Savings and Investment dimension after validation

| Initials | Result | Action | Reevaluated item |
|----------|--|----------|--|
| SI1 | Relevant averages and no comments. | Maintain | I know the difference between saving and investing. |
| SI2 | Adequacy of the initial verb to avoid response tendencies suggested in previous items and deletion of the word "my". | Rewrite | Having an emergency fund is essential to protect yourself from financial shocks. |
| SI3 | Three suggestions for clarifying the term "liquidity". | Rewrite | Some investments are more liquid than others; they convert into resources that can be used more quickly and easily. |
| SI4 | Two suggestions are to replace the term "fact" with "factors" and one suggestion to include the term "political scenario". | Rewrite | Investments can be impacted by various external factors and uncertainties such as environmental catastrophes, climate change, terrorism, political scenario, and the international market, among others. |

| | | | |
|------|---|----------|--|
| SI5 | One suggestion to change the term "financial products" to "investment products". | Rewrite | I evaluate the relationship between risks and returns associated with different investment products. |
| SI6 | Relevant averages and no comments. | Maintain | The greater an individual's financial education knowledge, the greater their level of savings/investment. |
| SI7 | One unheeded suggestion that the item does not belong in the dimension. It was understood that the item compares the level of savings and investment with sustainable behavior. | Maintain | I believe that the lower an individual's savings/investment levels, the less likely he or she will be to engage in sustainable actions. |
| SI8 | One suggestion to reframe the term "advantageous", a suggestion to improve the understanding of "sustainable institutions", and a suggestion not accepted to exclude the item, as it was understood that it is in the scope of investments. | Rewrite | I believe that bonds and securities (shares, promissory notes, debentures, fund shares, among others) from institutions that promote the improvement of social and environmental problems are more attractive and advantageous investment options. |
| SI9 | Four accepted suggestions that SI9 measures the same as SI8. | Delete | |
| SI10 | Four accepted suggestions that SI5 measures the same as SI10. | Delete | |
| SI11 | Relevant averages and no comments. | Maintain | I evaluate performance and investment possibilities based on data and information from reliable sources and avoid dubious influences and sources of information. |
| SI12 | Relevant averages and no comments. | Maintain | I understand the functioning and conditions of a private pension plan. |

| | | | |
|------|--|----------|---|
| SI13 | Average of 2.91 and two comments that the question is of duality, not being able to apply Likert. | Delete | |
| SI14 | Two suggestions that the sentence evaluates two factors, and one suggestion to specify the term "sustainable". It was decided to divide them for better understanding. | Split | There are many options available for sustainable investments, that is, investments that promote the resolution of social and environmental problems. It is easy to find and acquire sustainable investments. |
| SI15 | Relevant averages and no comments. | Maintain | I know my level of tolerance for investment risks. |
| SI16 | Relevant averages and no comments. | Maintain | Some investment risks can be minimized through diversification. |
| SI17 | Relevant averages and no comments. | Maintain | I set savings goals, outline strategies, and strive to achieve them. |
| SI18 | Adequacy of the initial verb to avoid response tendencies suggested in previous items. | Rewrite | The values of investments in tangible and intangible assets may undergo positive and negative variations. |
| SI19 | Relevant averages and no comments. | Maintain | I monitor my investments periodically and make adjustments when necessary. |
| SI20 | Adequacy of the initial verb to avoid response tendencies suggested in previous items. | Rewrite | Some investment products have associated costs, such as: administration, entry, exit, performance, brokerage fees, commissions, taxes, and charges. |
| SI21 | Adequacy of the initial verb to avoid response tendencies suggested in previous items. | Rewrite | Every investment involves risks, risk tolerance, investment horizon, liquidity, and investment objectives. |

| | | | |
|------|---|----------|--|
| SI22 | One suggestion to replace the term "improve" with "promote improvements". | Rewrite | I am willing to boost investments that promote improvements in social and environmental problems. |
| SI23 | Relevant averages and no comments. | Maintain | Having some savings/investment decreases symptoms such as stress, anxiety, worry, and dissatisfaction and increases well-being and security. |
| SI24 | A suggestion to specify the term "vulnerabilities". | Rewrite | Those who have savings reserves are less exposed to social and environmental vulnerabilities. |

This was one of the dimensions that underwent the most changes, going from 24 proposed items to 22. Still, it measured the perceptions of the difference between savings and investment, emergency reserve needs, understanding of external factors, and sensitivity to trade-off risk. /return, savings and investment constraints, inclination towards sustainable investments, analytical and decision-making skills applied to investments, budgeting practices that influence investments, perception of variation and asset pricing, transaction costs, understanding of the elements of investment, including liquidity, and the sense of well-being caused by levels of savings and investment.

It is intended to confirm whether savings and investment behaviors are rooted in financial education, whether they are potentiated by budgetary control and consumption habits, whether they influence and are influenced by credit and indebtedness behaviors, and whether they impact future and legacy expectations. It is also intended to verify what type of relationship there is between savings and investment with the sustainability dimension and with the production and disposal of waste.

CONSUMPTION AND WASTE

This dimension aims to identify knowledge, behaviors, and practices about consumption habits and the production and disposal of waste and has a total of

20 propositions, presented in Table 14. The literature that supported this dimension was: Mancebo *et al.* (2002), Belk, Ger and Askegaard (2003), Brennan and Coppack (2008), Grimm *et al.* (2008), Aquino and Tomassini (2009), Hira (2012), Willis and Schor (2012), Anderson *et al.* (2013), Charles-Leijla, Aboites and Llamas (2018), Hali-ovic *et al.* (2019) and He *et al.* (2020).

The following constructs were addressed: green consumption behavior (CW1, CW2, CW10), willingness to sustainable practices (CW3 and CW8), ability to evaluate suppliers (CW4), recycling behavior (CW7), perception of consumption budget (CW9), financial advantages of conscious consumption (CW11 and CW13), availability to participate in sustainable actions (CW12), analytical and decision-making process of consumption (CW5, CW6, and CW14), perception of shared advantage (CW15), external factors (CW16 and CW17) and perception of production volume and waste disposal practices (CW18, CW19, and CW20).

Table 14. Items proposed in the Consumption and Waste dimension

| Initials | Proposed item | Average Adequacy | Average Clarity |
|----------|--|------------------|-----------------|
| CW1 | I always assess how sustainable a product/service is before I buy. | 4,55 | 4,82 |
| CW2 | I consume more from companies with sustainable policies. | 4,73 | 4,82 |
| CW3 | I am encouraged to participate in sustainability actions promoted by the companies I consume. | 4,18 | 4,18 |
| CW4 | The companies from which I consume are concerned with the waste generated by their activity. | 4,45 | 4,64 |
| CW5 | I would rather buy something new than fix what I already have. | 4,45 | 4,82 |
| CW6 | I make the most of something before discarding it. | 4,73 | 4,82 |
| CW7 | I always separate the garbage and contribute to reverse logistics. | 4,73 | 2,82 |
| CW8 | I feel willing to participate in sustainability actions promoted by public, private, or civil society initiatives. | 4,64 | 4,64 |

| | | | |
|------|--|------|------|
| CW9 | I deprive myself or postpone consuming products/services whose prices are outside my budget, even if I want to. | 4,27 | 4,64 |
| CW10 | I refuse to consume from companies that contribute to the degradation of the environment. | 4,64 | 4,73 |
| CW11 | Consumption in a sustainable way brings financial advantages. | 4,27 | 4,45 |
| CW12 | Sustainable products and services are easier to find. | 4,55 | 4,73 |
| CW13 | Sustainable products and services are cheaper. | 4,45 | 4,73 |
| CW14 | I assess whether my purchase decisions are needs or wants and can establish priorities. | 4,36 | 4,64 |
| CW15 | Sustainable actions are advantageous for the company and for the customer. | 4,00 | 4,64 |
| CW16 | I recognize the influences that advertisements, promotions, and the media, in general, can have on my evaluations and consumption decisions. | 4,18 | 4,64 |
| CW17 | I feel that there is a lack of effective initiatives involving the government, companies, and consumers concerning waste production. | 4,55 | 4,64 |
| CW18 | I always look for alternative destinations for my waste and only dispose of it in the common trash if there is no alternative. | 4,55 | 4,45 |
| CW19 | It is easy to dispose of trash and waste sustainably. | 4,36 | 4,55 |
| CW20 | I am aware that the more I consume, the more garbage and waste I produce. | 4,55 | 4,64 |

As seen in Table 14, all items in this dimension received high averages in the criterion of adequacy to the dimension; however, for the criterion of clarity of the statement, the item CW7 obtained an average of 2.82; in this way, it was rewritten. All items were kept, except for CW3, CW7, CW11, CW15, CW16, CW17, and CW20, changed according to the experts' comments and suggestions in Table 15.

Table 15. Consumption and Waste dimension after validation

| Initials | Result | Action | Reevaluated item |
|----------|---|----------|--|
| CW1 | Relevant averages and no comments. | Maintain | I always assess how sustainable a product/service is before I buy. |
| CW2 | A comment to exemplify the term "sustainable". | Rewrite | I consume more from companies with sustainable policies (clean energy, recycled materials, reverse logistics, and saving resources in production, among others). |
| CW3 | Three suggestions for replacing "am" with "I feel". | Rewrite | I feel encouraged to participate in sustainability actions promoted by the companies I consume. |
| CW4 | Relevant averages and no comments. | Maintain | The companies from which I consume are concerned with the waste generated by their activity. |
| CW5 | Relevant averages and no comments. | Maintain | I would rather buy something new than fix what I already have. |
| CW6 | Relevant averages and no comments. | Maintain | I make the most of something before discarding it. |
| CW7 | Five suggestions for item restructuring. | Rewrite | I always separate and dispose of domestic waste properly and seek to contribute to reverse logistics actions. |
| CW8 | Relevant averages and no comments. | Maintain | I feel willing to participate in sustainability actions promoted by public, private, or civil society initiatives. |
| CW9 | Relevant averages and no comments. | Maintain | I deprive myself or postpone consuming products/services whose prices are outside my budget, even if I want to. |
| CW10 | Relevant averages and no comments. | Maintain | I refuse to consume from companies that contribute to the degradation of the environment. |

| | | | |
|------|--|----------|--|
| CW11 | Duas sugestões para re-estruturação do item. | Rewrite | Consuming consciously generates savings in financial resources. |
| CW12 | Relevant averages and no comments. | Maintain | Sustainable products and services are easier to find. |
| CW13 | Relevant averages and no comments. | Maintain | Sustainable products and services are cheaper. |
| CW14 | Relevant averages and no comments. | Maintain | I assess whether my purchase decisions are needs or wants and can establish priorities. |
| CW15 | Two suggestions for item restructuring. | Rewrite | Sustainable actions can be advantageous for both the company and the customer. |
| CW16 | One suggestion for restructuring the item. | Rewrite | Advertisements, promotions, and the media's actions, in general, can influence my ratings and consumption decisions. |
| CW17 | One suggestion for restructuring the item. | Rewrite | There is a lack of effective initiatives involving the government, companies, and consumers regarding containing the volume and improving waste destination. |
| CW18 | Relevant averages and no comments. | Maintain | I always look for alternative destinations for my waste and only dispose of it in the common trash if there is no alternative. |
| CW19 | Relevant averages and no comments. | Maintain | It is easy to dispose of trash and waste sustainably. |
| CW20 | Adequacy of the initial verb to avoid response tendencies suggested in previous items. | Rewrite | The more I consume, the more garbage and waste I produce. |

This dimension was one of those that did not undergo significant changes, and it continues to measure how consumption behaviors are influenced by financial education and sustainability; they need to involve investigations of green consump-

tion behavior, willingness to sustainable practices related to the act of consumption and its consequences, the ability and desire to select sustainable suppliers, how recycling behavior interferes with the way consumption is carried out, and waste is treated, perception of budgetary control in consumption, the financial advantages of conscious consumption, the perception of the possibility of integrative bargaining approach between client/company, the analytical and decision-making process of consumption, the external factors that can influence consumption practices and the understanding of the relationship between the volume of consumption and the volume of waste production.

In this dimension, the objective is to confirm if consumption behaviors are directly influenced by the level of financial education and sustainability, if the level of indebtedness results from consumption practices, if budget practices guide consumption habits and if these are related to the volume of savings and investment. It is also intended to verify the relationship between consumption and waste with the future and legacy, as well as the relationship of the other dimensions with the generation of waste.

FUTURE AND LEGACY

This dimension aims to identify behaviors, practices, and expectations projected for the future and legacy, given the antecedent context of knowledge and behaviors, with 20 propositions presented in Table 16. The literature that supported this dimension was: Bucher -Koenen and Lusardi (2011), Sekita (2011), Hastings, Madrian and Skimmyhorn (2013), Zhu and Xiao (2021), Maman and Rosenhek (2019; 2020), Hibbert, Lawrence, and Prakash (2012a; 2012b), Berry, Karlan, and Pradhan (2018).

The following constructs were addressed: assessment of social security devices for (FL1), quality of life and environment (FL2), legacy and finances (FL3), legacy and sustainability (FL4), aging needs (FL5 and FL14), retirement preparation (FL6 and FL20), well-being (FL7), behavior about the insurance market (FL8 and FL10), succession planning (FL9 and FL11), quality of life (FL12), reflection and understanding of external factors (FL13), risk assessment (FL15), sense of community (FL16 and FL17), personal finances and sustainable habits (FL18 and FL19).

Table 16. Items proposed in the Future and Legacy dimension

| Initials | Proposed item | Average Adequacy | Average Clarity |
|----------|--|------------------|-----------------|
| FL1 | I believe that the government's devices are enough to have a comfortable future. | 4,60 | 4,50 |
| FL2 | I believe that the conditions of the environment do not influence the level of quality of life that I intend to have in the future. | 4,00 | 4,50 |
| FL3 | The best legacy I can leave for posterity is financial resources, assets, and rights. | 4,20 | 4,60 |
| FL4 | The best legacy I can leave for posterity are teachings, life examples, and education. | 4,60 | 4,70 |
| FL5 | I am aware that few people have income from work in old age and I recognize the importance of ensuring an alternative source of income. | 4,60 | 4,80 |
| FL6 | I allocate part of my income to retirement. | 4,50 | 4,80 |
| FL7 | I recognize that an individual's well-being involves both financial and non-financial factors. | 4,50 | 4,70 |
| FL8 | I understand that many health, life and property risks can be protected or minimized by insurance. | 4,40 | 4,70 |
| FL9 | I believe that estate succession planning is able to reduce costs and bring more tranquility to the family and future heirs. | 4,70 | 4,50 |
| FL10 | I have some type of insurance against health, life and property risks. | 4,50 | 4,50 |
| FL11 | I have defined the succession planning of my estate. | 3,30 | 4,00 |
| FL12 | The greater my financial and environmental awareness, the less exposed to vulnerabilities I will be during life and old age. | 4,70 | 4,80 |
| FL13 | I believe that the more financially and environmentally literate I will be, the more I will be able to understand the society around me. | 4,70 | 4,80 |
| FL14 | The financial situation implies the longevity of the individual. | 4,30 | 4,70 |

| | | | |
|------|---|------|------|
| FL15 | I am aware of the risks of losing part or all of the family income due to the death, unemployment, disability and health problems of a family member. | 4,70 | 4,70 |
| FL16 | Collective well-being involves an environmentally sound world and a society with fewer social differences caused by money. | 4,60 | 4,70 |
| FL17 | The more people oriented toward financial education and sustainability, the greater the collective well-being. | 4,70 | 4,70 |
| FL18 | The better my financial condition, the more likely I will develop sustainable habits. | 4,40 | 4,80 |
| FL19 | In both personal finance and sustainability, it is vital to have consistent, long-term habits. | 4,40 | 4,50 |
| FL20 | I am willing to save and invest for retirement. | 4,60 | 4,50 |

For the adequacy criterion, as shown in Table 16, only item FL11 received a low average of 3.30, opting for its suppression in FL9; as for the clarity of the statement, all averages were satisfactory, but most of the items were rewritten, for standardization and according to the comments, as shown in Table 17.

Table 17. Future and Legacy dimension after validation

| Initials | Result | Action | Reevaluated item |
|----------|--|----------|--|
| FL1 | One suggestion to exemplify "government's devices". Adequacy of the initial verb to avoid response tendencies suggested in previous items. | Rewrite | The government's social security devices (social security, social assistance, and health) are sufficient for a comfortable future. |
| FL2 | Adequacy of the initial verb to avoid response tendencies suggested in previous items. | Rewrite | The environmental conditions do not influence the level of quality of life that I intend to have in the future. |
| FL3 | Relevant averages and no comments. | Maintain | The best legacy I can leave for posterity is financial resources, assets, and rights. |

| | | | |
|------|--|----------|--|
| FL4 | Relevant averages and no comments. | Maintain | The best legacy I can leave for posterity are teachings, life examples, and education. |
| FL5 | Adequacy of verbs to avoid response tendencies, suggested in previous items. | Rewrite | Few people have income from work in old age, so it is crucial to ensure an alternative source of income during this period. |
| FL6 | Relevant averages and no comments. | Maintain | I allocate part of my income to retirement. |
| FL7 | Adequacy of the initial verb to avoid response tendencies suggested in previous items. | Rewrite | An individual's well-being involves both financial and non-financial factors. |
| FL8 | One suggestion to change the term "protected" to "avoided." Adequacy of the initial verb to avoid response tendencies suggested in previous items. | Rewrite | Many health, life, and property risks can be avoided or minimized by insurance. |
| FL9 | One suggestion to clarify "succession planning." Adequacy of the initial verb to avoid response tendencies suggested in previous items. | Rewrite | Estate succession planning (the strategy adopted for transferring a person's assets after death) can reduce costs and bring more peace of mind to the family and future heirs. |
| FL10 | One suggestion for restructuring the sentence to fit the Likert scale. | Rewrite | Having some insurance against property, health, and life risks are essential. |
| FL11 | Two suggestions are that FL11 measures the same as FL9. | Delete | |
| FL12 | Relevant averages and no comments. | Maintain | The greater my financial and environmental awareness, the less exposed to vulnerabilities I will be during life and old age. |
| FL13 | Adequacy of the initial verb to avoid response tendencies suggested in previous items. | Rewrite | The more financially and environmentally literate, the more I will be able to understand the society around me. |

| | | | |
|------|--|----------|--|
| FL14 | Relevant averages and no comments. | Maintain | The financial situation implies the longevity of the individual. |
| FL15 | Adequacy of the initial verb to avoid response tendencies suggested in previous items. | Rewrite | It is crucial to protect yourself from the risks of losing, in part or in full, the family income due to a family member's death, unemployment, disability, and health problems. |
| FL16 | Relevant averages and no comments. | Maintain | Collective well-being involves an environmentally sound world and a society with fewer social differences caused by money. |
| FL17 | Relevant averages and no comments. | Maintain | The more people oriented toward financial education and sustainability, the greater the collective well-being. |
| FL18 | Relevant averages and no comments. | Maintain | The better my financial condition, the more likely I will develop sustainable habits. |
| FL19 | Relevant averages and no comments. | Maintain | In both personal finance and sustainability, it is vital to have consistent, long-term habits. |
| FL20 | One suggestion to include the term "future." | Rewrite | I am willing to save and invest, thinking about retirement and the future. |

This dimension proposed 20 items, leaving 19 after validation, not changing its objectives of evaluating people's perception of trust in social security devices, the relationship between quality of life and the environment, the relationship between legacy, finances and sustainability, needs and preparations for the aging and retirement process, well-being, quality of life, safety, risk perception, and protection and mitigation strategies, succession planning strategies, the interference of factors external factors, a sense of community and sustainable habits that reduce the insecurities of the future.

This last dimension is a compilation of knowledge and behaviors, the results being highly dependent on all the previous dimensions. The objective is to verify if the more prepared by the environmental factors (antecedents), the more the action (behavioral factors) will be guided towards the consequence (consequence factors), whether rewarding or punitive.

Discussion

The instrument attempts to integrate concepts of instrumental finance and emancipatory finance with elements of sustainable consumption and production and disposal of waste, as well as analyze the extent to which these practices simultaneously contribute to and are motivated for the future and their alignment with the individual's legacy expectations.

Initially, 139 items were proposed, and after validation, 137 items remained, gathered in Table 18, demonstrating that the quantitative reduction of the items considerably impairs the foundation of the dimensions, the research objectives, and the tool itself. Simultaneous validation by finance and sustainability experts found that the items addressed refer to the scope of each dimension and brought important positions for the refinement of sentences, given the plurality of the potential audience in application in future research.

Table 18. Start and end items by dimension

| Factors | Dimensions | Quantity of proposed items | Quantity of end items |
|------------------------------|--------------------------|----------------------------|-----------------------|
| Antecedentes | Financial education | 18 | 19 |
| | Sustainability | 16 | 17 |
| Practice and Behavior | Personal/domestic budget | 22 | 23 |
| | Credit and indebtedness | 19 | 17 |
| | Savings and investment | 24 | 22 |
| | Consumption and waste | 20 | 20 |
| Consequences/result | Future and legacy | 20 | 19 |
| TOTAL | | 139 | 137 |

The contribution of this instrumental advance is a step towards the conceptual advance when it compiles and outlines the scope of the significant areas of financial education dispersedly measured in the literature studies. Another contribution was dimensionalization, which preserves the independence of each dimension without harming possible cause-and-effect relationships. The last advance was the search for a theoretical and practical balance in the interaction between financial education and the tripod of sustainability.

The main objective is to interpret the results at the dimension level, especially the last one since it synthesizes the others. However, other issues are of great interest, such as the intentions of financial investments in sustainable projects, the financial impacts of waste management at the individual level, and the potential conflict between financial and non-financial expectations for the future and legacy.

Final Remarks

This work proposed the relevant items in the relationship between financial education and sustainability. One hundred thirty-nine items were proposed, divided into seven dimensions of Couto, Maracajá, and Machado (2022): financial education (FE), sustainability (S), personal and household budget (B), credit and indebtedness (CI), savings and investment (SI), consumption and waste (CW) and future and legacy (FL). The items were evaluated by specialists regarding their adequacy in the respective dimensions and the clarity of the statements, using ordering scales. After validation, 137 items remained, based on the average score obtained in each criterion and according to the experts' suggestions and comments.

The proposal of the items constitutes a pioneering step in the conceptual convergence of financial education and sustainability fields by relating the sustainable triad in a complete and balanced way with financial education, especially the environmental pillar, which has been neglected in studies involving both fields.

The limitation of this study was its strictly theoretical concentration; however, because it is an emerging interdisciplinary relationship, the process of conceptual survey and formulation of relational hypotheses and instrumentation become valuable to minimize risks of theoretical inconsistency and problems in the application

of future research. Therefore, with structures, contents, and psychometric attributes validated by experts, it is recommended to apply the instrument in cross-sectional studies and longitudinal experiments; the items can also serve as a guide for interview scripts and case studies.

Financial education has enormous potential to minimize the catastrophic social and environmental effects caused by the economic savagery of recent centuries. This crucial knowledge for life was for a long time concentrated in a small portion of society that, coincidentally, is positioned at the top of the income concentration pyramid. This portion is responsible for dictating the economy's direction and, consequently, the lives of thousands of people.

It is as if financial education were reserved for the top of the food chain, allowing only certain predators to have the best financial, social, and environmental conditions, given their combination with economic power. Unlike the natural world, where the existence and death of the predator generate the necessary inputs for the rebirth of life and the maintenance of collective balance, in the economic context, predators only serve their interests and cause entropy in the rest of the chain.

The instrumentalist approach to financial education, which has dominated the scientific field for a long time, represents a field contained in itself, being a reflection also reflecting on the way society lives with financial education and sustainability. This pattern is broken with the democratization of financial knowledge for the most vulnerable, providing them with essential knowledge for living in the current economic system. Therefore, the expansion of discussions with sustainability is capable of dressing financial education in the attire of citizenship.

It is possible to work financial education with sustainability in schools, the job market, companies, institutions, and society. However, without the community's collective effort and public and private institutions, this becomes more of a distant dream than a feasible and virtuous plan. Therefore, the financial emancipation of the individual is one of the most fertile grounds for understanding that money, *per se*, cannot be eaten or breathed and does not bring happiness and well-being if the environment and our fellow people are ruined.

References

- Agarwal, S. & Mazumder, B. (2010). Cognitive Abilities and Household Financial Decision Making. *American Economic Journal Applied Economics*, 5. doi:10.1257/app.5.1.193.
- Anderson, L., Ostrom, A. L., Corus, C., Fisk, R. P., Gallan, A. S., Giraldo, M., Mende, M., Mulder, M., Rayburn, S., Rosenbaum, M., Shirahada, K. & Williams, J. (2013). Transformative service research: An agenda for the future. *Journal of Business Research*, 66(8), 1203–1210. doi:10.1016/j.jbusres.2012.08.
- Appolinário, F. (2007). *Dicionário de metodologia científica: um guia para a produção do conhecimento científico*. São Paulo; Atlas.
- Aquino, R. D. & Tomassini, R. (2009). O Consumo para os Estudantes de Administração: Uma Aplicação da Teoria do Núcleo Central de Representações Sociais. *XXXIII EnANPAD*
- Atkinson, A., & Messy, F. (2012). Measuring Financial Literacy: Results of the OECD / International Network on Financial Education (INFE) Pilot Study. doi:10.1787/20797117.
- Awang, H., Aji, Z. M., & Osman, W. R. S. (2018). Measuring virtual learning environment success from the teacher's perspective: Scale development and validation. *American Institute of Physics*. doi:10.1063/1.5055430
- Becker, S. (2013). Has the world really survived the population bomb? (Commentary on “how the world survived the population bomb: lessons from 50 years of extraordinary demographic history”). *Demography*. Dec; 50 (6): 2173-81. doi:10.1007/s13524-013-0236-y. PMID: 23955197.
- Belk, R. W., Ger, G., & Askegaard, S. (2003). The Fire of Desire: A Multisited Inquiry into Consumer Passion. *Journal of Consumer Research*, 30(3), 326–351. doi:10.1086/378613
- Bermudes, W. L., Santana, B. T., Braga, J. H. O. & Souza, P. H. (2016). Tipos de Escalas Utilizadas em Pesquisas e Suas Aplicações. *Revista Vértices*. 18. 7-20. doi:10.19180/1809-2667.v18n216-01.
- Bernheim, B. D., Garrett, D. M., & Maki, D. M. (2001). Education and saving: *Journal of Public Economics*, 80(3), 435–465. doi:10.1016/s0047-2727(00)00120-1
- Berry, J., Karlan, D. & Pradhan, M. (2018). The Impact of Financial Education for Youth in Ghana. *World Development*. 102. 71-89. doi:10.1016/j.worlddev.2017.09.011.
- Birochi, R. & Pozzebón, M. (2016). Improving financial inclusion: Towards a critical financial education framework. *Revista de Administração de Empresas*, 56(3), 266–287. doi:10.1590/s0034-759020160302
- Brown, M., & Graf, R. (2013). Financial Literacy and Retirement Planning in Switzerland. *Numeracy*. 6. doi:10.5038/1936-4660.6.2.6.
- Brennan, C. & Coppack, M. (2008). Consumer Empowerment: Global Context, UK Strategies and Vulnerable Consumers. *International Journal of Consumer Studies*. 32. 306 - 313. doi:10.1111/j.1470-6431.2007.00640.x.
- Bryant, J. (2013). *Economic Growth and Sustainability Rooted in Financial Literacy*. Practicing Sustainability (pp. 95-99). doi:10.1007/978-1-4614-4349-0_19.
- Bucher-Koenen, T. & Lusardi, A. (2011). Financial literacy and retirement planning in Germany. *Journal of Pension Economics and Finance*, 10, pp 565-584. 10.1017/S1474747211000485.
- Burchi, A., Włodarczyk, B., Szturo, M., & Martelli, D. (2021). The Effects of Financial Literacy on Sustainable Entrepreneurship. *Sustainability*, 13(9), 5070. doi:10.3390/su13095070

- Burkett, I. & Sheehan, G. (2009). *From the margins to the mainstream: The challenges for microfinance in Australia*. Brotherhood of St. Laurence and Foresters Community Finance. Fitzroy, Victoria, Austrália. ISBN 978-1-921623-02-8
- Cabraal, A. (2010). *The impact of microfinance on the capabilities of participants* (PhD Thesis). School of Economics, Finance and Marketing, RMIT University. Melbourne, Austrália.
- Cagetti, M. (2003). Wealth Accumulation Over the Life Cycle and Precautionary Savings. *Journal of Business & Economic Statistics*, 21(3), 339–353. doi:10.1198/073500103288619007
- Caplinska, A. & Danileviča, A. (2019). Analysis of financial literacy tendencies with young people. *Entrepreneurship and Sustainability Issues*. 6. 1736-1749. doi:10.9770/jesi.2019.6.4(13).
- Charles-Leija, H., Aboites, G. & Llamas, I. (2018). Una revisión de aportaciones que contribuyeron al estudio de la utilidad y la felicidad en la economía. *Revista de Analisis Economico*. XXXIII. 57-76. doi:10.24275/uam/azc/dcsh/ae/2018v33n84/Charles.
- Cohen, M. J. (2005). Sustainable consumption in national context: an introduction to the special issue. *Sustainability: Science, Practice and Policy*, 1(1), 22–28. doi:10.1080/15487733.2005.11907962
- Cohen, M. (2007). Consumer credit, household financial management, and sustainable consumption. *International Journal of Consumer Studies*. 31. 57 - 65. doi:10.1111/j.1470-6431.2005.00485.x.
- Cole, S., Sampson, T. & Zia, B. (2011) Prices or Knowledge? What Drives Demand for Financial Services in Emerging Markets?. *The Journal of Finance*. Vol. 66, No. 6, doi:10.1111/j.1540-6261.2011.01696.x
- Couto, R. F., Maracajá, K. F. B. & Machado, P. A. (2022a). Bibliometric analysis of studies in financial education and sustainability. *Research Society and Development*. 11. 1. doi:10.33448/rsd-v11i10.33014.
- Couto, R. F., Maracajá, K. F. B. & Machado, P. A. (2022b). Financial Education and Sustainability: A Conceptual Framework. *Administração: Ensino e Pesquisa*. 23. doi:10.13058/raep.2022.v23n3.2239.
- Creswell, J. W. (2009). *Research design: qualitative, quantitative and mixed methods approaches*. California: (3rd ed.) ISBN 978-1-4129-6556-9 (cloth) ISBN 978-1-4129-6557-6 (pbk.)
- Cude, B. J., Chatterjee, S. & Tavosi, J. (2020). Financial Knowledge, Personality Traits, and Risky Borrowing Behaviors in Iranian Households. *Sustainability*, 12(18), 7608. doi:10.3390/su12187608
- Deaton, A. (2019). *The Analysis of Household Surveys: A Microeconomic Approach to Development Policy*. Washington, DC: *World Bank*. ISBN (paper): 978-1-4648-1331-3 ISBN (electronic): 978-1-4648-1352-8 doi:10.1596/978-1-4648-1331-3
- Dresner, S. (2008). *The Principles of Sustainability* (2nd ed.). Routledge, London. ISBN9781849773249. doi:10.4324/9781849773249
- Dunlap, R. E., Van Liere, K. D., Mertig, A. G. & Jones, R. E. (2000). New Trends in Measuring Environmental Attitudes: Measuring Endorsement of the New Ecological Paradigm: A Revised NEP Scale. *Journal of Social Issues*, 56(3), 425–442. doi:10.1111/0022-4537.00176
- Dunlap, R & Van Liere, K. (2008). The “New Environmental Paradigm”. *The Journal of Environmental Education*. 40. 19-28. doi:10.3200/JOEE.40.1.19-28.
- Dwyer, R. (2009). Making a Habit of It: Positional Consumption, Conventional Action and the Standard of Living. *Journal of Consumer Culture* - 9. 328-347. doi:10.1177/1469540509341773.
- Elangovan, N., & Sundaravel, E. (2021). Method of preparing a document for survey instrument validation by experts. *MethodsX*, 8, 101326. doi:10.1016/j.mex.2021.101326

- Fan, L. and Zhang, L. (2021), The Influence of Financial Education Sources on Emergency Savings: The Role of Financial Literacy. *Fam Consum Sci Res J*, 49: 344-361. doi:10.1111/fcsr.12400
- Faroque, S. & South, N. (2020). Law-Enforcement Challenges, Responses and Collaborations Concerning Environmental Crimes and Harms in Bangladesh. *International Journal of Offender Therapy and Comparative Criminology*, 66(4), 389-406. doi:10.1177/0306624x20969938
- Fernandes, D., Lynch, J. & Netemeyer, R. (2014). Financial Literacy, Financial Education, and Downstream Financial Behaviors. *Management Science*. doi:10.1287/mnsc.2013.1849.
- Flores, S. A. M., Vieira, K. M. & Coronel, D. A. (2013). Influência de fatores comportamentais na propensão ao endividamento. *Faces: Revista de Administração*, 12(1), 13-35.
- Gathergood, J. (2012). Self-control, financial literacy and consumer over-indebtedness. *Journal of Economic Psychology*, 33(3), 590-602. doi:10.1016/j.joep.2011.11.006
- Gerardi, K., Goette, L. & Meier, S. (2013). Numerical Ability Predicts Mortgage Default. *Proceedings of the National Academy of Sciences of the United States of America*. 110. doi:10.1073/pnas.1220568110.
- Gibbs, C., Gore, M., McGarrell, E. & Rivers, L. (2010). Introducing Conservation Criminology: Towards Interdisciplinary Scholarship on Environmental Crimes and Risks. *British Journal of Criminology*. 50. 10.1093/bjc/azp045.
- Gil, A. C. (2007). *Métodos e técnicas de pesquisa social*. 5. ed. São Paulo: Atlas, 1999. Como elaborar projetos de pesquisa. 4. ed. São Paulo: Atlas.
- Grable, J & Joo, S. (1999). Financial help-seeking behavior: Theory and implications. *Journal of Financial Counseling and Planning*. 10.
- Grimm, N. B., Faeth, S. H., Golubiewski, N. E., Redman, C. L., Wu, J., Bai, X., & Briggs, J. M. (2008). Global Change and the Ecology of Cities. *Science*, 319(5864), 756-760. doi:10.1126/science.1150195
- Halilovic, S., Zaimovic, A., Berilo, A. A., & Zaimovic, T. (2019). Financial Literacy Assessment in Bosnia and Herzegovina. *Procedia Computer Science*, 158, 836-843. doi:10.1016/j.procs.2019.09.121
- Hastings, J. & Ashton, L. (2008). Financial Literacy, Information, and Demand Elasticity: Survey and Experimental Evidence from Mexico. *National Bureau of Economic Research, Inc, NBER Working Papers*. doi:10.3386/w14538.
- Hastings, J., Madrian, B. & Skimmyhorn, B. (2013). Financial Literacy, Financial Education and Economic Outcomes. *Annual Review of Economics*. 5:347-73. DOI: 10.1146/annurev-economics-082312-125807
- Hayek, F. A. (1982). *Law, legislation and liberty*. A new statement of the liberal principles of justice and political economy. Routledge, Abingdon. ISBN 0-415-09868-8
- He, H., Reynolds, C. J., Hadjikakou, M., Holyoak, N., & Boland, J. (2020). Quantification of indirect waste generation and treatment arising from Australian household consumption: A waste input-output analysis. *Journal of Cleaner Production*, 258, 120935. doi:10.1016/j.jclepro.2020.120935
- Hibbert, A. M., Lawrence, E. R. & Prakash, A. J. (2012a). Can Diversification be Learned?. *Journal of Behavioral Finance*. 13. 38-50. DOI: 10.1080/15427560.2012.654547.
- Hibbert, A. M., Lawrence, E. R., & Prakash, A. J. (2012b). The Role of Financial Education in the Management of Retirement Savings. *Journal of Behavioral Finance*, 13(4), 299-307. doi:10.1080/15427560.2012.7357
- Hill, R. & Kozup, J. (2007). Consumer Experiences with Predatory Lending Practices. *Journal of Consumer Affairs*. 41. 29 - 46. doi:10.1111/j.1745-6606.2006.00067.x.

- Hines, J. M., Hungerford, H. R. & Tomera, A. N. (1987). Analysis and Synthesis of Research on Responsible Environmental Behavior: A Meta-Analysis. *The Journal of Environmental Education*, 18(2), 1–8. doi:10.1080/00958964.1987.9943
- Hira, T. (2010). The NEFE quarter century project: implications for researchers, educators, and policy makers from a quarter century of financial education. Retrieved from National Endowment for Financial Education: The Quarter Century Project: 25 Years of Research in Financial Education.
- Hursh, D., Henderson, J. & Greenwood, D. (2015). Environmental education in a neoliberal climate. *Environmental Education Research*, 21(3), 299–318. doi:10.1080/13504622.2015.1018141
- Huston, S. J. (2010), Measuring Financial Literacy. *Journal of Consumer Affairs*, 44: 296-316. doi:10.1111/j.1745-6606.2010.01170.x
- Jickling, B. & Wals, A. E. J. (2008). Globalization and environmental education: looking beyond sustainable development. *Journal of Curriculum Studies*, 40(1), 1–21. doi:10.1080/00220270701684667
- Jones, R. & Dunlap, R. (2010). The Social Bases of Environmental Concern: Have They Changed Over Time?. *Rural Sociology*. 57. 28 - 47. doi:10.1111/j.1549-0831.1992.tb00455.x.
- Kahn, M. E. (2007). Environmental disasters as risk regulation catalysts? The role of Bhopal, Chernobyl, Exxon Valdez, Love Canal, and Three Mile Island in shaping U.S. environmental law. *Journal of Risk and Uncertainty*, 35(1), 17–43. doi:10.1007/s11166-007-9016-7
- Kaiser, T., & Menkhoff, L. (2017). Does Financial Education Impact Financial Literacy and Financial Behavior, and If So, When?. *The World Bank Economic Review*, 31(3), 611–630. doi:10.1093/wber/lhx018
- Kollmuss, A., & Agyeman, J. (2002). Mind the Gap: Why do people act environmentally and what are the barriers to pro-environmental behavior? *Environmental Education Research*, 8(3), 239–260. doi:10.1080/13504620220145401
- Kurowski, Ł. (2021). Household's Overindebtedness during the COVID-19 Crisis: The Role of Debt and Financial Literacy. *Risks*, 9(4), 62. doi:10.3390/risks9040062
- Lafferty, W. M. & Meadowcroft, J. (Eds). (2000). *Implementing Sustainable Development: Strategies and Initiatives in High Consumption Societies*. Oxford University Press, New York. ISBN-13: 9780199242016
- Lam, D. (2011). How the World Survived the Population Bomb: Lessons From 50 Years of Extraordinary Demographic History. *Demography*, 48(4), 1231–1262. doi:10.1007/s13524-011-0070-z
- Levine, R. (2005). *Finance and Growth: Theory and Evidence*. *Handbook of Economic Growth*, in: Philippe Aghion & Steven Durlauf (ed.), *Handbook of Economic Growth*, edition 1, volume 1, chapter 12, pages 865-934, Elsevier. doi:10.1016/S1574-0684(05)01012-9
- López-Rodríguez, C. E. & López-Ordoñez, D. A. (2022). Financial education in Colombia: Challenges from the perception of its population with socioeconomic vulnerability. *Economics and Sociology*, 15(1), 193-204. doi:10.14254/2071-789X.2022/15-1/12
- Luo, W. & Cheng, J. (2022). Transition to sustainable business models for green economic recovery: role of financial literacy, innovation and environmental sustainability. *Econ Change Restruct.* doi:10.1007/s10644-022-09408-1
- Lusardi, A. (2000). Saving for Retirement: The Importance of Planning. *Journal TIAA-CREF*. Institute Research Dialogue

- Lusardi, A. & Mitchell, O. S. (2007a). Financial Literacy and Retirement Preparedness: Evidence and Implications for Financial Education. *Business Economics*, 42(1), 35–44. doi:10.2145/20070104
- Lusardi, A. & Mitchell, O. S. (2007b). Baby Boomer retirement security: The roles of planning, financial literacy, and housing wealth. *Journal of Monetary Economics*, 54(1), 205–224. doi:10.1016/j.jmoneco.2006.12.
- Lusardi, A., Mitchell, O. S. & Curto, V. (2010). Financial Literacy among the Young. *Journal of Consumer Affairs*, 44(2), 358–380. doi:10.1111/j.1745-6606.2010.01173.x
- Lusardi, A. & Mithcell, O. (2011a). Financial literacy around the world: An overview. *Journal of Pension Economics and Finance*, 10(4), 497–508. doi:10.1017/S1474747211000448
- Lusardi, A. & Mitchell, O. S. (2011b). Financial Literacy and Retirement Planning in the United States. *Journal of Pension Economics and Finance*. 10. 509–525. doi:10.2139/ssrn.1810550.
- Lusardi, A. & Mitchell, O. S. (2014). The Economic Importance of Financial Literacy: Theory and Evidence. *Journal of Economic Literature*, 52 (1): 5–44. doi:10.1257/jel.52.1.5
- Lusardi, A. & Tufano, P. (2009). Debt Literacy, Financial Experiences, and Overindebtedness. *National Bureau of Economic Research*. doi:10.3386/w14808.
- Lyons, A., Rachlis, M. & Scherpf, E. (2007). What's in a Score? Differences in Consumers' Credit Knowledge Using OLS and Quantile Regression. *Journal of Consumer Affairs*. 41. 223–249. doi:10.1111/j.1745-6606.2007.00079.x.
- Lyons, A & Kass-Hanna, J. (2019). Financial Inclusion, Financial Literacy and Economically Vulnerable Populations in the Middle East and North Africa. *Emerging Markets Finance and Trade*. 57. 2699–2738. doi:10.1080/1540496X.2019.1598370.
- Maman, D & Rosenhek, Z. (2019). Facing future uncertainties and risks through personal finance: conventions in financial education. *Journal of Cultural Economy*. doi:10.1080/17530350.2019.1574865.
- Maman, D & Rosenhek, Z. (2020). Responsibility, planning and risk management: moralizing everyday finance through financial education. *The British Journal of Sociology*. doi:10.1111/1468-4446.12698
- Mancebo, D., Oliveira, D. M., Teixeira, J. G. & Silva, L. V. (2002). Consumo e subjetividade: trajetórias teóricas. *Estud. psicol.* (Natal). Vol. 7(2):325–332. doi:10.1590/S1413-294X2002000200013
- Marques, M. L. M. & Frade, C. (2003). Regular o sobreendividamento (Relatório de Pesquisa). Coimbra, Portugal, Centro de Estudos Sociais, Faculdade de Economia, Universidade de Coimbra.
- Martine, G & Alves, D. (2015). Economia, sociedade e meio ambiente no século 21: tripé ou trilema da sustentabilidade?. *Revista Brasileira de Estudos de População*. doi:10.1590/S0102-3098201500000027P.
- Mayoux, L. (2002). “Microfinance and women’s empowerment: Rethinking ‘best practice’”, *Development Bulletin*, no. 57, pp. 76–81.
- Mitchell, O. S. & Lusardi, A. (2015). Financial Literacy and Economic Outcomes: Evidence and Policy Implications. *SSRN Electronic Journal*. doi:10.2139/ssrn.2568732
- Morais, C. (2005). Escalas de Medida, Estatística Descritiva e Inferência Estatística.
- Moreno-Casas, V. & Bagus, V. (2021). The ethics of care and the tragedy of the commons. *International Review of Economics*. 68. doi:10.1007/s12232-021-00376-y.
- Moreno-García, E., Santillán, A. G. & Gutiérrez-Delgado, L. (2017). Nivel de educación financiera en escenarios de educación superior. Un estudio empírico con estudiantes del área económico-administrativa. *Revista Iberoamericana de Educación Superior*. 8. doi:10.22201/iisue.20072872e.2017.22.234.

- Narula, S. (2022). Achieving sustainability through financial literacy training. *International Journal of Innovation and Sustainable Development*. 16(2), 197-213.
- Nugent, J. B. & Yhee, S. (2002). Small and Medium Enterprises in Korea: Achievements, Constraints and Policy Issues. *Small Business Economics*. 18. 85-119. doi:10.1023/A:1015181911497.
- Ono, S., Yuktadatta, P., Taniguchi, T., Iitsuka, T., Noguchi, M., Tanaka, S., Ito, H., Nakamura, K., Yasuhara, N., Miyawaki, C., Mikura, K., Khan, M. & Kadoya, Y. (2021). Financial Literacy and Exercise Behavior: Evidence from Japan. *Sustainability*. 13. doi:10.3390/su13084189.
- Oosterveld, P., Vorst, H. & Smits, N. (2019). Methods for questionnaire design: a taxonomy linking procedures to test goals. *Quality of Life Research*. 28. 1-12. doi:10.1007/s11136-019-02209-6.
- Orton, L. (2007). Financial Literacy: Lessons from International Experience. Canadian Policy Research Networks.
- Penz, P. G. (1986). *Consumer Sovereignty and Human Interests*. Cambridge Books, Cambridge University Press, ISBN: 0521070910
- Pereira, V. S. V. (2011). Orçamento familiar: uma ferramenta para gerir os recursos financeiros da esfera doméstica. In: Encontro Internacional de Produção Científica - EPCC, VII. ISBN 978-85-8084-055-1
- Rahmandoust, M., Shah, I. M., Norouzi, M., Hakimpoor, H. & and Khani, N. (2011). Teaching Financial Literacy to Entrepreneurs for Sustainable Development. *OIDA International Journal of Sustainable Development*, Vol. 2, No. 12, pp. 61-66.
- Remund, D. (2010). Financial Literacy Explicated: The Case for a Clearer Definition in an Increasingly Complex Economy. *Journal of Consumer Affairs*. 44. 276 - 295. doi:10.1111/j.1745-6606.2010.01169.x.
- Ribeiro, R. B. & Soares, I. (2016). Insights and directions for sociological approaches to saving: The case of a Financial Education Programme for children in Portugal. *Journal of Consumer Culture*, 17(3), 845-863. doi:10.1177/1469540516634411
- Sampieri, R. H., Collado, C. F. & Lucio, P. B. (2006). *Metodologia de pesquisa*. 3ª ed. São Paulo: McGraw-Hill.
- Santos, J. O. & Santos, J. A. R. (2005). Mercado de capitais: racionalidade versus emoção. *Revista Contabilidade & Finanças*., v. 16, n. 37. ISSN 1808-057X. doi:10.1590/S1519-70772005000100008.
- Scheresberg, C. B. (2013). Financial Literacy and Financial Behavior among Young Adults: Evidence and Implications. *Numeracy*. 6. doi:10.5038/1936-4660.6.2.5.
- Sehn, C. A. & Feil, A. A. (2018). Análise da ferramenta orçamento familiar. *REA - Revista Eletrônica de Administração*. ISSN: 1679-9127, v. 17, n.1, ed. 32.
- Sekita, S. (2011). Financial Literacy and Retirement Planning in Japan. *NETSPAR - Network for Studies on Pensions, Aging and Retirement - Institute of Social and Economic Research, Osaka University*. doi:10.2139/ssrn.1809681
- Silva, J. G., Silva Neto, O. S. & Araújo, R. C. C. (2017). Educação Financeira de Servidores Públicos: Hábitos de Consumo, Investimento e Percepção de Risco. *Revista Evidenciação Contábil & Finanças*, 5(2), 104-120.
- Spaargaren, G. (2000). Ecological modernization theory and domestic consumption. *Journal of Environmental Policy and Planning*, 2(4), 323-335. doi:10.1002/1522-7200(200010/12)2:4<323::aid-jep-p61>3.0.co;2-w

- Speer, S. (2013). Challenges in evaluating financial literacy. In: J.E. Furubo, R. C. Rist and S. Speer (Eds.) *Evaluation and Turbulent Times: Reflections on a Discipline in Disarray. Comparative Policy Evaluation*, vol. 20. New Brunswick, NJ: Transaction Publishers, ISBN 9781138509863
- Stango, V. & Zinman, J. (2008). Exponential Growth Bias and Household Finance. *Journal of Finance*. doi:10.2139/ssrn.1081633
- Steffen, W., Richardson, K., Rockström, J., Cornell, S. E., Fetzer, I., Bennett, E. M., Biggs, R., Carpenter, S. R., Vries, W., De Wit, C. A., Folke, C., Gerten, D., Heinke, J., Mace, G. M., Persson, L. M., Ramanathan, V., Reyers, B. & Sörlin, S. (2015). Planetary boundaries: Guiding human development on a changing planet. *Science*, 347(6223), 1259855–1259855. doi:10.1126/science.1259855
- Swiecka, B., Yeşildağ, E., Özen, E., & Grima, S. (2020). Financial Literacy: The Case of Poland. *Sustainability*, 12(2), 700. doi:10.3390/su12020700
- Tavares, F. O., Tavares, V. C., Santos, E. & Ratten, V. (2020). The Perception And Knowledge Of Financial Risk Of The Portuguese. *Sustainability*. 12. doi:10.3390/su12198255.
- Tomášková, H., Mohelska, H. & Němcová, Z. (2011). Issues of Financial Literacy Education. *Procedia - Social and Behavioral Sciences*. 28. doi:10.1016/j.sbspro.2011.11.069.
- Torres, I. A. & Barros, F. S. (2014). Investimentos financeiros: uma análise dos alunos investidores de uma Instituição de ensino superior de Brasília – DF, *Universitas Gestão e TI*, v. 4, n. 1, p. 39-53, ISSN 2179-832X doi:10.5102/UN.GTI.V4I1.2804
- Trinh, L. Q., Morgan, P. J., & Sonobe, T. (2020). Investment behavior of MSMEs during the downturn periods: Empirical evidence from Vietnam. *Emerging Markets Review*, 100739. doi:10.1016/j.ememar.2020.100739
- Van Rooij, M., Lusardi, A., & Alessie, R. (2011). Financial literacy and stock market participation. *Journal of Financial Economics*, 101(2), 449–472. doi:10.1016/j.jfineco.2011.03.
- Veld-Merkoulova, Y. (2011). Investment Horizon and Portfolio Choice of Private Investors. *International Review of Financial Analysis*. 20. 68-75. doi:10.1016/j.irfa.2011.02.005.
- Wacquant, L. J. (2002). O legado sociológico de Pierre Bourdieu: duas dimensões e uma nota pessoal. *Revista de Sociologia e Política*, 95-110.
- Willis, M. M., & Schor, J. B. (2012). Does Changing a Light Bulb Lead to Changing the World? Political Action and the Conscious Consumer. *The ANNALS of the American Academy of Political and Social Science*, 644(1), 160–190. doi:10.1177/0002716212454831
- Xiao, J.J., Tang, C & Shim, S. (2008). Acting for Happiness: Financial Behavior and Life Satisfaction of College Students. *Social Indicators Research*. 92. 53-68. doi:10.1007/s11205-008-9288-6.
- Ye, J. & Kulathunga, K. (2019). How Does Financial Literacy Promote Sustainability in SMEs? A Developing Country Perspective. *Sustainability*, 11(10), 2990. doi:10.3390/su11102990
- Yuktadatta, P., Khan, M. & Kadoya, Y. (2021). Financial Literacy and Exercise Behavior in the United States. *Sustainability*. 13. doi:10.3390/su13169452.
- Zhu, A. Y. F. & Chou, K.. (2018). Financial literacy of Hong Kong adolescents: Testing the validity of a scale and evaluating two conceptual models. *Youth & Society*. doi:10.1177/0044118X17753813
- Zhu, T., & Xiao, J. J. (2021). Consumer financial education and risky financial asset holding in China. *International Journal of Consumer Studies*. doi:10.1111/ijcs.12643
- Zinman, J. (2015). Household Debt: Facts, Puzzles, Theories, and Policies. *Annual Review of Economics*, 7(1), 251–276. doi:10.1146/annurev-economics-080614-115640