Mental Accounting Effects on Overspending Behavior: A Study with Brazilian Individuals

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Abstract
This research aimed to analyze Mental Accounting effects on the Overspending Behaviors of Brazilian individuals. This is a qualitative, descriptive and explanatory study, carried out through bibliographical research and case study, using the Content Analysis method, with pre-defined analysis categories. Data collection took place through semi-structured interviews with 27 Brazilian individuals, from the 27 states of Brazil and the research *corpus* was composed of transcriptions of the 27 interviews. The results indicate evidence of occurrences of the cognitive process of Mental Accounting and its biases in the three dimensions of domestic finance -. planning, income and credit card - and, in these three dimensions, stages of coding, categorization and evaluation were identified. In the coding stage, evidence was found that the dimensions of planning, income and credit card are all coded together, because they are all within the scope of planning. Still at the coding stage, the results seem to confirm the idea that the card bill would be a cluster of several smaller losses, being edited hedonically in loss integration form. In the categorization stage, interviewees cited labels for their income and expenses. In the evaluation stage, it was possible to observe that in Planning, planned individuals tend to *ex ante* evaluation and unplanned individuals tend to *ex post* evaluation; in income, the majority tends towards *ex ante* assessment; and in credit cards, everyone tends to *ex post* evaluation. Finally, the category of overspending behaviors with the greatest number of signs of the occurrence of Mental Accounting and its biases was the category of balanced behaviors, contradicting the idea that excessive behaviors would have a greater relationship with Mental Accounting.
Keywords: Mental Accounting; Personal Finance; Overspending Behavior; Brazilian Individuals.

Submetido em 06/10/2024 e aceito em 17/12/2024 por Patrícia Bortolon após o processo de Double Blind Review

1 Introduction

Mental Accounting is the cognitive process by which an individual, in an irrational and unconscious manner, encodes, categorizes, and evaluates economic events they perceive. The consumption of a family or an individual is an example of an economic event that is "mentally accounted for" when discussing household finances (Thaler, 1985; 1999).

As previously mentioned, the cognitive process of Mental Accounting takes place in the irrational and unconscious field of the mind, which is also often responsible for processing emotional, sentimental, and cultural factors. These aspects are frequently linked to individuals' overspending behaviors (Bae *et al.*, 1993; Fan *et al.*, 2020; Nashawati, 2018; Khare, 2016; Paraíso & Fernandes, 2019; Carraro & Merola, 2018; Campara *et al.*, 2016; Cerbasi, 2016).

Therefore, while it is known that there is some relationship between Mental Accounting and people's overspending behaviors, there is no consensus in the literature on how this relationship occurs or whether it is beneficial or detrimental to household finances and overspending behaviors.

Given these gaps, this study was guided by the following question: How does Mental Accounting affect the overspending behaviors of Brazilian individuals? The main objective was to analyze the effects of Mental Accounting on the overspending behaviors of Brazilian individuals.

The study of this topic is relevant considering that the Theory of Mental Accounting is an emerging subject and has been the focus of various studies in Brazil in recent years (Miotto & Parente, 2015; Kitsch *et al.*, 2016; Zaneta, 2016; Silva *et al.*, 2017; Santos *et al.*, 2019; Constantino, 2020; Rengel, 2020; Silva, 2020; Avanzi *et al.*, 2020; Bugalho, 2021). However, no similar studies were found that aimed to investigate the relationship between the proposed phenomena – namely, the cognitive process of Mental Accounting and the overspending behaviors of brazilian individuals.

Regarding contributions, it is expected that this study will deepen the understanding of Mental Accounting and its relationship with the financial behavior patterns of Brazilian individuals. It is also intended to support financial professionals and brazilian citizens in better understanding the implications of Mental Accounting on human behavior, especially in financial decision-making processes. This understanding could help develop strategies to optimize spending control, reduce debts, and balance finances.

2. Theoretical Framework

2.1 Mental Accounting, its stages and biases

Mental Accounting is defined as the irrational and often unconscious cognitive process by which individuals encode, categorize, and evaluate the economic events that occur in their daily lives (Thaler, 1999). This process involves three cognitive stages (encoding, categorization, and evaluation), which are biased by the heuristics of the human mind that sometimes influence individuals' decisions (Thaler, 1980; 1985; 1999). The main biases that permeate the cognitive process of Mental Accounting are presented in Table 1.

Table 1
Mental Accounting Biases

Bias	Concept
Endowment Effect	Overvaluation of one's own assets in comparison to the assets of others, due to the emotional attachment to their ownership.
Sunk Cost	The futile attempt to recover a lost investment, whether in time, money, or any other kind of loss.

Prices Psychophysics	The tendency to perceive absolute values as relative values and make decisions based on this perception.
Regret Aversion	Aversion to alternatives that involve the possibility of regret, leading to avoidance or inaction.
Self-Control	The tendency to create tools to help control expenses, assuming individuals lack the discipline to do so on their own.

Note. Adapted from Thaler (1980, 1985, 1999).

To better understand how each of these biases operates during the stages of the Mental Accounting cognitive process, each of them is explained below.

The encoding stage describes how people perceive and experience gains and losses in their combined form (Thaler, 1999). According to the author, there are four ways to combine losses and gains: 1) In the case of successive gains, an individual will always prefer to segregate them, as a person feels happier when experiencing the pleasure of a gain multiple times. 2) For losses, the perceived utility increases through integration, as the pain of multiple losses is felt only once. 3) For mixed gains (larger gains that offset small losses), perceived utility increases if they are integrated with losses, as the pain of small losses is outweighed by the pleasure of larger gains. 4) In the case of mixed losses (larger losses offset by small gains), a person is less unhappy when segregating losses from gains, as the smaller gains serve as a "silver lining" to ease the larger losses.

Thaler referred to these methods of grouping gains and losses as Hedonic Editing, because an individual will always prefer to group or segregate events of gain or loss in order to maximize perceived utility, that is, increasing their pleasure or reducing their pain (Thaler, 1985).

This encoding stage, according to Avanzi *et al.* (2020), is closely linked to the principle of psychophysics, as it directly influences the perception of perceived utility by individuals, and consequently, the forms of hedonic editing, in a way that convinces the consumer that a deal was good, even when it was not.

The categorization stage, in turn, aims to categorize the budget, that is, to classify income and expenses into mental accounts of assets and liabilities, following a logic specific to each category (Shefrin & Thaler, 1988; Thaler, 1999). For example, income is part of the mental account category of assets and is labeled both by its temporal flow and liquidity availability. This means that the way in which income is obtained (regularly or unexpectedly) influences how it will be spent, so the type of expense depends on the type of income. Finally, the greater the liquidity of income, the greater the temptation to spend it (Thaler, 1999). Expenses, in turn, make up the mental account category of an individual's liabilities and are labeled in potential budgetary categories (Thaler, 1999), designated according to areas of their personal life, as explained by Adams and Cuecuecha (2010) and Li *et al.* (2010). Thus, liability categories, or expenses, may include, for example, entertainment, health, housing, durable goods, family support, among others (Adams & Cuecuecha, 2010; Li *et al.*, 2010).

Moreover, the categorization phase, according to Miotto and Parente (2015), Constantino (2020), and Sui *et al.* (2020), is closely related to the self-control bias, as the categories assigned to income allow individuals to track the flow and availability of their income, while the categories of expenses allow them to map the allocation of available resources. This function as a tool for controlling household expenses and contributes to balanced overspending behavior. On the other hand, Lima (2003), Kitch *et al.* (2016), and Zanetta (2016) argue that the act of categorizing income and expenses pushes individuals even further away from rationality, as they will treat their financial problems in a segmented manner, even if it harms them. An example of this is when an individual takes out a high-interest loan to pay off a debt, even though they have money invested. This phenomenon, according to the

authors (Lima, 2003; Kitch *et al.*, 2016; Zanetta, 2016), may stem from the endowment effect, in which an individual tends to overvalue an item they own (in this case, their invested money) compared to items belonging to others (the money loaned at the bank).

Finally, the evaluation stage refers to the frequency with which mental accounts are assessed. Evaluating a mental account means balancing that account daily, weekly, monthly, or annually. The evaluation stage typically occurs *ex ante*, meaning based on the expectation of an event. *Ex post* evaluations, that is, evaluations based on a completed event, are less common but may increase in frequency depending on the size of the transaction or as an atypical purchase or transaction becomes more common (Thaler, 1999).

The principle of psychophysics is also present in this stage of the Mental Accounting process, asit can influence the perception of the utility of a transaction experienced by individuals, convincing them that a deal was good even when it was not (Avanzi *et al.*, 2020). Furthermore, the evaluation stage is also related to the sunk cost bias, as it is at this stage that an individual typically realizes the occurrence of a possible irreversible bad deal and, as a result, is likely to try to recover the lost investment, repeating the entire cognitive process over and over again, even if unsuccessful (Thaler, 1980).

Finally, as explained by Lima (2003), regret aversion is related to the entire cognitive process of Mental Accounting and can occur at any of the three stages, as when encoding, categorizing, or evaluating an economic event, the individual may, due to the bias, avoid an alternative that seems risky or even choose to do nothing, maintaining the status quo without making a decision.

Moreover, in order to fulfill the objectives of this study, it is necessary to discuss overspending behavior in more detail to better understand its relationship with the cognitive process of Mental Accounting.

2.2 Overspending Behavior

Consumption patterns and financial habits that vary according to the intrinsic behaviors of each individual are also referred to as overspending behavior, or simply spending behaviors in the translations of international works (Sui *et al.*, 2020; Fan *et al.*, 2020; Nashawati, 2018; Carraro & Merola, 2018), and can impact financial decisions, consequently affecting the family's financial planning as a whole (Securities and Exchange Commission [CVM], 2019).

Overspending behaviors that involve good or excellent financial habits and consumption patterns are considered balanced overspending behavior, as they do not cause problems to the individual's and/or family's financial health and aim, at a minimum, to balance monthly income and expenses (Sui *et al.*, 2020; Fan *et al.*, 2020; Nashawati, 2018; Carraro & Merola, 2018; Paraíso & Fernandes, 2019; Khare, 2016; Campara *et al.*, 2016). On the other hand, behaviors that display costly consumption habits and patterns that destabilize household finances reinforce the tendency to indebtedness and non-payment, and are therefore considered excessive overspending behavior, as they generally prevent any financial planning, generate more expenses than planned, and as a result, the established budget is not followed. Thus, expenses frequently exceed monthly salaries, and the credit card is used uncontrollably, as if it were a supplement to the income that is missing, with the bill rarely paid on time and/or in full (Sui et al., 2020; Fan *et al.*, 2020; Nashawati, 2018; Carraro & Merola, 2018; Paraíso & Fernandes, 2019; Khare, 2016; Campara *et al.*, 2016).

According to Sui *et al.* (2020), individuals' overspending behavior, whether in its balanced or excessive form, can manifest primarily in three dimensions of household finances: the financial planning dimension, the income dimension (also called the budget dimension), and the credit card expenses dimension.

The financial planning dimension, or simply planning, refers to the control and expenditure strategies that allow families to ensure their budget balance and achieve short, medium, and long-term goals, as mentioned by Jorge and Ferreira (2011) and the CVM (2019), given that families with a solid financial plan are less likely to overspend and are therefore always financially balanced, spending only within what was predicted (Sui *et al.*, 2020). Thus, it is understood that overspending behavior in relation to the planning dimension, when it assumes its balanced form, tends to fit and follow a specific plan. On the other hand, when such behavior takes on an excessive form, there is no planning and/or when there is, it is not faithfully executed.

The income or budget dimension refers to the budget constraint described by Thaler (1985) that the budget is limited to the family's income. Thus, expenses, or liabilities, must be compatible with assets to maintain household financial balance. Otherwise, the household budget would become deficient, as expenses would exceed income (Sui *et al.*, 2020). In summary, the income dimension deals with the balance between income from the monthly salaries of family members and their monthly expenses. It is the balance of the monthly budget. In this sense, the balanced form of overspending behavior in the income dimension would be when income and expenses remain balanced in the short term, usually within the month. In contrast, the excessive form occurs when expenses always exceed income, causing frequent imbalance in the established budget.

Finally, the credit card expenses dimension, although a routine expense for many families, in the views of Carraro and Merola (2018), Paraíso and Fernandes (2019), Khare (2016), and Campara *et al.* (2016), should be observed with greater attention, as in many countries, it is the factor that most drives individuals into debt and, in many cases, also into default. Thaler (1999) and Khare (2016) explain that this happens because when a person makes a purchase using a credit card, they do not feel the pain of loss, represented by the cash outflow at that moment, and have the illusory feeling that they will not have to pay for the purchase. In other words, there is a dissociation between the purchase and consumption, which seems to reduce the perceived cost of the purchase event. Sui *et al.* (2020) support this idea by stating that credit card spending does not seem as painful as spending cash. Based on this, Sui *et al.* (2020) and Khare (2016) argue that overspending behavior related to the credit card expense dimension is considered balanced when this resource is used consciously, and especially when individuals and/or families, within the established budget, are able to pay their monthly bills, preferably in full and on time. The opposite scenario would occur if the individual and/or family were never, or almost never, able to pay the bill on time and/or in full, which would result in overspending behavior harmful to household finances.

Furthermore, some authors argue that overspending behavior, especially the excessive type, is often driven by emotional, sentimental, and cultural factors (Bae *et al.*, 1993; Fan *et al.*, 2020; Nashawati, 2018; Carraro & Merola, 2018; Paraíso & Fernandes, 2019; Khare, 2016; Campara *et al.*, 2016; Cerbasi, 2016), that is, factors also related to the irrational and sometimes unconscious part of the mind, just like Mental Accounting, which could be an indication that it has more influence on excessive behaviors than on balanced ones.

In light of the above, the next section explores possible relationships between overspending behavior in its three dimensions and the cognitive process of Mental Accounting, aiming to elucidate the objective of this study.

2.3 Relationships between Mental Accounting and Overspending Behavior

In the available literature on Mental Accounting and individuals' overspending behaviors, there is no consensus on how the cognitive process of Mental Accounting influences household finances and, consequently, overspending behaviors. Some authors argue that

Mental Accounting is benign to household finances and promotes balanced overspending behaviors (Miotto & Parente, 2015; Constantino, 2020; Sui *et al.*, 2020). However, other authors claim that Mental Accounting is detrimental to household finances and reinforces excessive overspending behaviors (Lima, 2003; Silva, 2020; Avanzi *et al.*, 2020; Kitch *et al.*, 2016; Zanetta, 2016). Thaler (1999), the pioneer in the studies of Mental Accounting, questions whether it is beneficial overall for people's routines and suggests research in this direction to resolve such controversy (Thaler, 1999). Nevertheless, what all the cited authors agree on is that there is some relationship between the cognitive process of Mental Accounting and individuals' overspending behaviors, and that the biases resulting from Mental Accounting are present in this relationship.

Thus, as previously mentioned, overspending behavior in the planning dimension deals with broader financial strategies involving short, medium, and long-term goals, and therefore encompasses the income dimension (usually short-term), which in turn includes the credit card expenses dimension (Sui *et al.*, 2020; Bae *et al.*, 1993; Thaler, 1999; Carraro & Merola, 2018; Paraíso & Fernandes, 2019; Khare, 2016; Campara *et al.*, 2016). It is understood that the planning, income, and credit card dimensions follow the tendency of being coded together in the cognitive process of Mental Accounting, as they all fall under the scope of planning.

Moreover, planning is a set of strategies and economic events aimed at achieving a future goal, which may result in gains (in case of success) or losses (in case of failure) (Jorge & Ferreira, 2011; CVM, 2019; Nashawati, 2018); just as the income dimension also aims to record monthly income and expenses, in a combined way, in order to balance the budget (Thaler, 1999; Sui *et al.*, 2020). Therefore, these two dimensions are subject to hedonic editing in the form of mixed gains and losses, either segregating when losses are greater than gains or integrating when gains are greater than losses. The credit card dimension, on the other hand, can be seen as a combination of several smaller losses, integrated into a single monthly payment, meaning that hedonic editing would occur in the form of integrating losses (Thaler, 1985; 1999).

Furthermore, when talking about a household budget, it automatically involves categorizing assets and liabilities with the aim of achieving a future goal, within a broader plan. Thus, whenever an individual sets a monthly household budget, they are categorizing mental accounts to label gains and losses resulting from their economic events (Thaler, 1999). The mental accounts that are drawn adapt to the family context, varying according to the subjectivity of each family (Thaler, 1999; Kahneman & Tversky, 1999).

Finally, the evaluation related to overspending behaviors, that is, the judgment and decision about what to do concerning the planning, income, and credit card dimensions, follows the time constraint imposed by the budget. In other words, the analysis and decisions about a family's finances occur monthly, although this period should be longer to allow for more consolidated planning, according to Thaler's theory (1999). Moreover, the evaluation step, executed by individuals with balanced overspending behaviors, tends to occur *ex ante*, as they generally follow a prior plan that allows them to judge and decide about their financial events before they occur. In contrast, individuals with excessive overspending behaviors, due to their poor habits and consumption patterns that prevent them from following any plan, are only able to analyze their results after the fact, i.e., *ex post* (Thaler, 1999).

The following section describes the methodological procedures used in the study.

3 Methodological Procedures

Considering the objective of this study, which is to analyze the effects of Mental Accounting on the overspending behaviors of Brazilian individuals, a qualitative research was conducted (Silva & Menezes, 2001; Woods, 1999) with a descriptive-explanatory nature (Gil, 2010). The research was carried out through a bibliographic review and a case study (Yin, 2005;

Creswell, 2014), using Bardin's content analysis method (1977). The approach used was Thematic Categorical Content Analysis, with the enumeration of indicators based on the presence (or absence) of phenomena and frequency counting, as proposed by Oliveira (2008), utilizing predefined analysis categories based on the reviewed literature. These categories are illustrated in Table 2.

Table 2:
Categories of Analysis Used in the Study

Themes	Analysis Categories
Overspending Behavior	Balanced Overspending Excessive Overspending
Mental Accounting Cognitive Process	Coding Stage Categorization Stage Evaluation Stage Endowment Effect Sunk Cost Bias Psychophysical Principle Regret Aversion Self-Control Bias

Note. Created by the authors based on the study theoretical framework.

Data collection occurred in July and August 2022 through semi-structured individual interviews guided by a script. The aim was to capture the overspending behaviors reported by the interviewed individuals across the three dimensions of household finances: financial planning, income, and credit cards. The goal was then to identify signs of the occurrence of the Mental Accounting cognitive process in its three stages (Coding, Categorization, and Evaluation), as well as the biases associated with these stages (endowment effect, psychophysical principle, sunk cost bias, regret aversion, and self-control bias). In other words, the focus was on the overspending behavior described by the interviewees and the search for signs of Mental Accounting (presence or absence) within these behaviors, along with the frequency of these signs.

Twenty-seven Brazilian individuals were interviewed, one from each Brazilian state. The selection of these individuals was non-probabilistic and intentional. Part of the interviewees were invited from the researcher's network of contacts, while others were referred by previous interviewees (Snowball Technique) and/or recommended by the researcher's friends and acquaintances. The only inclusion criteria were: Brazilian nationality and being from a different federative state than the previous interviewee, to avoid attributing the findings to cultural traits of any particular region.

The interviewees were mostly individuals who identified as female, with an average age of 34 years. Most had begun higher education and had various professions. The average monthly net income per family was approximately 9,000 reais, considering all interviewees, ranging from those with incomes up to 35,000 reais to those with no income.

The research was extended to all 27 Brazilian states because Sui *et al.* (2020) and Niazi and Malik (2020) suggest that people’s behaviors vary according to their realities and/or contexts. In other words, different regions, with distinct demographics and contexts, give rise to different behaviors, subjective to each reality. It is important to emphasize, however, that there was no intention to compare the cultures of each Brazilian state, but rather to report the different ways in which Mental Accounting influences the behaviors of Brazilian individuals. Thus, the research corpus consisted of the transcription of the 27 interviews conducted.

The results of the analysis and the discussion of these findings are presented in the next section.

4. Analysis and Discussion of the Results

4.1 Signs of the Occurrence of Mental Accounting and Its Biases on Overspending Behaviors

The results obtained through content analysis allowed for the identification of signs of the occurrence of the Mental Accounting process and its biases across the three dimensions of household finances. For better understanding of the analysis, the information is presented separately, first describing the findings for the financial planning dimension, then for the income dimension, and finally for the credit card dimension.

4.1.1 Signs of the Occurrence of Mental Accounting and Its Biases on Overspending Behaviors in the Financial Planning Dimension

Regarding the coding stage in the financial planning dimension, when asked to describe what they thought about when visualizing the term "Financial Planning," the interviewees frequently mentioned terms such as "don't spend more than I earn," "don't exceed my budget," "expense control," and even their own expenses. These elements are related to the income dimension, in which the credit card is implicitly included, as it is also a source of expenses. This occurred across the three dimensions analyzed. These records were classified under the "Coding Stage" category and suggest that, in fact, financial planning encompasses income, which in turn includes the credit card, meaning the dimensions of planning, income, and credit card are all coded together because they all fall under the scope of Planning. This confirms what the literature has suggested (Sui *et al.*, 2020; Bae *et al.*, 1993; Thaler, 1999; Carraro & Merola, 2018; Paraíso & Fernandes, 2019; Khare, 2016; Campara *et al.*, 2016). Some of the interviewees' reports on what they visualize as "Financial Planning" are presented below:

> It's making a list of what you receive and what you have to spend during the month, right? During that period when you spent. It's more or less like that. (Interviewee 5 – RJ, Administrative Technician in Education, 55 years old).

> Look, for me, it has always been about not spending beyond what I earn and always setting aside a reserve margin. It's not every month that I can do this, but we always try to work with this planning. (Interviewee 17 – BA, Accountant, 36 years old).

> Ah, it's total control of monthly expenses, right? Especially using a spreadsheet for detailed control of what is spent monthly. Here at home, we have a breakdown of fixed monthly expenses and potential expenses that are not planned for the month, right? (Interviewee 20 – RS, IT Project Manager, 33 years old).

Still in the coding stage, regarding hedonic editing for the financial planning dimension, no evidence was found to confirm the idea that planning would be edited in the form of mixed gains and losses, as anticipated by Thaler (1999) and Sui *et al.* (2020). This is because none of the interviewees suggested any perception of success as a gain and failure as a loss, nor did they suggest that these successes or failures could be separated or integrated in any way. None of the interviewees said anything that could confirm such relationships, although they do recognize that financial planning brings financial benefits to those who practice it.

In the categorization stage, considering that the interviewees frequently mentioned terms such as "expenses," "fixed expenses," "reserve," "investment," and "budget" in an attempt to classify some expense or income while talking about their planning, the "Categorization Stage" category was assigned to all these records, as it refers precisely to the mental labeling of income and expenses (Thaler, 1999).

Finally, regarding the evaluation stage, the results indicate that individuals who are organized, that is, those with balanced overspending behaviors, tend to evaluate *ex ante*, as they usually follow a prior plan that allows them to judge and decide on their financial events before they happen. In contrast, unorganized individuals with excessive overspending behaviors tend to evaluate *ex post*, as due to their bad habits and consumption patterns, they do not follow any planning and can only analyze their results after the events occur (Thaler, 1999). The reports from interviewees 8 and 15, who reported excessive and balanced overspending behaviors respectively, exemplify this result:

> I never made any planning, and currently, with the effects of the pandemic, I'm no longer in the job I was before, and I can't save money because after paying the bills, there's never anything left. (Interviewee 8 – AC, Real Estate Agent, 31 years old)

> Yes, I got a planning now. Today I'm rebuilding the amount I had to use for my career transition, but anyway, I'm now rebuilding this reserve that I had to use, and I have a certain amount I want to reach so that, in the future, I can have a retirement, even though I don't receive a government pension or anything like that. (Interviewee 15 – SC, Electrical Engineer, 30 years old)

Additionally, still regarding the evaluation stage in planning, there were several reports from interviewees stating that they conduct a weekly, biweekly, monthly, and even annual balance of their financial planning. Some reports from the interviewees follow, illustrating these findings:

> I usually did this control every two weeks because my credit cards are on a biweekly cycle. But the household bills were on a monthly basis. (Interviewee 7 – AL, Business Owner, 55 years old)

> I try to make this planning at least once a month. (Interviewee 3 – MT, High School Graduate, University Student)

> I only make the planning once a year, when I file my income tax return, usually in April. (Interviewee 15 – SC, Electrical Engineer, 30 years old)

4.1.2 Evidence of the Occurrence of Mental Accounting and Its Biases on Overspending Behaviors in the Income Dimension

The income dimension, in summary, deals with the balance of a family's monthly budget, as this is where monthly income and expenses are recorded, combined, in order to confront them and assess what needs to be adjusted. (Thaler, 1985; 1999; Jorge & Ferreira, 2011; Kitch, 2016; Sui *et al.*, 2020). In this regard, with respect to categorization, the results revealed that all interviewees, even if unconsciously, have the habit of categorizing income and expenses as a way of controlling them, with the labeling of these items being unanimous among all. Two of the records of these categorizations are transcribed below.

> Our sources of income come from our work. I am a Navy engineer, and my wife is a nursing resident. The expenses I have every month are rent, condominium fees, electricity, gas, and credit card. (Interviewee 1 – AM, Naval Engineer, 27 years old).

> I only have income from my job. I don't have any other source of income. Regarding my bills, the priority is the rent, which is due on the first, then comes the credit card, and the rest comes after, such as electricity, phone, internet, the regular bills we have. But initially, it's the credit card and rent. (Interviewee 5 – RJ, Administrative Technician in Education, 55 years old).

Furthermore, in addition to categorizing income and expenses, some interviewees also assign more specific labels to certain categories, such as 'fixed expenses,' 'variable expenses,' 'variable income,' or, as Interviewee 2 (RR, Specialist, Nurse) justified, 'having indulged in buying a new car' because she pays for the car installments with a specific income: 'the income from the land installments I sold,' and Interviewee 14 (ES, Specialist, Nurse), who reported paying for a consortium to eventually purchase an apartment, implying that the allocation of income (expense) is defined based on its source (revenue), meaning that the type of expense depends on the type of income, as described by Thaler (1999).

Regarding the coding stage, there were numerous reports concerning credit cards, which were spontaneously mentioned while discussing budgeting, confirming the idea that credit cards and income are coded together, just as income, in turn, is coded within planning, as mentioned in the previous section. This confirms the approach adopted in the study by Sui *et al.* (2020) and the ideas of Bae *et al.* (1993), Thaler (1999), Carraro and Merola (2018), Paraíso and Fernandes (2019), Khare (2016), and Campara *et al.* (2016). Two of these reports are presented below:

> When the money comes in, I pay my fixed debts, right? Most of them are charged to my credit card, so I already have a general view of how things are and how much will be charged. The first thing I do is really allocate it to my debts. I pay everything off first and then I think about what I will do with my money. (Interviewee 4 – DF, Data Analyst, 31 years old).

> When the payment comes in, I pay everything in the first week, except the credit card bill, because it only closes on the 13th, so it's no use paying before that. But all the bills I can pay in advance, I will do that [...]." (Interviewee 16 – PR, Psychologist, 26 years old).

Still regarding the coding stage, with respect to hedonic editing, for the income dimension, the idea that there would also be an editing in the form of mixed gains and losses (Thaler, 1999) was partially confirmed, since only expenses were considered by the interviewees as losses, as they caused some discomfort; and there seems to be a tendency to always integrate all gains and losses, regardless of whether they are greater or smaller, because payments (of expenses) are made once a month, which is different from what Thaler (1999) predicted, stating that there would be segregation when losses are greater than gains and integration when gains are greater than losses. The records of these discomfort perceptions regarding expenses are presented below:

> Well, when I think about my income and expenses, I got a bit anxious. It gives me a little bit of anxiety because I can't predict how much will come in and if I will manage to reach the end of the month within that reality. Since this causes me anxiety, it leads to negative thoughts. (Interviewee 9 – RN, Psychologist, 39 years old).

> I think it's desperation (laughs). Some time ago, I started tracking my expenses and writing them down because I had the feeling that I couldn't see where my money was going. It's really a feeling of losing control.' (Interviewee 16 – PR, Psychologist, 26 years old).

Finally, regarding the evaluation stage, in the income dimension, the results were almost identical to those found for the planning dimension concerning the frequency with which mental accounts are reviewed. However, regarding the nature of the evaluations conducted, it was observed that most interviewees (67%) tend to evaluate *ex ante*, because they either anticipate the budget or make adjustments during its execution. The reports showed that families, at least, did not end up in the red at the end of the month. The interviewees who did not perform such

actions (33%) reported always running out of money by the end of the month, as they only performed evaluations or made decisions when they were already in the red, meaning they were engaging in *ex post* evaluation. The reports of Interviewees 10 and 3 relate to *ex ante* evaluation, and Interviewee 9's report pertains to *ex post* evaluation:

> Usually, there's some left over. Now that we've started this routine of setting aside money for investment, as if it were a fixed account to invest in every month, because it gives a higher return. (Interviewee 10 – RO, Entrepreneur, 34 years old).

> It never lacks, but sometimes I want to do something and realize I don't have enough money, so I say "I won't do it." In Cuiabá, it's very difficult because we spend a lot on Uber, so I skip going places to avoid spending on Uber or to reduce expenses as well. So, it doesn't lack, but there's not much left over either. (Interviewee 3 – MT, University Student, 20 years old).

> The biggest frequency has been the lack. Before, when we needed money, we used to get my aunt's credit card, but she has passed away [...]. Now that she is not here anymore, we pay what we can, and what we can't, we push it forward. When something comes in, we see, and then we recalculate the route. (Interviewee 9 – RN, Psychologist, 39 years old).

4.1.3 Indications of Occurrence of Mental Accounting and Its Biases on Overspending Behavior in the Credit Card Dimension

In the coding stage, regarding the credit card dimension, the results demonstrated that, in the perception of the interviewees, the credit card can indeed influence the budget and planning, both in positive and negative ways, depending on how it is used. This is illustrated by the reports of Interviewees 13, 16, and 21, for example:

> The credit card influences the budget a lot, because Brazilians don't know how to use it. It becomes a snowball, and then they can't even pay what they've spent. (Interviewee 13 – SP, Domestic Worker, 57 years old).

> The credit card influences, for sure, because people use credit as if it were a source of income, when in fact, it becomes just another expense, it's a false cover. (Interviewee 16 – PR, Psychologist, 26 years old).

> I see it like this... sometimes people want to buy something more expensive and don't have the money to pay it upfront, so it's easier for them to buy using the credit card. So, looking at it this way, it helps because they'll be able to pay a smaller installment every month." (Interviewee 21 – PI, Early Childhood Teacher, 42 years old).

These opinions further reinforce the proposition in this study that the planning, income, and credit card dimensions in the process of Mental Accounting are all coded together, as they are interconnected, as suggested by the studies of Bae *et al.* (1993), Thaler (1999), Carraro and Merola (2018), Paraíso and Fernandes (2019), Khare (2016), Campara *et al.* (2016), and Sui *et al.* (2020). Additionally, it was confirmed that the credit card bill is indeed perceived as a conglomerate of smaller losses, being hedonically edited in the form of integrated losses. That is, several smaller expenses are combined into a single monthly payment, with these expenses perceived as losses because they bring negative perceptions to the interviewees (Thaler, 1985; 1999). Some of them mentioned centralizing all their expenses on the bill, precisely as a way to visualize everything in one place, facilitating both the analysis of the expenses and the payment. In addition to this finding, it was observed that most interviewees associated the bill with negative thoughts when they were asked to reflect on their credit card bill. The reports of Interviewees 27 and 10 summarize these results:

> I think about pain, sadness, discouragement, bitterness (lots of laughs). Because currently, my bill is high, especially now that I centralize all my expenses on it. It's much higher than I'd like it to be. I've accepted it, but I look and say 'Oh, why?' The thoughts are definitely negative. (Interviewee 27 – PA, Naval Officer, 30 years old).

> It's panic, right, sis? Because we make all our purchases for the month on the credit card, so at the end it seems like this huge amount, like 'wow, right!? But looking at the statement carefully, we see that it's really all we spent. We're shocked when we see the big amount, but when we stop to look, it's all there. It hurts a bit in the heart to pay, right? (Interviewee 10 – RO, Entrepreneur, 34 years old).

Regarding the categorization stage, in the credit card dimension, indications of occurrence were also present, as, although there is, in some cases, centralization of expenses on the bill, each of these expenses had a label for the interviewees that allowed them to identify the type of expenditure made on the card, as shown by some examples of reports:

> I use it for vanity, you know? Stores, gas, those things. Clothes, makeup, things like that. (Interviewee 24 – CE, Homemaker, 25 years old).

> Basically, all the expenses I mentioned before are on the card: my cell phone plan, insurance, my training, when I pay for a course [...]. (Interviewee 4 – DF, Data Analyst, 31 years old).

> Gym, medication, food, transportation, like Uber, leisure to do something, shopping mall." (Interviewee 16 – PR, Psychologist, 26 years old).

Thus, it can be observed that the categorization stage, in the credit card dimension, closely resembles the records found in the income dimension, likely because one dimension integrates with the other, as mentioned earlier.

Finally, regarding the evaluation stage, it was observed that this was heavily associated with how the interviewees perceived the credit card bill. As a result, the interviewees almost always evaluated the economic event "bill" negatively, as they reported the feeling of paying for something that "had already passed," or even regret for having used the card, as demonstrated by the transcriptions of some reports:

> I think I must pay it when the time comes. The feeling I get is pity for paying for something I've already spent. (Interviewee 6 – MA, Housekeeper, 25 years old).

> [...] a negative thought comes because you reflect on whether you bought things you really needed and realize you spent on unnecessary things, you know? [...] Then when the bill comes, you don't even remember what you spent it on and why it's so high. (Interviewee 26 – AP, Administrative Assistant, 29 years old).

> It's a feeling of, at least, discomfort when I see how much I've spent on silly things." (Interviewee 25 – MS, Lawyer, 30 years old).

The explanation for this phenomenon is provided by Thaler (1999) and Khare (2016), who explain that when a person makes a purchase with a credit card, there is a dissociation between the purchase and the consumption. As a result, the individual's mind believes that they won't have to pay for that expenditure at the exact moment. However, as the interviewees' reports show, when the "bill arrives," it feels exactly like paying for something with a certain "*delay*." That is, at the moment of evaluation, there is only the "pain of the loss", represented by paying the bill, without the counterpart of the "pleasure of gain," which would be the act of consumption. This also leads to the conclusion that the evaluations made in the credit card

dimension, in the scope of this study, were all *ex post*, because individuals were constantly evaluating an event that had already passed.

4.2 Category of Overspending Behavior with the Highest Number of Indications of Occurrence of Mental Accounting

Contrary to what was expected based on the literature, it was found that, for the category of balanced overspending behaviors, there were 168 occurrences of Mental Accounting, 131 of which corresponded to the stages (Coding, Categorization, and Evaluation) and 37 to the biases (Regret Aversion, Endowment Effect, Psychophysics, Self-Control, and Sunk Cost). In contrast, for the category of excessive overspending behaviors, there were 74 occurrences of Mental Accounting, 59 of which referred to the stages and 14 to the biases. In other words, the cognitive process of Mental Accounting manifested more than twice as often in balanced overspending behaviors than in excessive overspending behaviors, which allows us to disregard the idea that there is a stronger relationship between Mental Accounting and excessive behaviors, as suggested by the studies of some authors (Bae *et al.*, 1993; Fan *et al.*, 2020, Nashawati, 2018; Khare, 2016; Paraíso & Fernandes, 2019; Carraro & Merola, 2018; Campara *et al.*, 2016; Cerbasi, 2016). The data described are presented in Table 3.

Table 3
Frequencies of Occurrence of Mental Accounting in Each Category of Consumption Behaviors.

Mental Accounting Biases / Category of Overspending Behavior	Balanced Overspending	(%) Balanced Overspending	Excessive Overspending	(%) Excessive Overspending	Total Occurrences	(%) Total
Coding Stage	37	69%	17	31%	54	100%
Categorization Stage	57	76%	18	24%	75	100%
Evaluation Stage	37	61%	24	39%	61	100%
Psychophysical Principle	1	11%	8	89%	9	100%
Self-Control Bias	34	97%	1	3%	35	100%
Endowment Effect	2	40%	3	60%	5	100%
Sunk Cost Bias	0	-	2	100%	2	100%
Regret Aversion	0	-	0	-	0	-
Totals	168	70%	73	30%	241	100%

Note. Research data (2023).

According to Table 3, it can be concluded that some cognitive biases in Mental Accounting seem to be "good" for personal finances, such as the self-control bias, which accounted for 97% of its occurrences in the balanced behavior group. Other biases seem to be "bad," such as the psychophysical principle, the endowment effect, and the sunk cost bias, which, although they occurred less frequently in absolute terms, accounted for 89%, 60%, and 100% of occurrences in the overspending behavior group, respectively. Additionally, one bias (regret aversion) remained neutral, with no explicit occurrences reported by the interviewees. This does not mean it is absent, as it may manifest subtly at any stage of Mental Accounting, when an individual avoids or remains inactive in response to a particular alternative, as explained by Lima (2003). This aligns with the studies by Miotto and Parente (2015), Constantino (2020), and Sui *et al.* (2020), who unanimously assert that Mental Accounting is beneficial to personal finances and promotes balanced overspending behavior, as the overall cognitive process of Mental Accounting showed a higher number of indications of occurrence when discussing balanced overspending behaviors.

5 Final Considerations

The present study aimed to analyze the effects of Mental Accounting on the overspending behaviors of Brazilian individuals. In this sense, through content analysis applied to the transcripts of interviews with 27 Brazilians who participated in the research, it was possible to achieve the main objective proposed and conclude that Mental Accounting seems to be benign to household finances across its three dimensions, manifesting most frequently in balanced overspending behaviors.

The results allowed for the identification of indications of the occurrence of the cognitive process of Mental Accounting and its biases in the three dimensions of household finances: planning, income, and credit cards. In these three dimensions, the stages of coding, categorization, and evaluation occurred. It is also emphasized that, in all three dimensions, evidence was found that planning encompasses income, which in turn encompasses the credit card. That is, the dimensions of planning, income, and credit cards are all coded together, as they are all under the scope of planning. Regarding hedonic editing, which occurs in the coding stage, in the planning dimension, there were no signs to confirm the idea that planning would be edited in the form of mixed gains and losses, as none of the interviewees suggested any perception of success as gain and failure as loss. In the income dimension, the idea that there would also be an editing process in the form of mixed gains and losses was partially confirmed, since only expenses were considered by the interviewees as losses, and there seems to be a tendency to integrate all gains and losses. In the credit card dimension, the idea was confirmed that the credit card bill is perceived as a conglomerate of smaller losses, being hedonically edited in the form of integrated losses. Furthermore, in all three dimensions, interviewees mentioned labels for their income and expenses, characterizing the categorization stage. Additionally, the evaluation stage also occurred in all three dimensions: in the planning dimension, the planned individuals tend to evaluate *ex ante*, while the unplanned ones tend to evaluate *ex post*; in the income dimension, most tend to evaluate *ex ante*; and in the credit card dimension, everyone tends to evaluate *ex post*.

Regarding the category of consumption behaviors with the highest number of indications of the occurrence of Mental Accounting and its biases, it is noteworthy that the balanced consumption behavior category demonstrated the most indications of the occurrence of the cognitive process of Mental Accounting (with 70% of occurrences), contradicting the idea that excessive behaviors would have a greater connection to Mental Accounting, due to the fact that both phenomena develop in the irrational and unconscious field of the mind.

The limitation of the study was related to the development of the research instrument. As it involved a questionnaire, and because no qualitative studies on Mental Accounting had been found, there were no prior references to validated qualitative research instruments that could capture the interviewees' perceptions of the cognitive process of Mental Accounting and its biases. The questionnaire developed for this study might be the first of its kind. Thus, although several versions of the questionnaire were tested, in some cases, interviewees gave somewhat ambiguous answers, which could either indicate a lack of understanding on the part of the interviewees or evidence that the research instrument may not have been entirely reliable for its intended purpose. Moreover, as data were collected during the pandemic period, the interviewees' reports—and consequently the results—might have been influenced by the post-pandemic context, which could be explored in future studies.

It should also be noted that, as this is a qualitative study, the results presented here cannot be generalized. However, this study serves as a starting point for future research to further investigate the indications presented here on a larger scale. In this sense, it is suggested that future studies analyze the relationships between consumption behaviors and the

demographic characteristics of individuals, as well as validate scales for the overspending behaviors described here, in order to allow for their measurement and even association with other instruments in both qualitative and quantitative research. The same is suggested for Mental Accounting.

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