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The Influence of Self-Deception in the Practice of Tax Evasion in Brazil

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ABSTRACT

Objective: The studies in the literature show that economic and behavioral factors have an influence on the practice of tax evasion. From this perspective, this research aimed to identify whether self-deception influences the practice of tax evasion in Brazil.

Method: Data was collected through a quasi-experiment, followed by the administration of a questionnaire, between November 2016 and September 2017. 800 data collection instruments were applied in *loco* in all the country's geographical regions, 598 of which were validated. Measures were adopted to ensure the validity of content, criteria, and constructs.

Results: The reliability testing resulted in a Cronbach's Alpha of 0.63, and the Composite Reliability was greater than 0.60. Data were analyzed through binary logistic regression. Following the multivariate approach, the results of this research suggest that self-deception influences the individual's chances of tax evasion.

Originality/Relevance: This study differs from the others in that it considers tax evasion based on the influence of the taxpayer's human behavior.

Theoretical/methodological contributions: Based on an interdisciplinary approach, this study contributes to the public administration in its determination of actions that may discourage tax evasion through the implementation of strategic policies that include the taxpayer's behavioral factor.

Keywords: Logistic regression. Self-deception. Tax evasion. Categorization flexibility.

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1 INTRODUCTION

Utsumi (2014) states that historically inefficient inspections and the lack of stricter punishments are the causes of the high level of tax evasion in Brazil. Furthermore, it is common practice for the population to claim that the amount of tax paid is high, compared to the quality of services available to society.

Empirical evidence aimed at investigating tax evasion has expanded from the first analysis carried out by Allingham and Sandmo (1972), who structured a theoretical decision model to explain what leads a taxpayer to evade taxes. The authors stated that a rational individual considers the omitted income to be a risky asset, which depends on the probability of omission detection and the consequent punishment, to maximize an expected utility function.

The control of tax evasion levels is an arduous task for tax authorities, given the structural limits of the economy and the social acceptance of tax evasion behavior. However, research has revealed that several authors have detected behavioral, political, and economic factors that are related to tax evasion, namely social norms (Bosco & Mittone, 1997; Mittone, 2006; Torgler, Schaffner & Macintyre, 2007; Thomas, 2015), trust in authorities (Torgler, 2003; Pickhardt & Prinz, 2014; Kogler *et al*., 2013), the transparent tax system (Chiarini, Marzano & Schneider, 2013) and the cost of compliance (Diniz *et al*., 2009; McCoon, 2011).

Research reveals that, in order to maintain a positive self-image, individuals like to consider themselves honest. However, they are prone to becoming dishonest when the advantage of unlawful practices exceeds the costs and risks (Becker, 1968; Allingham & Sandmo, 1972; Mazar & Ariely, 2006; Mazar, Amir & Ariely, 2008).

In addition to financial benefits, Rosenberg (1979) demonstrates that people strive to maintain a positive self-image in society. In this same sense, Mazar, Amir, and Ariely (2008) find that a positive self-image contributes to reducing dishonesty. If the individuals want to affect their image of honesty, they abdicate their attitude to maintain the condition of honesty.

Mazar and Ariely (2006) highlight that evidence on the inhibition of dishonesty can be explained by the categorization flexibility, or self-deception. Categorization flexibility is understood as the bias that leads the individual to a distorted interpretation of reality (Mazar & Ariely, 2006). In this sense, Trivers (2000) characterizes the reinterpretation process as an unconscious misinterpretation of reality for the conscious mind, which is called self-deception.

Research related to factors influencing tax evasion practices, such as those of Mittone (2006), Torgler (2007), Zaklan, Westerhott and Stauffer (2009), Alm (2012), Sá, Martins, and Gomes (2014), Pickhardt and Prinz (2014) and Andrighetto *et al*. (2016), was carried out in developed countries, whose cultural and economic aspects differ from the Brazilian environment, as Brazil is an emerging country. In a scenario of uncertainty and insecurity, due to the impact caused by the economic crisis regarding cultural dimensions, Hofstede (1991) assures that, in an environment of uncertainty, society feels threatened and tends to flee from these situations, instead of facing them. This is the Brazilian society's the environment, which may suggest different results from other studies.

Tax evasion has been treated as a phenomenon that is socially, culturally, and psychologically influenced by an interdisciplinary approach (Adams, 1965; Spicer & Lee Becker, 1980; Baldry, 1986; Mittone, 2006; Bloomquist, 2006; Zaklan, Westerhott & Stauffer, 2009; Alm, 2012; Andrighetto *et al*., 2016).

However, research has focused on understanding the application and enforcement of social norms, emphasizing the effect of economic variables, without considering other factors that may influence tax evasion. In this sense, the present study is relevant because it explores

environmental influences, aiming to know and understand how such factors interfere in the behavior of individuals in the practice of tax evasion. Such understanding provides the adoption of effective measures to minimize the effects of tax evasion.

Thus, it is worth asking whether the cost-benefit measured, based on the flexibility of categorization, explains the tax evasion of Brazilian taxpayers. Therefore, having defined the general objective of the research, the motivating question is: Does self-deception influence the practice of tax evasion in Brazil?

Regarding originality, this study discusses the topic from a perspective aimed at investigating human behavior, based on factors that affect the internal reward system and that explain the motivations for dishonesty. From a theoretical point of view, this research explores tax evasion from the analysis of human behavior, demonstrating that not only economic factors in the light of the cost-benefit of the illegal act influence tax evasion, but also internal rewards. From a pragmatic perspective, according to Guthrie (2014), accountants play an important role in ensuring the effective and solid operation of tax systems, in addition to helping to combat tax evasion. Therefore, the purpose is to contribute to their role so that they provide instructions to other accountants so that they can guide taxpayers, based on the behavioral aspects, on the consequences of the actions taken in the face of tax evasion. Thus, tax honesty is analyzed from an interdisciplinary approach, cooperating with the Public Administration in determining actions that may discourage tax evasion.

This work intends to contribute to the advancement of accounting theory and international and Brazilian academy, considering that it is inserted in the context of the study of such factors in Brazil, building a survey of scientific production on the subject around the world, besides helping the conceptual refinement and the theoretical-descriptive and empirical assumptions that can strengthen the foundation of the investigation of the factors that influence fiscal dishonesty.

2 THEORETICAL FRAMEWORK

In addition to the level of dishonesty itself, categorization flexibility (self-deception) is another factor that affects the internal reward system. Self-deception is a way of organizing knowledge in which someone can simultaneously store true and false knowledge as if both were true, either by socialization or by the very nature of the act. In this way, the person can deceive himself/herself and others (Trivers, 2000). From this perspective, Giannetti (2005) states that self-deception permeates most of the options and judgments made, and this phenomenon is the basis of their ability to sincerely believe that we are what we are not.

According to Trivers (2011), parts of the brain demonstrate to have been co-opted by natural selection to suppress other parts of the brain and create self-deception, a form of active memory suppression. This suppression generates effects of reinforcing some behaviors, which in fact should be suppressed. For example, studies show that the part of the brain that controls lies, when suppressed, leads the person to improve the lies, because they become unconscious (TRIVERS, 2002). Thus, it is clear that involuntary conscious memory is an internal mechanism of self-deception.

According to Fan *et al*. (2019), involuntary conscious memory is an internal mechanism of self-deception since the deceiver's cognitive load influences the probability of deception, corroborating Trivers' studies.

Also based on the Trivers' opinion (2002), self-deception is considered self-promotion, it is a way of exaggerating the positive and reducing the negative, to produce a prestigious social self-image. Thus, the individual tends to over-believe their own abilities.

Through rationalizations and biased discourse, human beings reconstruct their personal motives and create narratives to justify bad or questionable behavior (Trivers, 2002). Therefore, the behavior considered negative can be attributed to external causes, rather than internal ones (Trivers, 2011).

Wright (1994) questions whether human beings have unconscious and innate mechanisms for self-promotion, as occurs with self-depreciation. Thus, the author states that self-depreciation is a form of self-deception, with a negative bias, where the individual always apprehends reality in a negative way.

Individuals who act like this maintain beliefs about their intelligence, competence and moral values, even when faced with their senseless, incompetent and immoral behavior (Mazar & Ariely, 2006; Mazar, Amir & Ariely, 2008), factors that are related to internal and external mechanisms.

Thus, Fan *et al*. (2019) state that, in terms of internal mechanisms, individuals who deceive themselves use self-adaptability of memory to achieve self-delusion through the impairment of non-random conscious memory to reduce their cognitive load. On the other hand, regarding external mechanisms, higher cognitive load leads to more self-deception.

Studies have shown that in more stressful situations, individuals are more likely to deceive themselves, given that high and low status are related to the level of ability to detect lies (Lu, Chang, 2014; Ren *et al*., 2018). Regarding studies focused on social status, Ren *et al*. (2018) found that individuals with high social status are no longer able to control themselves and reduce self-deception.

The aforementioned showed that self-deception influences the practice of tax evasion. Coricelli *et al*. (2010) found that taxpayers' emotions are positively correlated with the decision to cheat and with the proportion of evaded income. The authors also found that the risk of public exposure to deception prevents tax evasion, while the cost of fines encourages evasion. Thus, it is clear that an authorship policy can strengthen the emotional dimension of cheating and discourage tax evasion.

The practice of accruals of expenses and omission of income as acts that can be practiced by taxpayers of income tax is an example of self-deception. The individual analyzes the cost-benefit of the illicit action, without measuring the damage caused to society and is entitled to follow such practices by internalizing a sense of justice of having already paid enough tax. Therefore, the individual maintains his/her positive self-image, in addition to influencing the individuals of the group to which s/he belongs. Therefore, even facing a dishonest act, the individual interprets it as honest.

Mazar, Amir, and Ariely (2008) tested the hypothesis that dishonesty increases with the growth of categorization flexibility from the use of non-monetary objects and found that these objects are facilitators of dishonesty and, therefore, of self-deception, as the individual understands that s/he is not causing significant damage to the environment, nor is s/he benefiting unduly. However, when the individual realizes that the benefit earned is from a criminal act, the cost of moral integrity is exceeded by the external benefit, and the internal reward does not influence decision making (Mazar, Amir & Ariely, 2008).

Russo (2016) analyzed the Italian tax evasion reports and found that tax morale is negatively correlated with irregular activities and that there is consistent evidence of the maintenance of self-concept, where illegal actions are more easily categorized, in the sense that they are consistent with a positive self-image of honesty if they involve small amounts of monetary values. The data also suggest that a stronger individual and social attitude towards tax evasion makes the categorization more difficult.

Laine, Silander, and Sakamoto (2020) carried out a study aimed at identifying the factors that influence deceptive behavior based on incentives and found that the deception rate

almost doubled under conditions of non-detection of tax penalty, observing that financial incentives, detection risk, and expected advantage obtained by tax evasion influence the behavior of taxpayers.

Self-awareness is a variable that activates internal reward mechanisms and prevents dishonest acts from occurring; that is, the individuals perceive their behavioral reference pattern and contribute to the maintenance of their positive self-image. Therefore, individuals who are more likely to falsify the reality of the facts will be more prone to dishonesty.

Thus, the following basic research hypothesis to be empirically tested is foreseen: the practice of tax evasion by Brazilian individuals is influenced by the categorization flexibility (self-deception).

3 SAMPLE AND METHODS

The desired profile of participants was individual taxpayers living in Brazil and who presented an Annual Adjustment Statement (DAA) of the Individual Income Tax, relating to the 2016 tax year, calendar year (income and expense generation periods) of 2015, or the fiscal year of 2017, calendar year of 2016. According to the 2017 Annual Plan of Inspection of the Internal Revenue Service of Brazil, the Internal Revenue Service received 27,557,232 DAAs from the Personal Income Tax, having 2015 as the base year (Brasil, 2017).

To constitute the sample, individuals from all regions of the country who were participating in graduate programs, events promoted by the Regional Accounting Councils (CRCs) or by class representative entities were invited.

Graduate departments, CRC secretariats, and secretariats of other events were contacted via telephone and, later, via email. The research project, the data collection procedure, and the presentation of the Free and Informed Consent Term (TCLE) were explained in detail. After authorization by the person in charge, the data collection instrument was applied in a scheduled place, date, and time.

The sampling used was classified as non-probabilistic and, for convenience, considering that data collection was not random. A 95% confidence level and a 5% margin of error were defined. The final sample consisted of 598 individuals, according to the sample distribution by gender and age shown in Table 1.

Table 1
Sampling distribution by gender and age

Regions	Gender (%)		Age (years)		
	Female	Male	Up to 30 year old	From 31 to 40 years old	More than 41 years old
Midwest	*13.38%*	16.05%	12.54%	7.69%	9.20%
Northeast	10.87%	6.69%	9.03%	4.85%	3.68%
North	8.86%	15.09%	12.88%	8.36%	2.67%
Southeast	5.02%	6.35%	6.86%	2.51%	2.00%
South	6.52%	11.20%	11.87%	5.02%	0.84%
Total	**44.65%**	**55.35%**	**53.18%**	**28.43%**	**18.39%**

In turn, Table 2 reveals the sample distribution according to family income. The data showed that more than 60% of the respondents have a monthly family income of less than BRL 8,000.00 and 23% have an income between BRL 8,000.01 and BRL 16,000. These data indicate that the sample has characteristics of individuals prone to dishonesty, considering that studies show that the higher the income, the greater the propensity to dishonesty (Andreoni; Erard; Feinstein, 1998).

Table 2
Sample distribution by family income in BRL

Regions	Family income in R$					
	Less than 4,000.00	**From 4,000.01 to 8,000.00**	**From 8,000.01 to 16,000.00**	**From 16,000.01 to 32,000.00**	**From 32,000.01 to 64,000.00**	**Above 64,000.01**
Midwest	8.03%	11.37%	6.86%	3.18%		-
Northeast	5.68%	7.53%	3.68%	0.67%		-
North	8.03%	8.36%	6.36%	1.00%	0.16%	-
Southeast	1.51%	3.68%	3.68%	1.68%	0.84%	-
South	5.18%	9.36%	2.52%	0.67%		-
Total	**28.43%**	**40.30%**	**23.10%**	**7.20%**	**1.00%**	-

To summarize the data collection instrument applied, Figure 1 shows the independent variables that are the object of the study, the purpose of each question, as well as the justification for the elaboration of each question.

Variable	Question	Purpose	Justification
Q1 - In the last five years, have you gone a bit overboard in submitting expenses to pay less tax?			
Self-deception	Q1	Question 1 was aimed at verifying whether the respondent practiced tax evasion in the last 5 years.	As overstatement of expenses is an unlawful practice, respondents are expected to answer "no" if they are less prone to dishonesty.
Q2 - In the last five years, have you failed to report any income?			
Self-deception	Q2	Question 2 was also aimed at identifying whether the respondent practiced tax evasion in the last 5 years.	The practice of underreporting income is known to be illegal; Respondents are expected to answer "no" if they are less prone to dishonesty.
Q3- Suppose your annual income was BRL 100,000 and you must pay BRL 15,000.00 in taxes; however, you know it is fine to get medical receipts to reduce your tax. Would you take this risk?			
Self-deception	Q3	Question 3 was aimed at verifying whether the respondent characterizes a dishonest act as if it were honest.	Mazar, Amir and Ariely (2008) explain that the unconscious falsification of reality is considered self-deception, a process in which the individual considers honest what is actually dishonest. In this sense, dishonesty-prone participants are expected to answer "yes".
Q3.1 - What if the probability of being caught by the Brazilian Federal Revenue is 50%?			
Self-deception	Q3.1	Question 3.1 was aimed at ensuring that the falsification of reality is perceived by the participants.	Participants are expected to realize that obtaining medical receipts is a dishonest practice and that, even in the face of a null probability of detection, it has an influence on the practice of tax evasion, so they choose the "yes" option as an answer when they are inclined to dishonesty.

Figure 1. Independent variables, purposed of questions and justification

To verify whether the probability of detection would influence the decision to be dishonest regarding the number of correct answers in the mathematical test table, the data collection instrument consisted of a model in which participants should identify themselves in the data collection instrument and another model in which they should not identify themselves. The quasi-experiment was applied in all geographic regions of Brazil according to accessibility. In the Midwest region, it was applied in the cities of Aparecida de Goiânia, Goiânia, and Rio Verde, in the State of Goiás; in the Southeast, it was applied in the cities of Rio de Janeiro and São Paulo; in the South, in the city of Londrina, in the State of Paraná; in the North, in the city of Belém, in the State of Pará; and, finally, in the Northeast, in the city of Natal, in the State of Rio Grande do Norte.

3.1 Original experimental design

The model used in this work was based on the experiments of Mazar and Ariely (2006) and Mazar, Amir and Ariely (2008). The authors developed a mathematical test in which the participants in the survey were paid for their performance. The test form consisted of 20 tables, each with a group of 12 three-digit numbers, with participants having five minutes to find two digits per table that would add to 10 (see Table 3). Each participant's sum success was paid according to the price established per hit.

Table 3
Mathematical Test Template

1.69	1.82	2.91
4.67	4.81	3.05
5.82	5.06	4.28
6.36	5.19	4.57

Mazar, Amir, and Ariely (2008) validated this mathematical task through a pretest in which the participants did not view this test as a reflection of intelligence or mathematical ability. Thus, the motivation for a possible fraud would be the financial incentive, arising from the fact that the participant claims to have correctly solved more issues than he actually solved, and not the desire for personal fulfillment or satisfaction (Trivers, 2000).

In the control groups, the authors asked the participants to solve the tables of the mathematical test described above and, after the five-minute period, they would have to return the form to the inspector, who would pay the participants US$ 0.50 per table correctly solved. The authors instructed the participants that, after completing the mathematical test, they should count how many tables they answered correctly and write the number on a billing slip that had been made available with the tables. Then, the test sheet should be placed in a paper shredder and only the billing slip with the correct number of tables would be returned to the inspector. The inspector would check the number of questions that the participants claimed to have answered correctly and would pay them US$0.50 per correct table.

By placing the test sheets in the shredder, participants destroyed all evidence of any possible dishonest behavior. Thus, the probability of being detected and, consequently, the external costs of the act of dishonesty were practically nil, since the magnitude of the reward would outweigh the external costs, because there would be no way to prove that the participant could have cheated.

Then, the authors compared the performance of participants in the control situation. The control condition served as the participant's average performance parameter for the following experiments, assuming that the participants would, on average, have similar

abilities for the test. Significantly higher performances with other groups were interpreted as a sign of cheating.

3.2 Design of the quasi-experiment

Quasi-experimental studies are those that do not include all the characteristics of a true experiment, as complete experimental control is not always possible, especially with regard to randomization and application of the intervention (Levy, Ellis, 2011). For this study, a modification made in the original experiment was related to payment for the performance of each participant, considering that Resolution N. 466/2012 of the National Health Council does not allow that individuals participating in scientific studies receive money.

Considering the respect for human dignity and the special protection of the participants in scientific research involving human beings, Resolution N. 466/2012 of the National Health Council determines that research projects must be submitted to the Ethics and Research Council before the application of the data collection instrument. Therefore, the application of the quasi-experiment occurred after the submission of the research project to the Ethics and Research Committee of Rio Verde/Goiás, which judged favorably the application of the data collection instrument.

Thus, upon payment to the participants, they were communicated that such procedure was fictitious, in compliance with all mandatory submission terms established in Resolution N. 466/2012. It is worth emphasizing that this change did not influence the results: first, because the payment was carefully announced to be fictitious only after all participants informed that they had completed the socioeconomic questionnaire and it was not applied to a sample that might know about the mock payment procedure.

By assuring participants that the ethical rights of voluntariness, anonymity, and confidentiality were preserved, the TCLE was read before the beginning of the application of the mathematical test, and only after the free consent of each individual present, the material containing the billing slip, the math test list, and the socioeconomic questionnaire was delivered. After the distribution stage, the researcher explained the application of the quasi-experiment, and then the mathematical test was applied. After the five minutes available to carry out the test, the socioeconomic questionnaire was filled out and, only after completing the questionnaire, the fictitious payment was made according to the performance of each participant.

To obtain greater accuracy on the honesty situation of the participants, the experiment was adapted in the sense that, in the control groups, the tests were preserved and were not discarded in a shredder, as in the original experiment, with the participants being asked to discard the tests in a selective collection bin, preventing them from leaving the room with the test sheets because the research would be carried out with other groups. Upon payment, they only had the payment slip and the socioeconomic questionnaire in their hands. Without the participants noticing, there was an identification on the billing slips and on the mathematical test sheets, corresponding to each of the respondents, which allowed the researchers to know the actual performance of the participants. After checking the answers and comparing the results with the performances declared in the billing slip, this resource made it possible to identify the dishonest participants. In this sense, participants who did not present the respective number of tables with correct answers in the billing slip were considered dishonest.

The purpose of preserving the test sheets for later checking was in the sense of not having to assume that the actual performance of the participants was similar to that of the control group, in which higher performance in self-assessment situations would be a sign of dishonesty.

4. RESULTS

Tax evasion was the dependent variable, and the independent variables that guided the research were "exaggerated declaration of expenses", "under-reporting of income" and "self-deception". It is worth noting that the tax evasion analyzed here refers to individuals/taxpayers.

To assess whether the use of factor analysis was adequate to the research data, the Kaiser-Meyer-Olkin (KMO) sample adequacy measure was used, as shown in Table 4. The results were obtained in the factorial analysis of independent variables according to the initial and final model for the categorization flexibility construct.

Table 4
Factorial analysis of independent variables according to the initial and final models

Construct	Items	Initial Model			Final model		
		FL[1]	Com.[2]	Weight	FL[1]	Com.[2]	Weight
Categorization flexibility	Exaggeration of expenses (Q1)	0.60	0.36	0.33	0.60	0.36	0.33
	Under-reported income (Q2)	0.50	0.21	0.25	0.50	0.21	0.25
	Self-deception (Q3)	0.81	0.66	0.45	0.81	0.66	0.45
	Self-deception (Q3.1)	0.76	0.57	0.42	0.76	0.57	0.42

Note. [1]Factor load; [2]Commonality.

The items "exaggeration of expenses" and "under-reported income" had a satisfactory factor load, but they do not satisfactorily explain the categorization flexibility construct, in which there is a commonality lower than 0.50 (as the item exclusion criterion is the factorial load, the items were kept). Therefore, the results suggest that there is a correlation and linear combination between the variables.

Subsequently, the confirmatory factor analysis was used through convergent validity and reliability techniques to verify the representativeness of the variables within the construct, as shown in Table 5.

Table 5
Convergent validity, reliability, and dimensionality of the "categorization flexibility" construct and its items

Construct	Items	EVA[1]	C.A[2]	C.R[3]	KMO[4]	Dim.[5]
Categorization flexibility	4	0.50	0.54	0.69	0.56	1

Note. [1]Extracted variance; [2]Cronbach's Alpha; [3]Compound Reliability; [4]Kaiser-Meyer-Olkin test;[5]Dimensionality.

Table 5 shows that the construct presented an EVA greater than 0.50, therefore, the latent variable explains the variance of its indicators. As for reliability, the results showed that there is internal consistency, and the construct "categorization flexibility" had a CA of 0.54 and a CR of 0.69. As for the adjustment of the ACF, the construct was adequate, since the KMO test value was greater than 0.50, in addition to confirming the assumption that the variables are associated with each other, as they are one-dimensional according to the Parallel Line criterion, as shown in Figure 2.

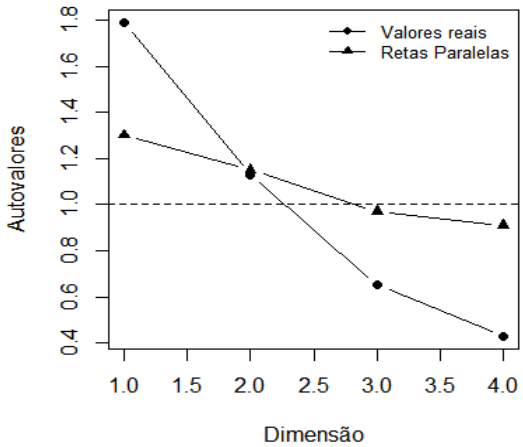

Figure 2. Dimensionality of the "categorization flexibility" construct

The indicator was created through the estimated weights in the factorial analysis, from the weighted mean of the individuals' responses by the weights, in which weight 3 represented the respondents' "yes" response, 2 indicated the response "I don't know" and 1, the answer "no". The results are shown in Table 6.

Table 6
Description of indicators

Indicator	Mean	SD	95%CI	Min.	1st Q	2nd Q	3rd Q	Max.
Categorization flexibility	1.25	0.40	[1.22;1.28]	1.00	1.00	1.00	1.35	3.00

As the dependent variable is a binary qualitative variable, which involves only the choice of tax evasion or not, and the characteristic that influences the decision is the individual's behavior, the appropriate econometric model for this analysis is the binary logistic regression.

The logistic regression model adopted for this research is the *logit*, in which the probability of an individual belonging to one of the groups is observed in the sample, allowing the interpretation of the results as a function of the *odds ratio* (Gujarati, 2006). Calculations for the econometric model were performed using the R Software (version 3.2.4).

To verify whether the flexibility of categorization influences tax evasion, a logical regression was developed, in which the items related to the construct and the control variables (characterizing the respondent's profile) were considered as independent variables, using the *Stepwise* selection method of variables.

Thus, using the *forward procedure*, a univariate analysis was performed, which constituted the adjustment of a model for each of the variables. Variables that presented a p-value lower than 0.25 were selected for the multivariate analysis, and the *backward* procedure was then applied. Therefore, in turn, the variables with the highest p-value were removed, and the procedure was repeated until only the significant variables remained in the model. For the *backward* method, a 5% significance level was adopted.

The use of logistic regression models depends directly or indirectly on the estimates of the coefficients, which will be presented together with the logistic regression data. However, it is noteworthy that the presence of multicollinearity can cause problems in the adjustment of the model by impacting the estimates of the models' parameters. Therefore, to assess the level

of association between the independent variables, the Variance Inflation Factor (VIF) was used, as shown in Table 8.

Finally, to verify the fit of the binary response logistic regression model, the Hosmer-Lemeshow test was used, which consists of evaluating the model by comparing the observed and expected frequencies, proposing two types of clustering, which are based on estimated probabilities (Hosmer & Lemeshow, 1989). The results obtained are shown in Table 7.

Table 7
Influence of categorization flexibility on tax evasion

Variables		Honest		Dishonest		B[1]	SD (β) [2]	OR [3]	95% CI[4]	p-value
		N	%	N	%					
Exaggeration of expenses (Q1)	No	380	76.0%	120	24.0%	-	-	1.00	-	-
	I don't know	35	77.8%	10	22.2%	-0.10	0.37	0.90	[0.44; 1.88]	0.789
	Yes	35	66.0%	18	34.0%	0.49	0.31	1.63	[0.89; 2.98]	0.114
Under-reported Income (Q2)	No	344	68.8%	104	23.2%	-	-	1.00	-	-
	I don't know	29	76.3%	9	23.7%	0.03	0.40	1.03	[0.47; 2.24]	0.948
	Yes	77	68.8%	35	31.2%	0.41	0.23	1.50	[0.95; 2.37]	0.080
Self-deception (Q3)	No	381	76.2%	119	23.8%	-	-	1.00	-	-
	I don't know	31	75.6%	10	24.4%	0.03	0.38	1.03	[0.49; 2.17]	0.932
	Yes	38	66.7%	19	33.3%	0.47	0.30	1.60	[0.89; 2.88]	0.117
Self-deception (Q3.1)	No	413	75.8%	132	24.2%	-	-	1.00	-	-
	I don't know	23	71.9%	9	28.1%	0.20	0.41	1.22	[0.55; 2.71]	0.618
	Yes	14	66.7%	7	33.3%	0.45	0.47	1.56	[0.62; 3.96]	0.345

Note. [1](intercept); [2]SD (standard deviation); [3]OR (Odds Ratio); [4]CI (confidence interval).

Regarding categorization flexibility, no variable was statistically significant. As observed through the logistic regression data presented in Table 7, it can be inferred that there was not enough evidence for self-deception to be considered a factor that influenced tax evasion. It is noteworthy that taxpayers who answered "yes" can be proportionally considered more dishonest than taxpayers who answered "no", in addition to showing that more than 68% of the respondents do not falsify the reality of the facts.

Although the variables did not show statistical significance under the univariate analysis, the data allow us to conjecture that the sample under investigation may have categorized illegal actions as being legal, aiming at a positive self-image, since more than 60% of the respondents have a family monthly income of less than BRL 8,000.00, which corroborates the study conducted by Russo (2016), when he revealed that individuals seek to maintain their self-concept when they are involved with small amounts of monetary values.

It is possible to assume that the sample used involuntary conscious memory influencing the probability of a mistake. In this sense, Trivers (2000) and Fan *et al*. (2019) state that involuntary conscious memory is an internal mechanism of self-deception that influences the probability of mistake.

5. DISCUSSION

The variables selected in the univariate analysis were adjusted in the multivariate logistic regression model, in which the *backward* method was applied for the final selection of variables, considering a significance level of 5%. The degree of relevance of the selected

variables for the multivariate analysis was measured by Wald's p-value, and all variables showing a p-value greater than 0.25 were excluded from the model. The results obtained are shown in Table 8.

Table 8
Multivariate analysis

Variables	Initial Model					Final model				
	β	SD (β)	OR	95%CI	p-value	β[1]	SD (β)[2]	OR[3]	95% CI[4]	p-value
Intercept	2.42	0.76	-	-	0.000	1.35	0.42	-	-	0.001
Northern Region	-	-	1.00	-	-	-	-	1.00	-	-
Southeast Region	-1.49	0.42	0.23	[0.1; 0.51]	0.000	-1.62	0.38	0.20	[0.09; 0.41]	0.000
Southern Region	-3.39	0.58	0.03	[0.01; 0.1]	0.000	-3.40	0.55	0.03	[0.01; 0.1]	0.000
Northeast Region	-1.32	0.35	0.27	[0.13; 0.53]	0.000	-1.32	0.31	0,27	(-0.15; 0.49)	0.000
Midwest Region	-1.50	0.31	0.22	[0.12; 0.41]	0.000	-1.34	0.26	0.26	[0.16; 0.44]	0.000
Identified=No	-	-	1.00	-	-					
Identified=Yes	-0.41	0.23	0.67	[0.42; 1.04]	0.076					
Exaggeration of expenses (Q9)=No	-	-	1.00	-	-	-	-	1.00	-	-
Exaggeration of expenses (Q9) = I don't know	-0.98	0.47	0.38	[0.15; 0.95]	0.022	-1.35	0.52	0.26	[0.09; 0.71]	0.009
Exaggeration of expenses (Q9)=Yes	0.34	0.39	1.41	[0.66; 3.00]	0.377	-0.18	0.34	0.84	[0.42; 1.64]	0.602
Under-reported Income (Q10)=No	-	-	1.00	-	-	-	-	-	-	-
Under-reported Income (Q10) = I don't know	-0.82	0.51	0.44	[0.16; 1.19]	0.326	-	-	-	-	-
Under-reported Income (Q10)=Yes	-0.32	0.31	0.73	[0.40; 1.34]	0.308	-	-	-	-	-
Self-deception (Q11)=No	-	-	1.00	-	-	-	-	-	-	-
Self-deception (Q11)=I don't know	-0.35	0.48	0.71	[0.27; 1.82]	0.134	-	-	-	-	-
Self-deception (Q11)=Yes	-0.52	0.38	1.69	[0.79; 3.58]	0.174	-	-	-	-	-
Maximum VIF	2.09					1.20				
Hosmer-Lemeshow Test	0.998					0.517				
R^2 (Nagelkerke)	27.26%					22.24%				

Note. [1](intercept); [2]SD (standard deviation); [3]OR (Odds Ratio); [4]CI (confidence interval).

The statistical equation is represented below, where P(Y=Dishonest) is the probability that an individual is dishonest, and g(X) is the *logit* link function:

$$P(Y = Dishonest) = \frac{e^{g(x)}}{1 + e^{g(x)}}$$

$$g(x) = 1{,}35 - 1{,}62(I_{Region} = Southeast) - 3{,}40(I_{Region} = South) - 1{,}32(I_{Region} = Northeast) - 1{,}34(I_{Region} = Midwest) - 1{,}35(I_{Q9} = I\ don't\ know)$$

The above shows that, by the multivariate analysis, the region and the exaggeration of expenses influenced tax evasion, which allows us to infer that taxpayers reinterpret the fact as if it were legal.

The variable "self-deception" ("exaggeration of expenses") was analyzed from the perspective of categorization flexibility and, compared to individuals who answered "yes" in the exaggeration of expenses (Q1), the chance of being dishonest was 0.26 [0 .09; 0.71] times lower for individuals who answered, "I don't know" (p-value=0.009). However, the variables "under-reported income" and "self-deception" were not statistically significant.

Thus, the results corroborate the studies of Ren *et al*. (2018) and Laine, Silander, and Sakamoto (2020), allowing us to infer that internal factors in the light of self-deception influence deceptive behavior of individuals.

To verify the existence of correlation between the independent variables, the VIF test was used, which, in the final model, presented a value of 1.20, indicating that there is no statistically significant collinearity between the variables.

As a final measure of model adjustment, the Hosmer-Lemeshow test was used, in which the model can be considered appropriate, having presented p-value=0.517, which indicates adherence between the observed and predicted values. Regarding the explanatory capacity of the model, as can be seen through the R^2 (Nagelkerke), the final model explains 22.24% of the dishonesty variability.

6 CONCLUSIONS AND RECOMMENDATIONS

The present study had the general purpose of verifying whether self-deception influences the practice of tax evasion in Brazil. The analysis and confirmation of the research hypothesis were performed through statistical tests obtained based on logistic regression, and the adjustment of the ACF demonstrated that the construct was adequate, since the KMO test value was greater than 0.50. Data were collected between November 2016 and September 2017 and resulted in a sample of 598 participants.

The dishonesty of individuals is theoretically explained by two aspects: rational and non-rational ones. The rational ones explain that dishonesty reflects the illicit practices of the individual, based on the cost-benefit analysis of the actions taken, while non-rational aspects are explained through psychological actions. Therefore, the influence of the flexibility of categorization for the practice of tax evasion was analyzed based on the variables "exaggeration of expenses", "under-reported income" and "self-deception", in the light of irrational aspects.

The statistical tests obtained through logistic regression, from the analysis of each variable in the construct, did not show significant statistical difference. However, using the indicators of each construct obtained in the factorial analysis, for the multivariate analysis, it was confirmed that self-deception influenced the chance of tax evasion, and the greater the categorization flexibility, the greater the chance of tax evasion; however, the individuals do not see themselves facing a dishonest act, because they store true and false knowledge as if both were true, through socialization or by the nature of the act, generating a self-deception.

The practices of exaggerating expenses or underreporting income are how the individual analyzes the cost-benefit of the act, not evaluating the damage caused to society because s/he internalizes a sense of justice based on the premise that s/he already contributes enough fiscally or that paying taxes does not generate the expected return on public services. From this perspective, it is suggested that the levels of fiscal transparency of socioeconomic and fiscal factors be increased, aiming to reduce the informational asymmetry between public administration and citizens, in addition to increasing the level of trust in institutions.

The results obtained in this research reinforce that the motivational factors of dishonesty depend on the individuals' intrinsic stimuli, being conditioned by economic and behavioral factors.

Therefore, the findings are useful to help the Public Administration in the implementation of effective political strategies, which achieve the inhibition of the levels and effects of tax evasion. These results highlight that the bodies responsible for curbing the adoption of illegal practices, in the tax sphere, must consider the diversity of behavior of taxpayers, without ignoring their intrinsic motivations, and emphasizing demographic, economic, and behavioral variables, considering that the behavior of the individual is crucial to understand their attitude towards illegal practices.

Understanding taxpayer's behavior also helps the Public Administration to define more effective communication with citizens, generating greater transparency in the tax system. Therefore, tax authorities will be able to develop inspection strategies aimed at taxpayers who do not duly comply with tax obligations, aiming at reducing the *tax gap*. Therefore, due to the consequences for the economy and society, the inhibition of tax evasion is necessary to follow-up public financing and to ensure respect for constitutional principles.

The limitations of this research are explained so that the results are used carefully. Although the questionnaire has been pretested, and its validity and reliability have been assessed, the interpretations of each respondent may be different in that they reflect each person's understanding and judgment about what is being asked.

Future work on this topic can be directed to guarantee a defined target audience, as well as future research that will validate another data collection instrument. To continue this study, it is recommended to investigate other psychological factors and other environmental variables to improve the empirical evidence about the individual subjective factors that determine each one's fiscal conduct.

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A Influência do Autoengano na Prática da Evasão Fiscal no Brasil

RESUMO

Objetivo: *Os estudos presentes na literatura evidenciam que os fatores econômicos e comportamentais influenciam a prática da evasão fiscal. Considerando essa perspectiva, esta pesquisa teve o objetivo de identificar se o autoengano influencia a prática da evasão fiscal no Brasil.*

Método: *A coleta de dados foi realizada por meio de um quase-experimento, seguido de aplicação de questionário, entre novembro de 2016 e setembro de 2017. Foram aplicados in loco 800 instrumentos de coleta de dados em todas as regiões geográficas do país, sendo 598 deles validados. Adotaram-se medidas para assegurar as validades de conteúdo, critério e constructo.*

Resultados: *O teste de confiabilidade resultou em um Alfa de Cronbach de 0,63, e a Confiabilidade Composta foi superior a 0,60. Os dados foram analisados através da regressão logística binária. Os resultados desta pesquisa sugerem, sob a abordagem multivariada, que o autoengano influencia as chances de adoção da evasão fiscal dos indivíduos.*

Originalidade/Relevância: *Este estudo difere-se dos demais por analisar a evasão fiscal a partir da influência do comportamento humano do contribuinte.*

Contribuições teóricas/metodológicas: *A partir de uma abordagem interdisciplinar, o estudo contribui com a Administração Pública na determinação de ações que possam desestimular a sonegação fiscal por meio da implementação de estratégias políticas que incluam os fatores comportamentais do contribuinte.*

Palavras-chave*: Regressão logística. Autoengano. Evasão fiscal. Flexibilidade de categorização.*

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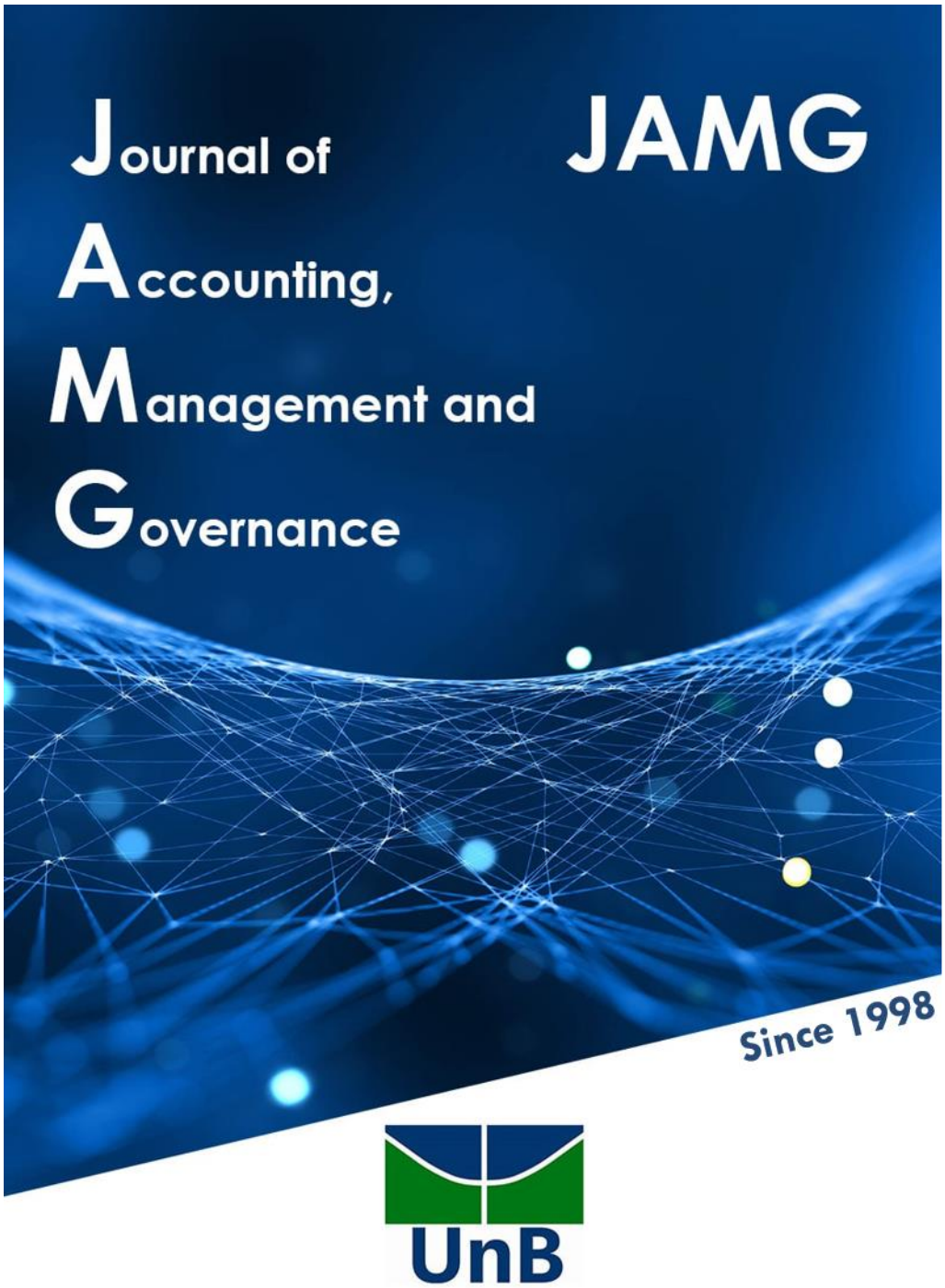
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