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# Decision-making style inventory: validation on the model for the brazilian context

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## *Abstract*

This study aims to validate the *General Decision-Making Style Inventory* (GDMS) within the Brazilian context. The GDMS, originally developed by Scott and Bruce (1995), measures five decision-making styles: rational, intuitive, dependent, procrastinating, and spontaneous. The research adopts a descriptive survey approach with a quantitative methodology. Data were collected from 1,183 participants at a Federal University using an online questionnaire. The instrument, consisting of 25 items adapted from Lehnhart et al. (2023), was analyzed using Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) to evaluate its reliability, convergent validity, discriminant validity, and overall model fit. The results confirmed the five-factor structure of the GDMS in the Brazilian context, retaining 19 items in the final validated model. Adjustments to the original model improved fit indices and revealed key relationships between decision styles, such as a strong positive correlation between spontaneous and procrastinating styles and a significant negative association between rational and spontaneous styles. These findings highlight the multidimensional nature of decision-making and the interplay of cognitive and behavioral traits. The study concludes that the GDMS is a reliable and valid tool for assessing decision-making styles in Brazil. While the sample was limited to a single institution, the findings contribute to the global understanding of decision-making processes and provide a basis for future research. Further studies should expand the instrument's application across diverse populations and explore its integration with additional psychological constructs.

**Keywords:** Decision-making styles. GDMS validation. Brazilian context. Confirmatory Factor Analysis. Structural Equation Modeling.

## *Inventário de estilos de tomada de decisão: Validação do modelo para o contexto brasileiro*

### *Resumo*

Este estudo validou o Inventário Geral de Estilos de Tomada de Decisão (GDMS) no contexto brasileiro. O GDMS, desenvolvido por Scott e Bruce (1995), avalia cinco estilos de decisão: racional, intuitivo, dependente, procrastinador e espontâneo. A pesquisa utilizou uma abordagem descritiva e metodologia quantitativa, coletando dados de 1.183 participantes de uma Instituição Federal de Ensino por meio de questionário online. O instrumento, composto por 25 itens adaptados por Lehnhart et al. (2023), foi analisado por Análise Fatorial Confirmatória (CFA) e Modelagem de Equações Estruturais (SEM), verificando confiabilidade, validade convergente, validade discriminante e ajuste geral do modelo. Os resultados confirmaram a estrutura de cinco fatores do GDMS no Brasil, com 19 itens no modelo final validado. Ajustes no modelo original melhoraram os índices de aderência e revelaram relações significativas entre os estilos de decisão, como uma forte correlação positiva entre os estilos espontâneo e procrastinador e uma associação negativa entre os estilos racional e espontâneo. Esses achados destacam a interação entre traços cognitivos e comportamentais na tomada de decisão. Conclui-se que o GDMS é uma ferramenta válida e confiável para o contexto brasileiro. Apesar da limitação de amostra a uma única instituição, os resultados contribuem para a compreensão dos processos de decisão e fornecem base para pesquisas futuras que ampliem sua aplicação e explorem sua integração com outros construtos psicológicos.

**Palavras-chave:** Estilos de tomada de decisão. Validação do GDMS. Contexto brasileiro. Análise Fatorial Confirmatória. Modelagem de Equações Estruturais.

## *Inventario de estilos de toma de decisiones: validación del modelo para el contexto brasileño*

### *Resumen*

Este estudio validó el Inventario General de Estilos de Toma de Decisiones (GDMS) en el contexto brasileño. El GDMS, desarrollado por Scott y Bruce (1995), evalúa cinco estilos de decisión: racional, intuitivo, dependiente, procrastinador y espontáneo. La investigación adoptó un enfoque descriptivo con metodología cuantitativa, recopilando datos de 1.183 participantes de una Institución Federal de Enseñanza mediante un cuestionario en línea. El instrumento, compuesto por 25 ítems adaptados por Lehnhart et al. (2023), fue analizado mediante Análisis Factorial Confirmatorio (CFA) y Modelado de Ecuaciones Estructurales (SEM), verificando confiabilidad, validez convergente, validez discriminante y ajuste general del modelo. Los resultados confirmaron la estructura de cinco factores del GDMS en Brasil, con 19 ítems en el modelo final validado. Las modificaciones al modelo original mejoraron los índices de ajuste y revelaron relaciones significativas entre los estilos de decisión, como una fuerte correlación positiva entre los estilos espontáneo y procrastinador, y una asociación negativa entre los estilos racional y espontáneo. Estos hallazgos destacan la interacción entre rasgos cognitivos y comportamentales en la toma de decisiones. Se concluye que el GDMS es una herramienta válida y confiable para el contexto brasileño. A pesar de la limitación de la muestra a una sola institución, los resultados contribuyen a la comprensión de los procesos de decisión y proporcionan una base para investigaciones futuras que amplíen su aplicación y exploren su integración con otros constructos psicológicos.

**Palabras clave:** Estilos de toma de decisiones. Validación del GDMS. Contexto brasileño. Análisis Factorial Confirmatorio. Modelado de Ecuaciones Estructurales.

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## INTRODUCTION

It seems logical to attribute to the individual characteristics of an individual considerable effect on their decisions. Nevertheless, such aspect turned out to be found as an impact factor on the decision-making process in the last three decades, arising higher curiosity on the topic in the last years. The studies that highlight the individual characteristics of decision-makers in choice processes, particularly the decision styles inherent to individuals, gained prominence at the end of the 1990s and the beginning of the 2000s.

Loo (2000) states that the decision-maker's characteristics received little attention in studies on decision-making processes. This becomes more evident when individual differences variables are compared with the decision-making task or the situation in which the decision took place, as it had been previously observed by Scott and Bruce (1995).

Facing this gap theoretical models were proposed with the aim to understand decision-making styles such as in Harren (1979), Phillips et al. (1984), Rowe and Mason (1987) and Mann et al. (1989). Hunt et al. (1989) proposed a decision-making model that advances on previous by looking at the actor of the decision-making process, the decision maker.

Hunt et al. (1989) investigated how decision-making styles influence perception, execution, and outcomes by testing the hypothesis that individuals tend to prefer strategies or actions aligned with their personal styles. They concluded that the decision-making process depends on the decision-maker's cognitive characteristics.

Motivated by the interest in understanding the impact of individual styles on the decision-making process, Scott and Bruce (1995) developed one of the most widely used psychometric measures to identify distinct decision-making styles. The authors initially identified four styles of decision-making: rational, intuitive, dependent, and procrastinating. Subsequently, they introduced a fifth style, the spontaneous style, defined by a strong inclination to conclude the decision-making process quickly, as soon as possible. The final version of the General Decision-Making Style Inventory (GDMS) comprises 25 items, with five items dedicated to measuring each of the five styles, utilizing a 5-point Likert scale.

In recent years, research on decision-making styles has gained prominence across various choice contexts. Notable recent studies include investigations into the relationship between decision-making styles and generational differences (Duh & Iyiola, 2020; Klein & Sharma, 2022; Musasa & Moodley, 2020), the impact of individual styles on financial decisions (Cohen & Wirtz, 2022; Imran & Rautiainen, 2022; Weerasekara & Bhanugopan, 2022), and the influence of decision styles on consumer behavior, including purchase journeys (Harris et al., 2021) and online shopping (Klein & Sharma, 2021; Orlandi & Pierce, 2020; Virdi et al., 2020).

The cited literature highlights that decision-making styles influence both the decision-making process and its outcomes. Scholars view these styles either as inherent cognitive characteristics of individuals (Harren, 1979) or as learned and replicated behaviors, distinct from personality traits (Scott & Bruce, 1995). Given that the GDMS is the most widely adopted instrument for studying these styles, this study seeks to validate the model of the General Decision-Making Style Inventory in the Brazilian context, extending the work of Löbler et al. (2019) and Lehnhart et al. (2023), while building on the original framework proposed (Scott & Bruce, 1995).

The following sections outline the theoretical framework underpinning the study, emphasizing the constructs of decision-making and decision-making styles. Subsequently, the methodological procedures for confirmatory validation are described. The analysis, grounded in the theoretical foundation, is then presented, followed by the results of the confirmatory validation. Finally, the study concludes with a discussion of its main findings, the challenges encountered during its execution, and recommendations for future research.

## DECISION MAKING

As new information emerges, decisions are made as a natural and recurrent part of human behavior. Problem-solving and decision-making are integral processes that vary in complexity. While some decisions are straightforward and may not be consciously recognized as such, others are substantial and require deliberate reflection and objective analysis to reach a conclusion (Flinn, 2019).

Decision-making involves committing to a course of action aligned with specific interests and values, distinct from problem-solving, which arises from circumstances where immediate objectives are unattainable. Decision-making, therefore, represents a specialized subset of problem-solving, characterized by the deliberate determination to act in a particular way (Yates, 2003).

According to Yates (2003), decision-making is a deliberate process where individuals purposefully act to achieve specific goals. While some aspects of this process may become unconscious, decisions are not made randomly.

Individuals face various decision-making scenarios, influenced by perspectives shaping the selection process (Keren & Wu, 2015). Task characteristics and available alternatives play crucial roles in determining decision strategies and approaches, as well as differences in the context in which decisions occur.

Decision-making typically follows a structured process composed of stages, each supported by specific tactics to ensure progress (Nutt, 2002). This staged approach enables decision-makers to identify appropriate actions and their underlying rationale. Both internal factors, such as communication styles, risk tolerance, and resistance to change, and external factors, including organizational dynamics and economic conditions, influence the decision-making process. These contextual elements shape not only what is decided but also how decisions are made (Nutt, 2008).

Bell et al. (1997) highlight that characteristics such as risk propensity, tolerance for ambiguity, creativity, intelligence, need for control, power, experience, education, and decision styles, play a significant role in decision-making. External factors, such as organizational differences (Nutt, 2004) and prevailing economic conditions (Bell et al., 1997), also influence the process.

Nutt (2011) notes that researchers approach decision-making studies in varied ways. Some take a prescriptive perspective, rooted in the philosophy of science, to explore how decisions should be made (Nutt, 1989; Perrow, 1967; Simon, 1977; Thompson, 1967). Others, like Witte (1972) and Mintzberg et al. (1976), adopt a descriptive approach, examining what decision-makers actually do. Using observations, interviews, and surveys, these studies analyze practical decision-making procedures (Fredrickson, 1985; Hickson et al., 1986; Hickson et al., 2003; Nutt, 1984). This divergence has led to distinct perspectives on the decision-making process (Nutt, 2011).

Remenova and Jankelova (2019) expand on this topic, starting with the normative directive, which emphasizes rationality as evaluating all possible solutions to select the optimal one (Simon, 1979). However, this perspective often overlooks real-world constraints, such as limited abilities, knowledge, and information (Sanchez & Contreras, 2016). These constraints have fostered the descriptive approach, which explores how factors like values, information quality, conflict, uncertainty, intuition, and decision styles shape decision-making processes (Remenova & Jankelova, 2019).

Dewberry et al. (2013) link decision-making competence to specific decision styles, which, alongside personality traits, significantly impact performance. Verma (2009 as cited in Remenova & Jankelova, 2019) defines decision-making style as the outcome of cognitive processes guiding the selection among alternatives, reflecting how decision-makers acquire, process, and apply information throughout the process.

Research on the interaction between task characteristics, cognitive aspects of decision-makers, and their impact on decision-making processes has highlighted the importance of decision styles (Thunholm, 2004). The General Decision-Making Style Inventory, introduced by Scott and Bruce (1995), marked a significant shift, broadening the focus beyond professional development to a more comprehensive examination of decision-making styles (Loo, 2000).

Scott and Bruce (1995) developed a psychometric scale grounded in existing literature and validated it across four distinct groups: service personnel, postgraduate students, undergraduate students, and engineers. Their aim was to create a generalized tool for use in a variety of contexts. They found that service personnel responded to the survey with a career-focused perspective, while students evaluated it from a broader, more general decision-making standpoint.

Earlier studies, which influenced Scott and Bruce's framework, viewed decision styles as recurring patterns in decision-making behavior (Driver, 1979), individual traits applied to specific tasks (Harren, 1979), or learned habits shaping the scope of information and alternatives considered (Driver et al., 1998). Building on these ideas, Scott and Bruce (1995) defined decision-making style as an individual's consistent response pattern when faced with decisions. This perspective laid a foundation for future research into decision-making behaviors in various settings.

The initial version of the instrument identified four behavioral decision-making styles, including intuitive and rational styles, related to information processing stages. The intuitive style involves interactive assessment strategies, such as trial and error, relying on experience with tasks and focusing on details. This style aligns with decision-making dimensions driven by feelings, as described by Scott and Bruce (1995). In contrast, the rational style emphasizes structured problem-solving through planning, logical evaluation, and deliberate information analysis.

The rational and intuitive decision-making styles are linked to cognitive style theory, focusing on how individuals acquire and evaluate information—analytically or holistically (Erceg & Galic, 2022; Spicer & Sadler-Smith, 2005; Scott & Bruce, 1995). Kozhevnikov (2007) identifies decision styles as a subset of cognitive styles. Erceg and Galic (2022) relate these styles to Kahneman (2012) dual-process theory, distinguishing System 1 and System 2. The intuitive style aligns with System 1, where individuals rely on heuristics and instinctive judgments, while the rational style corresponds to System 2, involving structured and logical deliberation.

The dependent style originates from career decision-making literature and is characterized by individuals who rely on others, effectively delegating responsibility for decisions. Geisler and Allwood (2018) note this reliance may involve seeking advice or allowing others to decide. Procrastinators exhibit avoidance behaviors due to lack of confidence. Notably, procrastination and dependency involve deferring decision-making responsibility.

The final version of the General Decision-Making Style Inventory (GDMS) proposed by Scott and Bruce (1995) included 25 items. Validation identified a new spontaneous style, driven by impulse. Subsequent validation with students and engineers confirmed the consistency of these five independent, non-exclusive decision styles (Scott & Bruce, 1995).

According to Erceg and Galic (2022), one of the key strengths of the GDMS lies in its integration of cognitive styles and regulatory processes. The intuitive and rational styles correspond to cognitive processes, as outlined in the dual-process theory (Kahneman, 2012). In contrast, the dependent and procrastinating styles expand the GDMS framework by addressing regulatory processes in decision-making. Meanwhile, the spontaneous style focuses on time allocated to decisions, broadening the instrument's conceptual scope (Erceg & Galic, 2022).

The GDMS prompted studies validating it across diverse samples and countries. Loo (2000) conducted factor analyses supporting the five decision-making styles proposed by Scott and Bruce (1995), highlighting the GDMS's robustness as a reliable tool.

Spicer and Sadler-Smith (2005) assessed GDMS validity with UK business students, comparing the original five-factor model to alternatives. Analyses confirmed the five-factor model's superiority, aligning with findings by Scott and Bruce (1995) and Loo (2000). Similarly, Verma and Rangnekar (2015) validated the GDMS cross-culturally in India, confirming its five-factor structure among managers, supporting its broader applicability.

Baiocco et al. (2009) validated the GDMS with adolescents aged 15–19. Older adolescents favored the rational style, associated with better academic performance, while spontaneous and procrastinating styles correlated with more school absences.

Recent studies have expanded the GDMS application by exploring its relationship with individual differences across diverse contexts. The GDMS has been used to study patients' decision-making (Fischer et al., 2015), the link between decision styles, social orientation, and time perception (Geisler & Allwood, 2018), entrepreneurs' decision-making styles (Weerasekara & Bhanugopan, 2022), and the relationship between decision styles, personality, and problematic smartphone use (Urieta et al., 2022).

In Brazil, research on decision styles in general contexts remains limited. Mouta et al. (2021) addressed this gap by adapting the Decision Styles Scale (DSS) for the Brazilian context. This scale, comprising rational and intuitive styles, demonstrated excellent model fit and high reliability.

The exploratory validation of the GDMS was previously conducted by Löbler et al. (2019) and Lehnhart et al. (2021). The latter's transcultural adaptation followed Beaton et al. (2002) protocol, resulting in a translated version with enhanced content validity. Lehnhart et al. (2021) reported strong internal consistency across all factors, confirming the original instrument's five-factor structure and producing a 21-item version with satisfactory factor loadings and reliability. However, the lack of confirmatory factor analysis to validate the theoretical structure of the instrument in Brazil remained a critical gap, which this study seeks to address.

## METHOD

To achieve the study's objective, a descriptive study employing a quantitative approach was conducted through a structured survey. This strategy aims to uncover factual information, determine attitudes and opinions, and provide insights into behaviors through evaluating, analyzing, and describing a population based on a sample (Baker, 2001). Data collection utilized an instrument divided into two parts: the first part focused on demographic profiles such as age, sex, education level, marital status, and occupation. The second part assessed individual decision-making styles using the culturally adapted and validated GDMS version (Lehnhart et al., 2023).

The General Decision-Making Style Inventory (GDMS), developed by Scott and Bruce (1995), originally comprises 25 items distributed across five decision-making styles: rational (5 items), intuitive (5 items), dependent (5 items), procrastinating (5 items), and spontaneous (5 items). Respondents evaluated all items using a five-point Likert scale ranging from "completely disagree" (1) to "totally agree" (5).

The investigated sample, selected non-probabilistically and for convenience, primarily consisted of individuals older than 18 years old with varying educational levels, ranging from high school to postgraduate students. A total of 1,183 responses were collected through an online questionnaire system at a Federal Teaching Institution. The study was approved by the Committee on Ethics in Research, and the questionnaire was anonymous.

For data analysis, Confirmatory Factor Analysis (CFA) was employed to evaluate the constructs' convergent validity, unidimensionality, and discriminant validity. The analysis utilized the direct estimation procedure with a variance-covariance matrix and maximum likelihood estimation to assess the model fit. Convergent validity was examined through the magnitude and statistical significance of standardized coefficients, guided by the following fit indices: chi-square statistics ($\chi^2$), root mean square residual (RMSR), root mean square error of approximation (RMSEA), and Goodness of Fit Index (GFI). Comparative fit indices included the Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI).

As per Byrne (2016), Hair et al. (2014), and Kline (2015), acceptable thresholds for fit indices are: a chi-square/degrees of freedom ratio below 5.0; RMSR and RMSEA values below 0.08 and 0.06, respectively; and values above 0.95 for CFI, GFI, NFI, and TLI. Factors with standardized residuals below 2.58 are considered unidimensional at a 5% significance level (Hair et al., 2014). Discriminant validity was assessed using the Fornell and Larcker criterion (1981), which requires the square root of the Average Variance Extracted (AVE) to exceed inter-construct correlations, and Kline (2015) criterion, which stipulates that inter-construct correlations should be below 0.85.

Data processing and analysis were conducted using Microsoft Excel®, Statistical Package for the Social Sciences (SPSS 20.0), and Amos™. The analysis incorporated descriptive statistics, CFA, and Structural Equation Modeling (SEM).

## ANALYSIS OF RESULTS

This section begins by describing the characteristics of the researched sample. The second part presents the results, including the valid means and percentages of the items and their corresponding dimensions within the General Decision-Making Style Inventory. The third part outlines the initial and final models for the five constructs of the Inventory.

### Descriptive analysis of the sample

The profile of the 1,183 participants is summarized in the descriptive analysis shown in Table 1.

**Table 1**
**Respondents' socio-demographic profile according to the variables sex, age, marital status, educational level and occupation**

| Variables | Alternatives | Frequency | Percentage |
|---|---|---|---|
| Sex | Male | 515 | 43.5 |
| | Female | 660 | 55,8 |
| | Other | 8 | 0,7 |
| Age | 18- 20 years old | 299 | 25.3 |
| | 21- 26 years old | 345 | 29.2 |
| | 27- 33 years old | 254 | 21.4 |
| | Over 34 years old | 285 | 24.1 |
| Marital status | Single | 868 | 73.4 |
| | Married | 167 | 14.1 |
| | Separated/ Divorced | 31 | 2.6 |
| | Common law marriage | 117 | 9.9 |
| Educational Level | Elementary School | 11 | 0.9 |
| | High School | 312 | 26.4 |
| | Technical Course | 115 | 9.7 |
| | Superior Course | 450 | 38.0 |
| | Specialization or MBA | 93 | 7.9 |
| | Master Degree | 167 | 14.1 |
| | Doctorate | 32 | 2.7 |
| | Post-Doctorate | 3 | 0.3 |
| Occupation | Public server | 147 | 12.4 |
| | Employed person | 137 | 11.6 |
| | Liberal professional | 17 | 1.4 |
| | Self- employed professional | 47 | 4.0 |
| | Business person | 17 | 1.4 |
| | Student | 744 | 62.9 |
| | Retired | 9 | 0.8 |
| | Does not work | 23 | 1.9 |
| | Other | 42 | 3.6 |

Source: Elaborated by the authors, through data from the survey.

Among the respondents, the majority were female (55.8%). The mean age of the sample is 28 years (standard deviation: 10 years). Regarding marital status, 73.4% were single. In terms of education, 38% reported having higher education, and the most common occupation was "student" (62.9%).

The sample characteristics align with those of samples 2 and 3 in Scott and Bruce (1995) study, which applied the GDMS to 84 MBA students and 229 undergraduate business students from a large Midwestern university in the USA, with mean ages of 25 and 22 years, respectively.

## Items and dimensions of the General Decision-Making Style Inventory

To validate the model, an analysis of the instrument's averages was conducted. Table 2 presents the valid averages and percentages of the items and their corresponding dimensions in the General Decision-Making Style Inventory.

**Table 2**
**Valid averages and percentages of variables and constructs from the General Decision – Making Style Inventory**

| Style | Variables | Average | Percentages | | | | |
|---|---|---|---|---|---|---|---|
| | | | 1* | 2* | 3* | 4* | 5* |
| Rational | 1. I check my information sources to be sure of the veracity of the facts, before making decisions. . | 4.39 | 0.7 | 1.2 | 9.8 | 35.0 | 53.3 |
| | 2. I make decisions in a logical and systematic way. | 3.99 | 1.1 | 3.3 | 19.9 | 47.6 | 28.1 |
| | 3. I carefully reflect before making a decision. | 4.20 | 0.7 | 2.5 | 15.5 | 38.4 | 42.9 |
| | 4. When I make a decision, I consider many options in terms of a specific objective. | 4.34 | 0.8 | 2.0 | 11.1 | 34.6 | 51.5 |
| | 5. I study all the options I have before making a decision. | 4.14 | 1.1 | 4.7 | 16.5 | 34.0 | 43.7 |
| Intuitive | 6. When I make a decision, I trust my instincts. | 3.62 | 3.4 | 13.1 | 27.1 | 31.4 | 25.0 |
| | 7. When I make decisions, I tend to trust my intuition. | 3.63 | 3.5 | 13.8 | 25.2 | 31.3 | 26.2 |
| | 8. I generally make decisions that seem to be the right ones to me. | 4.14 | 2.4 | 3.0 | 15.9 | 36.1 | 42.6 |
| | 9. When I make a decision, it is more important for me to feel that the decision is right, than to have a rational justification for it. | 3.18 | 12.3 | 18.9 | 25.8 | 24.1 | 18.9 |
| | 10. When I make a decision, I trust my feelings and reactions. | 3.47 | 5.8 | 14.9 | 27.0 | 31.5 | 20.8 |
| Dependent | 11. I usually need help from other people when I make important decisions. | 2.98 | 15.2 | 22.8 | 24.6 | 23.0 | 14.4 |
| | 12. I rarely make important decisions without consulting other people. | 3.23 | 12.9 | 17.4 | 25.3 | 22.8 | 21.6 |
| | 13. If I have help from other people, it is easier to make important decisions. | 3.52 | 8.2 | 13.5 | 23.5 | 28.1 | 26.7 |
| | 14. I use other people's advice to make important decisions. | 3.33 | 7.8 | 16.4 | 28.1 | 30.9 | 16.8 |
| | 15. I like to have somebody to teach me the right direction, in face of important decisions. | 3.47 | 7.2 | 14.6 | 25.4 | 29.5 | 23.3 |
| Procrastinator | 16. I avoid to make important decisions until I am under pressure. | 2.57 | 29.2 | 23.1 | 21.6 | 13.3 | 12.8 |
| | 17. I postpone to make decisions whenever possible. | 2.51 | 29.8 | 24.9 | 20.5 | 14.7 | 10.1 |
| | 18. I frequently procrastinate when it is about making decisions. | 2.58 | 28.1 | 23.8 | 21.6 | 15.2 | 11.3 |
| | 19. I usually make last minute decisions. | 2.37 | 33.8 | 25.4 | 19.2 | 13.5 | 8.1 |
| | 20. I postpone many decisions because when I think about them I feel worried. | 2.54 | 29.7 | 25.0 | 19.9 | 13.1 | 12.3 |
| Spontaneous | 21. I usually make rushed decisions. | 2.17 | 33.3 | 34.1 | 19.5 | 8.6 | 4.5 |
| | 22. I usually make decisions in the heat of the moment. | 2.15 | 35.8 | 31.4 | 19.2 | 9.4 | 4.2 |
| | 23. I make fast decisions. | 2.82 | 17.1 | 20.0 | 34.4 | 20.7 | 7.8 |
| | 24. I usually make decisions on impulse. | 2.19 | 33.3 | 33.1 | 19.4 | 9.4 | 4.8 |
| | 25. When I make decisions, I do what seems to be natural i n the moment. | 3.23 | 7.8 | 15.3 | 35.3 | 29.1 | 12.5 |

Note: Likert type applied scale: 1*=Totally disagree; 2*=Partially disagree, 3*= Do not agree, nor disagree, 4*= Partially agree, 5*= Totally agree.

Source: Adapted from Scott and Bruce (1995), survey data.

In the Rational decision-making style, the predominant responses across all items were "partially agree" or "totally agree," reflecting a preference for logic and reasoning in decision-making. For the Intuitive style, "partially agree" was the most common response for four items. However, for the item "When I make a decision, it is more important for me to feel that the decision is right than having a rational justification for it," the most frequent response was "neither agree nor disagree," suggesting that individuals may require additional justification or motivation to support their decisions.

In the Dependent style, the average response across all five items was close to 3.00, indicating neutrality toward relying on others for decision-making. However, items referencing seeking help, guidance, or advice showed a slightly higher average for "partially agree." This may reflect uncertainty, particularly among younger respondents, who might value sharing decision-making aspects with others. For the Procrastinating style, the most frequent responses were "totally disagree" and "partially disagree," indicating that postponement is not a common behavior when making decisions. In the Spontaneous style, responses suggested that individuals are neither impulsive nor anxious but demonstrate quickness and agility in decision-making.

Overall, the item with the highest average score (4.39) pertained to verifying information sources to ensure factual accuracy before making decisions, a characteristic of the rational style. Conversely, the item with the lowest average score (2.15) related to frequently making decisions in the heat of the moment, a trait associated with the spontaneous style.

## Validation of the General Decision-Making Style Inventory

After analyzing the item averages and percentages, the next step was to individually validate the instrument's dimensions—rational, intuitive, dependent, procrastinating, and spontaneous styles—using Confirmatory Factor Analysis (CFA). The relationships between the observed variables and their constructs were estimated using the maximum likelihood method. The initial results are presented in Table 3.

**Table 3**
**Fit indexes for the five decision styles**

| Index | **Limit**[1] | Rational Style | | Intuitive Style | | Dependent Style | | Procrastinator Style | | Spontaneous Style | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Initial | Final | Initial | Final | Initial | Final | Initial | Final | Initial | Final |
| $x^2$ (v.) | - | 141.96 | 263.38 | 164.62 | 558.62 | 248.94 | 186.37 | 323.55 | 323.54 | 224.82 | 577.19 |
| $x^2$ (p.) | > 0.05 | 0.00 | 0.67 | 0,00 | 0.28 | 0.00 | 0.26 | 0.00 | 0.030 | 0.000 | 0.86 |
| $x^2$/df | < 5.00 | 4.76 | 0.018 | 28.56 | 1.16 | 9.32 | 1.35 | 5.09 | 2.67 | 22.20 | 0.03 |
| GFI | > 0.95 | 0.99 | 0.99 | 0.94 | 0.99 | 0.98 | 1.00 | 0.99 | 1.00 | 0.96 | 1.00 |
| CFI | > 0.95 | 0.99 | 1.00 | 0.92 | 1.00 | 0.98 | 1.00 | 0.99 | 1.00 | 0.95 | 1.00 |
| NFI | > 0.95 | 0.98 | 1.00 | 0.91 | 0.99 | 0.98 | 1.00 | 0.99 | 1.00 | 0.95 | 1.00 |
| TLI | > 0.95 | 0.97 | 1.00 | 0.83 | 1.00 | 0.97 | 1.00 | 0.99 | 0.99 | 0.90 | 1.00 |
| RMSR | < 0.08 | 0.01 | 0.00 | 0.09 | 0.01 | 0.04 | 0.01 | 0.02 | 0.02 | 0.07 | 0.00 |
| RMSEA | < 0.06 | 0.06 | 0.00 | 0.17 | 0.01 | 0.08 | 0.02 | 0.06 | 0.04 | 0.13 | 0.00 |
| AC | > 0.70 | | 0.74 | | 0.84 | | 0.85 | | 0.88 | | 0.87 |
| CC | > 0.70 | | 0.74 | | 0.85 | | 0.84 | | 0.88 | | 0.87 |

Notes: [1] Adequate levels for fit indexes based in Hooper et al. (2008), Hu and Bentler (1999).

Abbreviations: v.=Value p.=Probability; df=Degrees of freedom; AC=Cronbach's alpha; CC=Composite Reliability

Source: Elaborated by the author, survey data.

The initial models for the five constructs, using all variables from the original scale, were found to be imprecise, as the chi-square/degrees of freedom ratios exceeded the recommended limit, and some fit indices did not meet the suggested thresholds. To improve the models, items with factor loadings below 0.7 were removed: Rational Style - items 1 and 2; Intuitive Style - items 8 and 9; Spontaneous Style - items 23 and 25. Additionally, correlations between error terms were added where theoretically justified: Dependent Style: Q11 ↔ Q12, Q11 ↔ Q13; Spontaneous Style: Q19 ↔ Q20.

Following these adjustments, the final models for all five dimensions satisfied the absolute fit criteria, demonstrating convergent validity. All standardized residuals were below 2.58, confirming unidimensionality. Composite reliability and Cronbach's alpha indicated strong internal consistency for each construct. Finally, discriminant validity of the constructs was verified (Table 4).

**Table 4**
**Discriminant validity for the five styles**

| Styles | Convergent Validity | Discriminant Validity | | | | |
|---|---|---|---|---|---|---|
| | (AVE) | Rac | Int | Dep | Pro | Esp |
| Rational (Rac) | 0.49 | *0.70* | | | | |
| Intuitive (Int) | 0.66 | 0.12 | *0.81* | | | |
| Dependent (Dep) | 0.52 | 0.05 | -0.05 | *0.72* | | |
| Procrastinator (Pro) | 0.61 | -0.26 | -0.02 | 0.36 | *0.78* | |
| Spontaneous (Esp) | 0.69 | -0.41 | 0.10 | 0.35 | 0.51 | *0.83* |

Note: Diagonal values (italic) is the square root of AVE; other values correspond to the correlation between constructs.

Source: Survey data.

The correlation values between constructs in Table 4 are lower than the square root of the AVE (*italicized*) as per Fornell and Larcker (1981) criterion, and all inter-construct correlations are below 0.85, as recommended by Kline (2015), confirming discriminant validity. Following the validation of the five dimensions, the Decision-Making Styles model was estimated (Table 5).

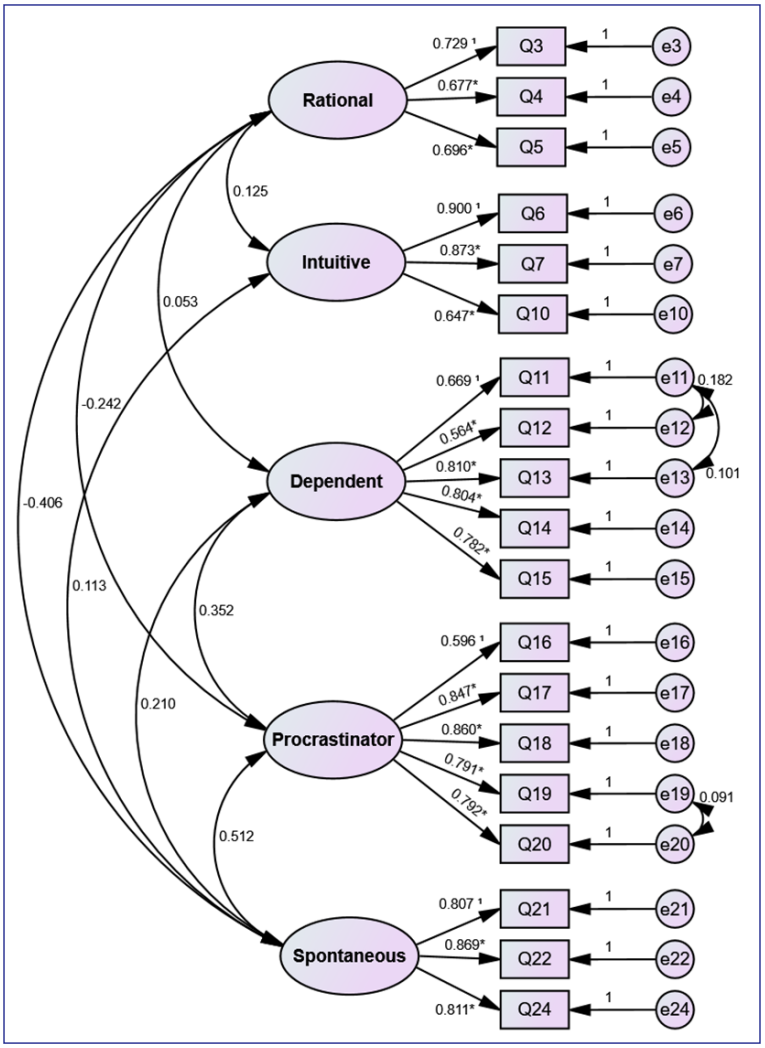
**Table 5**
**Fit indexes of integrated model of Decision Styles**

| Index | Limit[1] | Decision-Making Styles | |
|---|---|---|---|
| | | Initial | Final |
| $x^2$ (value) | - | 1035.02 | 452.67 |
| $x^2$ (probability) | > 0.05 | 0.00 | 0.00 |
| $x^2$/degrees of freedom | < 5.00 | 6.95 | 3.21 |
| GFI- Goodness of Fit | > 0.95 | 0.91 | 0.96 |
| CFI- Comparative Fit Index | > 0.95 | 0.92 | 0.97 |
| NFI- Normed Fit Index | > 0.95 | 0.90 | 0.96 |
| TLI- Tucker-Lewis Index | > 0.95 | 0.91 | 0.96 |
| RMSR- Root Mean Square Residual | < 0.08 | 0.22 | 0.06 |
| RMSEA- R. M. S Error of Approximation | < 0.06 | 0.07 | 0.04 |

Note: [1] Adequate levels for fit indexes based in Hooper et al. (2008), Hu and Bentler (1999).
Source: Survey data.

The analysis concluded that the five dimensions demonstrated convergent validity, as the fit indices (GFI, CFI, TLI, and NFI) exceeded 0.95, RMSR and RMSEA were below 0.08 and 0.06 respectively, and the Average Variance Extracted (AVE) exceeded 0.5. Reliability was confirmed with all Cronbach's alpha and Composite Reliability values above 0.7, indicating strong internal consistency. Unidimensionality was supported as all residuals were below 2.58. Discriminant validity was also confirmed, as the square root of the AVE for each construct exceeded its correlations with other constructs, satisfying Fornell and Larcker's criterion. After this confirmatory validation stage, the measurement model retained the five dimensions from the original model, now measured by a final set of 19 items. Figure 1 illustrates the final model of the General Decision-Making Style Inventory, including standardized coefficients and the significance of the relationships.

**Figure 1**
**Final Model of Decision Styles**




Note: * p < 0.01; [1] value of non-calculated z, where the parameter was fixed in 1, because of the model's demands.
Source: Elaborated by the authors.

The results in Figure 1 indicate that the five dimensions are interrelated, as previously identified by various authors (Alaybek et al., 2022; Loo, 2000; Scott & Bruce, 1995). Krasniqi et al. (2019) and Recart et al. (2021) also observed models with both positive and negative correlations between decision-making styles. The strongest positive correlation was found between the Spontaneous and Procrastinating styles (0.512), suggesting that individuals who tend to act quickly in decision-making are also prone to postponing or avoiding the decision-making process. This finding aligns with the results (Erceg & Galic, 2022). A high correlation was also observed between the Procrastinating and Dependent styles, corroborating the findings (Recart et al., 2021). On the other hand, the strongest negative correlation occurred between the Rational and Spontaneous styles, reflecting the contrasting behaviors of these dimensions: while the Rational style is analytical and logical, the Spontaneous style is impulsive. This result is consistent with findings (Gambetti et al., 2008).

The adjustment indices within the suggested limits (Table 6) confirm that the model meets the proposed validity criteria, indicating that the integrated General Decision-Making Style Inventory is suitable for the Brazilian context. Of the 25 items initially proposed, 19 were retained in the validated model. Table 7 illustrates the retained items in the validated model for the Brazilian context.

Based on the results described above and the Final Model of Decision Styles (Figure 1), it is evident that the items for the Dependent and Procrastinating styles remain consistent with the original model proposed (Scott & Bruce, 1995). For the other styles—Rational, Intuitive, and Spontaneous—two items were excluded from each during validation. Nonetheless, the remaining items in each dimension are sufficient to reliably measure their respective styles.

**Table 6**
**Items from the validated IGETD model**

| Style | Variable |
|---|---|
| Rational | 1. My decision requires careful reflection. |
| | 2. When I make a decision, I take into consideration many options in terms of a specific objective. |
| | 3. I exploit all my options before making a decision. |
| Intuitive | 4. When I make a decision, I trust my instincts. |
| | 5. When I make decisions, I tend to trust my intuition. |
| | 6. When I make a decision, I trust in my feelings and reactions. |
| Dependent | 7. I frequently need help from other people to make important decisions. |
| | 8. I rarely make important decisions, without consulting other people. |
| | 9. If I have the help of other people, it is easier to make important decisions. |
| | 10. I take the advice from other people to make important decisions. |
| | 11. I like to have somebody to guide me in the right direction to make important decisions. |
| Procrastinator | 12. I avoid to make important decisions until I am under pressure. |
| | 13. I postpone decision-making whenever possible. |
| | 14. I frequently procrastinate when I have to make important decisions. |
| | 15. I usually make important decisions in the last minute. |
| | 16. I procrastinate decision-making because thinking about them worry me. |
| Spontaneous | 17. I usually make rushed decisions. |
| | 18. I frequently make decisions at the heat of the moment. . |
| | 19. I frequently make decisions on impulse. |

Source: Elaborated by the authors.

## Discussion of the IGETD model results

Based on the explanatory results found in the model, it was observed that the predominant decision-making styles in the investigated sample were the spontaneous and the intuitive, both representing important modes of conducting the decision-making process in the situations faced by the participants. The findings indicate that hasty decisions made impulsively and in the heat of the moment - characteristic of the spontaneous style - as well as reliance on instincts, intuition, feelings, and emotions - characteristic of the intuitive style, largely account for how the decision-making process unfolded in the sample. Recent studies futher confirm the psychometric validity of these styles: Brazilian adaptations of the GDMS consistently reinforced the proeminence of the intuitive style (Lehnhart et al., 2021; Lehnhart et al., 2023; Löbler et al., 2019), while comparative analyses highlighted the strong influence of contextual factors on the predominance of spontaneous responses (Aluja et al., 2024; Voss et al., 2023). This evidence aligns with classical literature, where Simon (1977) emphasized that cognitive limitation leads individuals to rely on intuition, and Mintzberg et al. (1976) demonstrated that "unstructured" decisions often follow flexible and improvised patterns. In turn, Thompson (1967) and Perrow (1967) highlighted that highly uncertain environments reduce the applicability of rational models while increasing the relevance of intuitive and spontaneous styles.

Variables with lower explanatory power were observed in the constructs of the rational and dependent styles, suggesting that these modes represent underlying rather than predominant approaches among the sample. This finding indicates that fixed and repeated responsea are not the preferred strategy of the decision-makers investigated. Such a tendency may reflect the current context of constant uncertainty and fluctuations, in which rational and dependent styles dfail to provide the most effective responses.

Recent psychometric studies have shown that both the rational and the dependent style appear with reduced proeminence in populations exposed to turbulent environments, being less predictive of decision-making behavior (Aluja et al., 2024; Wachowicz et al., 2023). In the Brazilian context, the validation of the GDMS likewise identified the dependent style as secondary (Lehnhart et al., 2023). These findings align with classical contributions of Nutt (1984), who observed the limited effectiveness of overly rational and structured processes; and Fredrickson (1985), who highlighted the fragility of rationality in unstable environments. Similarly, Hickson et al. (2003) linked excessive reliance on leaders or organizational routines to the risk of strategic inertia, which explains why dependent styles demonstrate lower explanatory power in dynamic contexts.

## FINAL CONSIDERATIONS

This study was grounded on the premise that individual decision styles, understood as intrinsic characteristics of the decision-maker, influence both the decision-making process—encompassing the stages of choice in a given situation—and the outcomes in terms of decision quality and performance. Accordingly, the objective was to validate the General Decision-Making Style Inventory (GDMS) for the Brazilian context, originally developed by Scott and Bruce (1995), building on the investigations (Lehnhart et al., 2023; Löbler et al., 2019).

The validation process involved applying a two-section questionnaire—one focused on the respondents' profiles and the other on GDMS dimensions—to a sample of 1,183 adults via an online system. Data analysis employed descriptive statistics, confirmatory factor analysis (CFA), and structural equation modeling to structure the final model. The CFA tests verified the constructs' convergent validity, unidimensionality, and discriminant validity.

The results confirmed that the model satisfies the proposed validity criteria, establishing the GDMS as a suitable instrument for the Brazilian context. Of the 25 original items, 19 were retained in the validated model, with items 1 and 2 (Rational Style), 8 and 9 (Intuitive Style), and 23 and 25 (Spontaneous Style) excluded due to factor loadings below 0.7. Additionally, correlations between error terms with theoretical justification were included: Q11↔Q12 and Q11↔Q13 for the Dependent Style, and Q19↔Q20 for the Spontaneous Style.

The study successfully produced an adapted and validated instrument in Brazilian Portuguese, encompassing five decision styles. Unlike the Decision Style Scale (DSS) adapted by Mouta et al. (2021), which is limited to rational and intuitive styles, this model provides a broader and richer framework for evaluating decision styles.

However, the study's limitations should be noted. The convenience sample, derived from a Teaching Federal Institution's online questionnaire system, was restricted to its community. Future studies should test the instrument's validity with other measures of individual differences that may impact decision-making processes (Baiocco et al., 2009; Duh & Iyiola, 2020; Klein & Sharma, 2022; Musasa & Moodley, 2020) and in specific contexts (Cohen & Wirtz, 2022; Imran & Rautiainen, 2022; Weerasekara & Bhanugopan, 2022), as has been done in international research.

The validation of the General Decision-Making Style Inventory (GDMS) enables studies that operationalize the examination of psychological aspects across different types of decision-making, identifying the styles most closely associated with specific decisions within diverse organizational contexts. This approach allows researchers to assess whether certain decision styles are predominant or more effective in particular decision types, as well as to determine whether the prevalence of one or more styles is linked to the organizational decision-making context in which they occur.

Another promising line of research concerns the validation of the GDMS across diverse populations and organizational domains, including private, public, and third-sector, as already highlighted by Brazilian studies (Lehnhart et al., 2023; Löbler et al., 2019). This approach allows for examining whether the predominance of styles persists or shifts according to levels of complexity and organizational uncertainty, as anticipated by classics of organizational theorists (Perrow, 1967; Thompson, 1967).

Finally, longitudinal studies are recommended to track the evolution of decision-making styles in highly turbulent environments, such as those encountered during the creation, development, and acceleration of startups. This perspective would enable an assessment of whether intuitive and spontaneous styles remain predominant inder conditions of uncertainty, or whether they give way to more rational or dependent styles as the environment stabilizes, consistent with Hickson et al. (2003) discussion of the link between excessive dependence and strategic inertia.

This type of investigation is particularly relevant for advancing research on decision-making processes, as it can shed light on how the decision-makers navigate the choices they face in their daily activies. Accordingly, managers may consciously anticipate the decision-making process, positioning themselves more effectively with respect to their primary responsibility: making decisions in the context of constant organizational uncertainty.

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**Eliete dos Reis Lehnhart:** Conceptualization (Equal); Investigation (Equal); Methodology (Equal); Project Management (Leadership); Resources (Equal); Supervision (Leadership); Validation (Equal); Visualization (Equal); Writing- original draft (Equal).

**Carolina Schneider Bender:** Conceptualization (Equal); Investigation (Equal); Methodology (Equal); Resources (Equal); Validation (Equal); Visualization (Equal); Writing- original draft (Equal); Writing- revision and editing (Leadership).

**Taiane Keila Matheis:** Conceptualization (Equal); Data curation (Leadership); Investigation (Equal); Methodology (Equal); Resources (Equal); Validation (Equal); Visualization (Equal); Written- original draft (Equal).

**Rafaela Dutra Tagliapietra:** Conceptualization (Equal); Investigation (Equal); Methodology (Equal); Resources (Equal); Validation (Equal); Visualization (Equal); Written- original draft (Equal).

**DATA AVAILABILITY**

Data available upon request. The entire dataset supporting the results of this study is available upon request to the author, Taiane Keila Matheis. The dataset is not publicly available due to a lack of ethical provisions.

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