Analyzing correlations between approaches to analyzing decision-making styles

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Abstract. Descriptive decision-making theories center on the analysis of individuals' decision-making styles (DMSs). Different approaches have been used to study DMSs, but this study focuses on two approaches: those of (1) Scott & Bruce and (2) Rowe. Scott & Bruce categorizes DMSs into rational, intuitive, dependent, avoidant, and spontaneous, whereas Rowe delineates them into analytical, behavioral, conceptual, and directive. Previous studies have independently used these approaches to identify dominant DMSs or to establish correlations between DMSs and various personal characteristics. In this study, both DMS approaches were concurrently used to examine their correlations. The sample comprised 263 students, and correlation analyses were conducted on the entire dataset and its subsets while considering different characteristics (i.e. students' gender and study program, and the data collection timeframe). Multivariate correlation, along with descriptive statistics, was employed to investigate the correlation between the two approaches. The analysis revealed a positive correlation between the behavioral and dependent styles and a negative correlation between the avoidant and analytical styles. Additionally, the examination of the dominant and submissive styles indicated a significant connection between the analytical and rational DMSs. Overall, the two approaches exhibited weak connectivity. For a more comprehensive understanding of decision-makers' behavior and enhanced predictive capabilities, the concurrent application of the two approaches is imperative.

Keywords: correlation, decision-making style, Rowe's approach, Scott & Bruce approach, students

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1. Introduction

Analysis of decision-making styles (DMSs) is a subject extensively explored by researchers in various fields, including organization, management, decision-making, leadership, medicine, sociology, and psychology. There are numerous approaches defining DMS types, varying from the number of individuals included in the analysis to considerations of cognitive processes, handling uncertainty, and other factors. This paper specifically concentrates on two prominent approaches in DMS analysis: the Scott & Bruce approach and Rowe's approach. The primary emphasis of this study is on investigating the relationship between these two instruments. Remarkably, despite the breadth of the literature on DMSs, as presented in Section 3, there is a notable lack of analyses of the relationship between the results of these distinct instruments. The present study aims to bridge this gap by exploring and establishing the prominent appdoaches to DMS analysis: correlations between the Scott & Bruce approach and Rowe's approach, on which we found only one study in the literature [7]. Through the present study, we contribute to a more comprehensive understanding of DMSs in diverse contexts.

In most cases, in research literature on DMS:

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1. appliacation of a certain approach to the dataset to determine the distribution of dominant DMSs of the dataset's population, or

2. application of a certain approach with an other approach, or collection of some data on the personal characteristics which enabled one of the following:

   (a) identification of differences in the dataset population with respect to their personal characteristics,

   (b) identification of the correlations among the DMSs from the same DMS instrument,

   (c) application of the correlation analysis to and formulation of conclusions on the connectivity of the DMSs and some other concepts.

This paper analyzes a dataset composed of responses to a questionnaire results on the Scott & Bruce and Rowe's DMS analysis approaches, which was administered to army and business students. The dataset comprises data on personal characteristics of the students, such as their age, gender, and high school education, that were collected in 2020 and 2022, thus allowing for insights into the potential impact of the COVID-19 pandemic on the students' decision-making processes.

The primary objective of this research was to analyze relations between the results of the two aforementioned DMS analysis approaches. Additionally, within-instrument analysis was employed to interpret divergences in the DMS descriptions. The main research question guiding this study is: *Are the results of the two DMS analysis approaches correlated, and if so, how?* Through this investigation, this paper seeks to contribute valuable insights into the interrelationship between the Scott & Bruce and Rowe's the DMSs analysis approaches enhancing our understanding of DMSs of the specified student cohorts within their temporal contexts. We opted to use the Scott & Bruce and Rowe's approaches for several cogent reasons. First, the theoretical affinities between specific style descriptions within the Scott & Bruce and Rowe's frameworks (e.g. *analytical* and *rational*) stimulated our scholarly curiosity to undertake empirical scrutiny. Second, our prior research endeavors have delved into both methodologies, due to which validated questionnaires were readily available for our use.

The structure of this paper is as follows. Section 2 provides a brief overview of DMSs according to Bruce & Scott and Rowe. Section 3 comprehensively reviews existing papers on DMSs, particularly those that used the approaches of Scott & Bruce and Roweand incorporated correlation analyses. Section 4 outlines the research methodology used in this study. Section 5 presents and discusses the findings from the analysis. Finally, Section 6 concludes this paper.

2. The Scott & Bruce and Rowe's decision-making styles (DMSs)

DMS approach	DMS styles	Instrument	Sources
Scott & Bruce	Rational Intuitive Dependent Avoidant Spontaneous	Decision Style Inventory (DSI)	[1, 8, 19, 24, 25, 26, 16, 13]
Rowe	Analytical Behavioral Conceptual Directive	General Decision-Making Scale (GDMS)	[27, 21, 31, 9, 16, 13]

Table 1: *Decision-making style (DMS) types.*

Numerous studies have comprehensively analyzed the Scott & Bruce approach and Rowe's approaches, as outlined in Table 1. Such studies addressed both the theoretical and practical dimensions. Aside from defining DMSs, these approaches provide instruments, typically in the form of questionnaires, that enable individuals to discern their DMS profile and identify their dominant DMS. Notably, our previous research expanded the theoretical framework for DMS analysis by introducing the identification of submissive DMSs and assessing the intensity of their influence. This expansion contributes to a more nuanced understanding of DMSs, providing a richer conceptualization that goes beyond traditional categorizations [15].
Rowe's descriptions of DMSs are as follows [27, 21, 31, 9, 16, 13]:

- Directive DMS: The directive style is marked by a low tolerance for ambiguity and a task orientation. Decision-making is swift, involving few alternatives and sufficient information. Individuals with this DMS often take on a directing role, displaying authoritarian and somewhat aggressive tendencies. Despite this, they are highly effective in achieving results.

- Analytical DMS: In contrast, the analytical DMS exhibits a high tolerance for ambiguity, with each decision-making process characterized by conscientious consideration. Those with this style enjoy challenges and frequently hold significant positions within an organization. They lean towards logical and abstract thinking, fostering innovation in problem-solving. An analytical approach allows decision-makers to explore problems from various perspectives.

- Conceptual DMS: The conceptual style is human-oriented, showcasing high cognitive complexity. Decision-makers in this category consider numerous alternatives and place a premium on quality while envisioning common goals with their associates. They are organized and independent, and they actively engage with others, prioritizing ethical considerations and values. Problem-solving often involves intuition.

- Behavioral DMS: The behavioral DMS is characterized by empathy and sympathy towards collaborators. Individuals with this style possess strong listening skills, accept suggestions readily, and communicate effectively with others. Decision-making relies less on data and analytics but is rooted in conversations and meetings with associates. The short-term orientation emphasizes goals.

Numerous studies explored into the complex interplay among personality traits, emotional intelligence, and DMSs across diverse participant groups and contexts. El Othman et al. [10] studied Lebanese medical students by using the Big Five Personality Test, the Quick Emotional Intelligence Self-Assessment Scale, and the General Decision-Making Scale (GDMS) test, and found that emotional intelligence has both a positive influence on intuitive decision-making, and a negative impact on the avoidant and dependent DMSs. This underscores the role of emotional intelligence as a mediator between DMSs and personality traits, providing valuable insights into the nuanced dynamics of decision-making processes. Varzaneh and Aliahmadi [31] studied the relationship between emotional intelligence and DMSs among stock market investors. Their findings unveiled a discernible connection, indicating that emotional intelligence is linked to both the rational and intuitive DMSs.

Motvaseli and Lotfizadeh [20] examined the positive influence of cognitive style among Iranian entrepreneurship students. They used the GDMS test and the Cognitive Style Inventory to explore the intricate relationship between cognitive styles and the decision-making processes of these students. Bajwa et al. [5] explored the relationship between personality traits and DMSs in students using the GDMS test and the Big Five Inventoryand discovered a connection between conscientiousness and a rational DMS as well as distinctions between the decision-making capacities of individuals with concerning urban–rural backgrounds and gender.

The DMSs by Scott & Bruce are as follows [1, 8, 19, 24, 25, 26, 16, 13]:

- Rational DMS: A person with a rational DMS makes decisiosn methodically by conducting a thorough analysis and logical evaluation of alternatives. There is a commitment to research and the pursuit of quality information to gain a precise understanding of the situation.
- Intuitive DNS: The intuitive DMS relies on the internal feelings of the decision-maker. Decision-making for an intuitive individual involves analyzing details based on premonitions and feelings.
- Dependent DMS: The dependent style is characterized by a heavy reliance on others. Decision-makers leaning toward this style depend on the advice, thoughts, and experiences of others to guide their decision-making process. It indicates a lack of intellectual and practical independence.
- Avoidant DMS: This style involves an inclination to evade decision-making. It is marked by delays and is often associated with last-minute decision-making.
- Spontaneous DMS: In this style, decision-makers tend to make rapid decisions to keep the decision-making process as brief as possible.

A medical field study explored the neural influence on decision-making among 694 academic staff in three Malaysian universities using Rowe and Boulgarides's Decision Style Inventory (DSI). The results illuminated distinct patterns among the academic staff: in the first university, the staff exhibited a preference for the right hemisphere, aligning with a behavioral DMS; in the second university, they leaned toward the analytical style and the left hemisphere, showcasing a cognitive emphasis; and in the third university, they demonstrated a preference for the right hemisphere, emphasizing a conceptual decision-making approach [4]. Following this study, a survey used the same inventory investigated the prevailing DMSs among 54 deans in Malaysian universities. The outcomes revealed a predominant adoption of the behavioral style, and then, by the analytical style, with a combination of directive and conceptual DMSs also observed [14]. In Jordan, Al-Omari [3] investigated decision-making and leadership styles of 108 public school directors and found no significant correlation between their DMSs and their leadership styles. Most of them demonstrated a dominant directive DMS, which was assessed using Rowe's DSI. Torres and Augusto [29] emphasized the predictability of managers' future reactions based on their DMSs. This insight was derived from the analysis of the responses of MBA students to the aforementioned questionnaire. The study contributed to the understanding of how DMS, as identified through the questionnaire, could serve as indicators of managerial behavior in future scenarios.

3. Literature review: DMS and correlation analysis

The process of decision-making is intricate and demanding. Employing an appropriate DMS in specific situations is highly significant for achieving positive outcomes. Given the extensive application of DMSs and the corresponding instruments, numerous studies in various fields have scrutinized this subject. A comprehensive overview of pertinent scientific contributions is presented in this section to offer insights into the diverse applications and implications of DMSs in various contexts. Specifically, this literature review explores the correlations between DMSs and a broad spectrum of factors, including demographic attributes, social desirability, executive functioning, mental health competencies, entrepreneurial aspirations, stress levels, problematic smartphone usage, and more.

Loo [18] investigated the potential correlations between five DMSs and social desirability among 223 management undergraduates using the GDMS test and found low positive correlations between age and participants' scores on both the intuitive and avoidant DMS scales as well as low positive correlations between the rational DMS and social desirability.

In a study in Pakistan, the GDMS questionnaire was administered to 195 participants aged 30 to 60 with undergraduate degrees. The objective was to evaluate whether executive functioning mediates in the relationship between age and various DMSs in adults. The findings indicated a positive correlation between age and the dependent and avoidant DMSs, while a negative correlation between age and the spontaneous DMS and executive functioning [11].

Slovak researchers explored the connection of DMSs and decision-making competencies with mental health among 427 high school students using the GDMS test and found a positive correlation for the intuitive DMS and a negative correlation for the avoidant style and mental health indicators. Additionally, they observed a medium negative correlation was observed between the rational and spontaneous DMSsy a negative correlation between both lack of confidence and overconfidence and the spontaneous DMS, and a negative correlation between the intuitive DMS and recognizing social norms and consistency in risk perception [6].

Studiying the correlation between verbal and visual divisional thinking and DMSs among 186 Italian psychology students, the authors concluded that the rational DMS plays a pivotal role in the creative process [22].

Krasni et al. [17] examined the correlation between DMSs and entrepreneurial intentions among 230 managers from Kosovo and found that spontaneous and intuitive DMSs are likely to have entrepreneurial intentions.

Gambetti et al. [12] found, from their study of 194 individuals with diverse profiles and professions from Italy, a negative correlation between rational and spontaneous DMS, a positive correlation between the rational and dependent DMSs, dependent and avoidant DMSs and intuitive and spontaneous styles. Moreover, trait anxiety exhibited positive correlations with the dependent and avoidant DMSs.

Thunholm [28] investigated into the relationship between individual DMSs and negative stress among 23 male Army majors with critical decision-making responsibility and found a positive correlation between avoiding DMS and average cortisol level. This implies that in decision-making contexts, the tendency to avoid decision-making is associated with heightened negative stress levels.

Öngen [21] investigated the relationships between the vocational identity status, perfectionism, and DMSs of 317 Turkish university students and graduates using the GDMS test and two additional questionnaires. The findings indicated positive prediction of career exploration by the rational and dependent DMSs; positive prediction of commitment by the intuitive DMS; and positive prediction of reconsideration by avoidant DMS.

Abood et al. [2] examined the influence of leadership styles on DMSs among 73 nurses at Minia University Hospitals using the nurses completed two questionnaires: The Administrative Styles Questionnaire Scale and the GDMS test. The findings revealed a significant positive correlation between the direct style and the administration style. Conversely, a negative correlation between the conceptual and behavioral styles and the administration style.

Urieta et al. [30] explored the relationships between the personalities, DMSs, and problematic smartphone use (PSU) of 1,562 respondents aged 18 to 90 using Personality Test (ZKA-PQ/SF), the GDMS test, and the Mobile Phone Abuse Questionnaire (ATeMo). The results indicated that younger individuals are more likely to experience issues with phone memory. The analysis confirmed that problematic smartphone use is positively correlated with the avoidant, spontaneous, and dependent DMSs, but especially, with the avoiding and spontaneous DMSs.

4. Methodology

In this section, we present the dataset and the methodology that we used to answer the research question: *Are the results of the two DMS approaches correlated, and if so, how?*. We divided this research in three parts, as described in Table 2.

Analysis	Methods
Analysis of the participants' DMS profiles	Multivariate correlations
Analysis of the participants' dominant DMSs	Multivariate correlations, descriptive statistics
Analysis of the participants' submissive DMSs	Multivariate correlations, descriptive statistics

Table 2: *Methods used in this research.*

Our dataset comprised 263 students, and we analyzed various subsets, as detailed in Table 3. We collected the data in 2020 and 2022 and from male and female students in the fields of business and the army. Notably, our 2020 data collection occurred under COVID-19 conditions; but by 2022, the restrictions were no longer applicable. The inclusion of business and army students in our study was deliberate and multifaceted. We aimed to assemble two cohorts immersed in distinct organizational milieus, each distinguished by unique degrees of adaptability, regimentation, and formalism. Furthermore, both cohorts received instruction in DMSs as part of their academic curriculum to prepare them for future roles as discerning leaders. Moreover, our choice was informed by our prior research [16, 13, 15] that involved these same student cohorts, which allowed a seamless extension and consolidation of our previous findings. Finally, practical considerations, particularly, the feasibility of engaging students during class sessions, were also factored in, specifically given the challenges posed by the COVID-19 pandemic. The data were collected utilized the DSI and the GDMS test. The students completed questionnaires and calculated scores based on the prescribed instruments. Demographic information, including gender, age, high school education, and student type, was also collected voluntarily. The data collection procedure involved the digitization of collected data into spreadsheet format.

Dataset	Description	Number of students
S1	All students	263
S2	2020 subset	138
S3	2022 subset	125
S4	Male students	85
S5	Female students	178
S6	Business students	158
S7	Army students	105

Table 3: *Description of subsets.*

Following the data collection process, the scores for each approach were ranked, to enable the identification of the dominant and submissive DMSs. Additionally, the IDs and other variables necessary for the analysis, including the creation of dummy variables, were calculated. Correlations were estimated using the Row-wise method in the analytical tool JMP, which is accessible at https://www.jmp.com. Descriptive statistics were carried out using Microsoft Excel, using pivot table analysis for a comprehensive exploration of the collected data.

5. Results and discussion

5.1. Analysis of participants DMS profiles correlation

The analyzed data included the following variables:

- The scores (from 5 to 25) for each of the five DMS by Scott & Bruce (number between 5 and 25),
- The scores (from 20 and 160) for each of four DMSs by Rowe; and
- The calculated intensities of dominance (ID) of both approaches. The ID is a measure of the dominance of the dominant DMS over others [15]. For Rowe's approach, the ID was calculated using Eq. (1).

$$ID_j = \sum_{i=1}^{4} (max_j DS - DS_i) \tag{1}$$

$D_1 = 74,\ A_1 = 72,\ C_1 = 83,\ B_1 = 71$ $ID_1 = 33$	$D_2 = 50,\ A_2 = 84,\ C_2 = 113,\ B_2 = 53$ $ID_2 = 193$

D_i–achieved score of student i for directive DMS, A_i–achieved score of student i for analytical DMS, C_i–achieved score of student i for conceptual DMS, B_i–achieved score of student i for behavioral DMS, ID_i–achieved ID of student i in GDMS.

Figure 1: *Two DMS profiles.*

Figure 1 depicts two respondents of our survey and their GDMS scores (Rowe's approach). Subsequently, their IDs were calculated. In both cases, the dominant DMS was conceptual, as it had, denoted as C_i. Notably, the score of the second person, C_2, the score was significantly higher than the other values when compared with those of the first person. This discrepancy suggests that the second person used their dominant DMS more frequently than did the first person.

	R	I	De	Av	S	ID_{SB}	Di	An	C	B	ID_R
R	1,00	0,06	0,13	-0,21	-0,30	0,45	-0,02	0,14	-0,05	-0,07	0,03
I	0,06	1,00	0,09	0,04	0,37	-0,02	-0,01	-0,17	-0,03	0,18	-0,06
De	0,13	0,09	1,00	0,35	-0,04	-0,29	-0,11	-0,22	-0,05	0,33	-0,09
Av	-0,21	0,04	0,35	1,00	0,31	-0,61	-0,05	-0,32	0,08	0,25	0,03
S	-0,30	0,37	-0,04	0,31	1,00	-0,43	0,00	-0,13	0,09	0,04	0,07
ID_{SB}	0,45	-0,02	-0,29	-0,61	-0,43	1,00	-0,04	0,25	0,00	-0,18	-0,14
Di	-0,02	-0,01	-0,11	-0,05	0,00	-0,04	1,00	-0,10	-0,47	-0,42	0,11
An	0,14	-0,17	-0,22	-0,32	-0,13	0,25	-0,10	1,00	-0,27	-0,56	0,21
C	-0,05	-0,03	-0,05	0,08	0,09	0,00	-0,47	-0,27	1,00	-0,15	-0,03
B	-0,07	0,18	0,33	0,25	0,04	-0,18	-0,42	-0,56	-0,15	1,00	-0,27
ID_R	0,03	-0,06	-0,09	0,03	0,07	-0,14	0,11	0,21	-0,03	-0,27	1,00

R–rational, I–intuitive, De–dependent, A_v–avoidant, S–spontaneous, ID_{SB}– ID (Scott & Bruce) Di–directive, An–analytical, C–conceptual, B–behavioral, ID_R– ID (Rowe).

Table 4: *Multivariate Correlations (S1 dataset).*

Table 4 and Figure 2 show the correlations among the quantitative variables. The scores are predominantly uncorrelated. This observation suggests a lack of strong statistical associations between the variables under consideration, highlighting the independence or weak interdependence of the measured factors. The highest correlation observed was between the *dependent* and *behavioral* styles, with a correlation coefficient of $r = 0.33$. This correlation can be interpreted in light of the definitions of these DMSs. Behavioral decision-making signifies the inclusion of other participants in the decision-making process, which is often synonymous with group decision making. Conversely, the dependent style is characterized by seeking guidance from others. The second highest correlation is between the *avoidant* and *analytic* styles, with a negative correlation of $r = -0.32$. The interpretation of this correlation aligns with the definitions of these styles: the avoidant style involves procrastination, maintaining the status quo, and avoiding decisions, which contrasts with the analytical style that is characterized by a rational approach that typically discourages delaying decisions. Notably, the correlation between the *rational* and *analytical* styles was very weak ($r = 0.14$). Despite similar theoretical definitions, the observed weak correlation suggests that, in practice, these two DMSs may manifest differently in the dataset, highlighting a nuanced relationship between the rational and analytical DMSs.

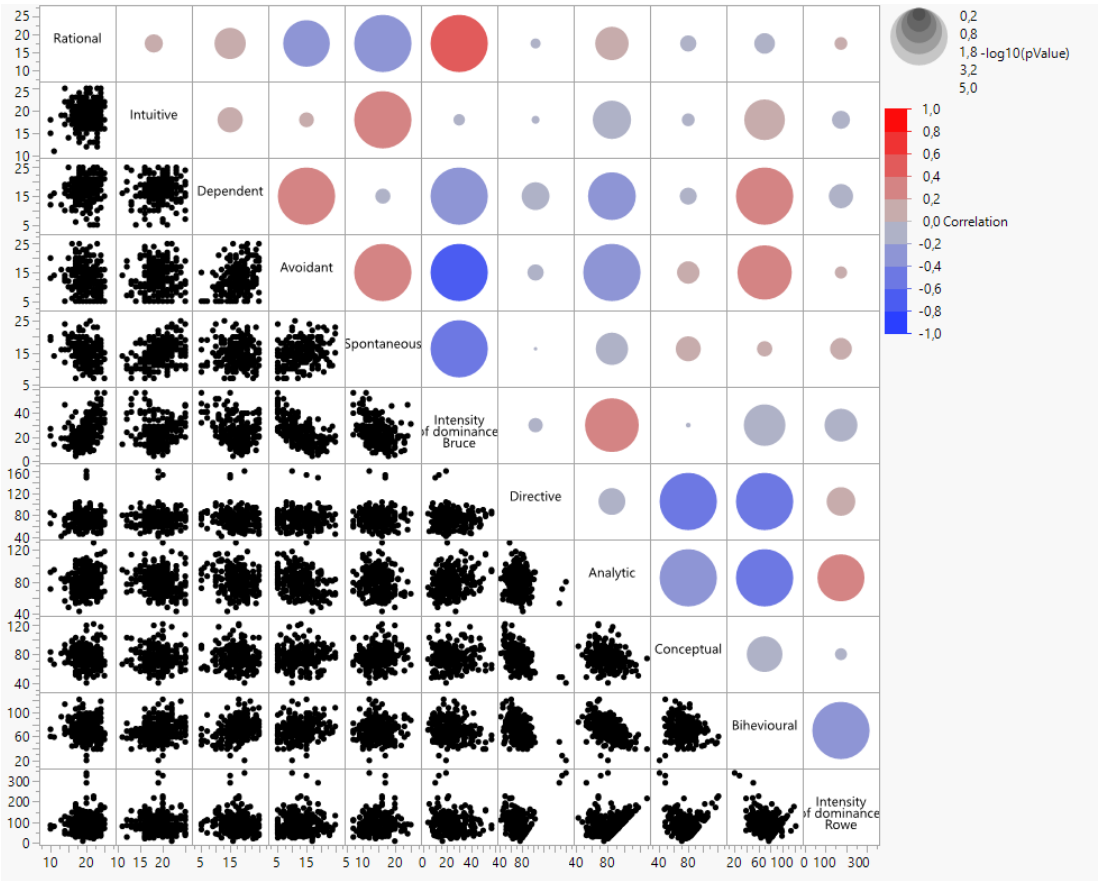

Figure 2: *Scatterplot Matrix for S1 dataset.*

Further correlations involving the same decision-making approach are noteworthy. The *intuitive* and *spontaneous* styles exhibited a correlation of $r = 0.37$, whereas the *dependent* and *avoidant* styles had a correlation of $r = 0.35$. The interpretation of these correlations aligns with their respective definitions. Additionally, correlations between distinct DMSs were observed.

The *directive* style correlates with the *conceptual* ($r = -0.47$) and *behavioral* ($r = -0.42$) styles. The *analytical* style correlates with the *behavioral* ($r = -0.56$). The negative sign in the last three correlations is attributed to the inherent differences in the definitions of these styles.
Three notable correlations involved the ID. The *rational* DMS correlated positively with the ID ($r = 0.45$), indicating that higher rationality corresponds to higher dominance. The *avoidant* and *spontaneous* styles exhibited negative correlations with the ID ($r = -0.61$ and $r = -0.43$, respectively) because higher spontaneity corresponds to lower dominance, as spontaneous individuals act based on environmental circumstances. Similarly, higher avoidance corresponds to lower dominance, which indicates that the of individual feels insecure.
In various datasets, similar results were consistently obtained, with the correlations exceeding $r > 0.3$. The following are additional correlations identified in other datasets, highlighting associations between variables from different DMS approaches:

- In dataset S3, *analytical* DMS showed a negative correlation with *dependent* DMS ($r = -0.36$). This suggests that students who tend to use the analytical style are less likely to employ the dependent style.
- In dataset S4, *analytical* DMS is correlated with the *rational* DMS ($r = 0.31$). This correlation was expected in the overall sample but was not achieved. However, it was realized in the case of the male students.
- Similarly, in dataset S7 (the army students), *analytical* DMS correlated with *rational* DMS ($r = 0.28$). This indicates a positive relationship between the analytical and the rational DMSs in the context of army students.

5.2. Analysis of dominant DMS correlation

The dominant DMSs of each participant were converted into dummy variables for both approaches, after which a multivariate correlation analysis was conducted. The outcomes of this analysis are summarized in Table 5.

	Di	An	C	B
R	-0,1379	0,1583	0,0146	-0,0942
I	0,079	-0,1092	0,009	0,0789
De	0,0763	-0,0587	-0,0669	0,05
Av	0,076	-0,0993	0,1061	-0,0712
S	0,0536	-0,0808	0,0925	-0,0575

R–rational, I–intuitive, De–dependent, A_v–avoidant, S–spontaneous, Di–directive, An–analytical, C–conceptual, B–behavioral.

Table 5: *Multivariate correlations (S1 dataset; dominant DMSs).*

Given the nature of dummy variables, all correlation coefficients were low. The highest correlation was observed between the *rational* and *analytical* DMSs, indicating that in many instances, when students characterized by the rational style using the DSI, they will also be characterized by the analytical style using the GDMS. To substantiate this observation, we used the pivot table method for descriptive statistics, and the results are shown in Table 6.

	The rational DMS is dominant.	The rational DMS is not dominant.
The analytical style is dominant.	55	71
The analytical style is not dominant.	39	98

Table 6: *Pivot table - the number of students (S1 dataset) (dominant DMS).*

The results in Table 6 reveal that the 55 students who exhibited a dominant analytical style also had a dominant rational style. Furthermore, the 98 students who did not have a dominant analytical style also lacked a dominant rational style. Similar patterns were observed in other datasets.

5.3. Analysis of submissive DMS correlations

The submissive DMS was characterized by its infrequent usage, as it was identified as having the lowest score in both approaches. To analyze this, we converted the submissive DMS of each participant into *dummy* variables for both approaches and conducted a subsequent multivariate correlation analysis. The outcomes of this analysis are detailed in Table 7.

	Di	An	C	B
R	0,029	0,2373	-0,0734	-0,1517
I	-0,0741	0,1748	-0,0565	-0,0251
De	-0,0996	-0,0254	-0,0098	0,1366
Av	-0,0044	-0,1454	0,0345	0,0941
S	0,0451	0,1132	-0,0017	-0,1263

R–rational, I–intuitive, De–dependent, A_v–avoidant, S–spontaneous, Di–directive, An–analytical, C–conceptual, B–behavioral.

Table 7: *Multivariate correlations (S1 dataset; submissive DMS).*

Once again, the highest correlation was observed between the *rational* and *analytic* DMSs. Table 8 further corroborates this connection.

	The rational DMS is submissive.	The rational DMS is not submissive.
The analytical style is submissive.	9	7
The analytical style is not submissive.	85	162

Table 8: *Pivot table - the number of students (S1 dataset) (submissive DMS).*

In terms of research implications, it is crucial for researchers to consider using both approaches when analyzing DMSs, given the overall low correlations identified between the various DMS types. Despite theoretical similarities, such as those between the rational and analytical styles, which are closest in definition, minimal correlation of styles across the entire sample was revealed. However, correlations were observed among specific subgroups, such as the army students and the male students, although they were still relatively low. These findings underscore the need for potential enhancements or refinements of GDMS and DSI. By examining why certain theoretical assumptions were not validated, researchers can explore possibilities for approach redesign or improvement, to ensure more accurate and comprehensive assessment of DMS in future studies.

Berisha et al. [7] had similar research. Among 152 students, there was a lack of convergent validity between DSI and GDMS. Similar to our study, their analysis revealed the highest correlation between the dependent and behavioral styles ($r = 0.28$ in their study, and $r = 0.33$ in ours). Additionally, they found a moderate correlation between the spontaneous and directive styles ($r = 0.22$), whereas in our study, no correlation between these two styles ($r = 0$). Interestingly, both studies reported a correlation of $r = 0.14$ between the analytical and rational styles. Despite some similarities in the results of the two studies, it is ultimately concluded that the correlations between the two approaches are low.

6. Conclusion

The present study delved into the realm of decision-making styles (DMSs), an area of extensive investigation spanning various fields, such as organization, management, leadership, medicine, sociology, and psychology. Numerous approaches to studying DMSs have emerged, with prior research typically focusing on a single DMS approach, examining dominant DMSs among different participant groups, exploring correlations od DMSs with diverse variables, or investigating internal correlations within a specific DMS approach.

This paper uniquely addressed the interrelation between two prominent DMS approaches: the Scott & Bruce approach and Rowe's approaches. Both approaches facilitate the identification of dominant and submissive DMSs, along with the intensity of their dominance. Given certain theoretical similarities between DMS types in these approaches, the present study aimed to scrutinize the correlation between the results of these approaches when applied to datasets of students in the fields of business and the military. Utilizing multivariate analysis and descriptive statistics (i.e. pivot tables), two significant correlations were identified: a positive association between the dependent style and the behavioral style, and a negative correlation between the avoidant style and the analytical style. These correlations were explained by the theoretical underpinnings of the respective DMS types. While an expected correlation between the analytical and rational scores was not observed in the overall sample, it manifested in sub-samples, specifically among the male students and army students.

The analysis of the dominant and submissive DMSs revealed a connection between the analytical and rational styles, that indicate the highest similarity in their definitions. Interestingly, the correlation analysis did not reveal significant differences between the subsets related to COVID-19 conditions.

In conclusion, the overall correlation between the two approaches was found to be low. This study emphasizes that knowing a person's dominant DMS in one approach, particularly if it is the rational DMS in GDMS, does not guarantee a similar result in the DSI. Thus, to comprehensively understand decision-makers, both approaches must be used. This insight underscores the importance of utilizing multiple DMS analyses to effectively predict and comprehend decision-makers' behaviors, which would aid in proactive preparation for their actions in diverse situations.

However, it is important to acknowledge the limitations of this study. First, the findings cannot be broadly generalized, as this study exclusively involved business and military studies students. Therefore, caution should be exercised in applying these findings to other academic domains. Additionally, the convenience sampling method employed in this study posed a limitation because although it was convenient for data collection, it could have introduced bias and could have limited the representativeness of the sample. Factors such as the students' motivation to participate and the influence of the COVID-19 conditions on the data collection procedures should be considered when interpreting the results.

For future research, following recommendations can enhance the scope and robustness of the study. First, expanding the sample size and including students from diverse fields beyond business and military studies, such as medicine, would provide a broader perspective on DMSs across different academic disciplines. Moreover, analyzing the responses of students at various levels of study, including both first-year and final-year students, could reveal potential differences in their DMSs over the course of their academic journey. Second, incorporating additional stylistic analysis approaches alongside the Scott & Bruce and Rowe's approaches would enable comprehensive examination of DMSs, comparison of results, and identify any potential discrepancies. Finally, creating an environment conducive to providing objective and accurate responses is essential and could involve ensuring anonymity and confidentiality in data collection procedures, as well as minimizing any potential biases or external influences that may affect the participants' responses.

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