Neuropsychological Trends

37
April 2025

Count on me! How to act and be accountable for one's choices in organizations

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ABSTRACT

By comparing junior versus senior professionals, this study explored the degree of agency, responsibility, and the ability to consciously report motivations in critical decision-making situations. Additionally, the relationship between these factors, decision-making styles and personality traits was investigated. Faced with organizational decision-making critical scenarios, participants were asked to choose among four alternatives with increasing levels of agency and responsibility and, secondly, to report the motivations behind the choice. The type of decision, the number of motivations reported, and the reaction times (RTs – both for selecting the decision and writing the motivations) were considered. Self-report scales were also administered to investigate professionals' profiles. Findings showed that decisions with a high level of agency and responsibility, as well as ability to report motivations, are influenced by seniority. In junior professionals, responsibility in decision-making was linked to the ability to motivate the choice and to RTs in deciding. Behavioral data for each professionals' group were also linked to distinct decision-making and personality profiles.

Keywords: job seniority; motivation; decision-making styles; personality profiles; agency

1. Introduction

With the transition to the world of work, different levels of responsibility are assumed, and it becomes evident to the person that, when faced with a work situation, all professionals can express different levels of agency and decide how to act by taking charge of his/her responsibilities on their decision. But does this tendency to decide by assuming one's responsibilities become more evident with entry into the world of work (i.e., it is influenced by seniority), or is it linked to individual differences? And, in addition, does seniority make professionals more able to report the motivations behind their decision to act while taking responsibility for their decision?

Taking a step back, at the core of any decision-making process there is the step of gathering information to support a decision, and this provides the basis for justifying the reasons why a certain decision was made (Balconi, 2023). The significance of this stage is underlined by models describing the decision-making process, such as the DECIDE model (Guo & Williams, 2008) or the Parallel Process model (Corner et al., 1994), which contains an information-gathering phase to generate potential decision alternatives and select the best one.

In particular, some factors are relevant to define the decision-making process in its complexity.

Firstly, in the decision-making process, during the information-processing stage, specific information is obtained, assessed, and employed to make the best decision, based on the task's goal as well as the decision-makers' past knowledge and experience (Wiggins & Bollwerk, 2006). In the previously mentioned models, this information-gathering stage represents a fundamental and pivotal phase in the decision-making process: the information available is considered a key element to informed and reasoned decisions (Daradkeh et al., 2013). Thus, the more information available the more informed the decision will be (Crivelli, Acconito et al., 2024).

Notwithstanding, it is not always possible to gather complete information to make a decision: in fact, the work environment is often characterized by several internal and external constraints, rapid and sudden changes, and the need to quickly make efficient and quality decisions. The combination of all these variables gives rise to situations in which decisions must be made with partial or incomplete information and in the face of risk and uncertainty (Panpatte & Takale, 2019). Thus, when faced with a choice between two different alternatives or among a group of potential solutions, the decision-maker bases his or her choice on the expected outcomes and their probability of success, as well as the level of responsibility one wishes to assume on the decision (Daradkeh et al., 2013). This last factor, i.e., the issue of responsibility for one's decisions, is a recurrent key theme in organizations which will be discussed later.

Also, under ambiguous and uncertain situations, the decision maker's prior experience or implicit knowledge also plays a significant role (Balconi et al., 2025; Daradkeh et al., 2013; Mishra et al., 2015). Indeed, it has been demonstrated that experience offers a more effective and supportive basis for decision-making since it allows the improvement of various cognitive skills, such as more accurate representation of information, greater attention to relevant information, and better mental organization of knowledge on a given topic (Mishra et al., 2015).

Additionally, another important factor consists of the "involvement of others", indeed the type of decision made can also be influenced by whether it affects only individuals or involves other people (Acconito et al., 2024a). In this sense, several research has shown how responsibility for someone else's welfare affects choice behaviour, leading people to act more pro-socially (Charness, 2000; Charness & Jackson, 2009).

Furthermore, responsibility makes one more risk-averse: people, in risky situations, follow an implicit social rule, which requires them to exercise more caution when they are responsible for someone else in addition to themselves (Crivelli, Allegretta et al., 2024; Pahlke et al., 2015). Thus, when someone is asked to decide under uncertainty in circumstances that affect multiple individuals, there can be two main scenarios: i) the individual makes an effort to decide as best he/she can for both themselves and other people and assumes the responsibility for the decision (opting for a risky and active decision-making approach); ii) the individual prefers to leave the situation as it is and chooses not to take responsibility for the decision (also this type of scenario consists of a decision, or rather a risk averse and passive decision-making approach).

Nonetheless, decision-makers may gradually shift from being risk prone or risk averse based on individual differences and on contextual factors (Leonhardt et al., 2011). This shift can also be explained by referring to the relationship between responsibility and the concept of agency, in terms of feeling of control over the events caused by own actions and intentionality (Crivelli et al., 2019: Frith, 2014; Moretto et al., 2011). Specifically, the strong association between responsibility and agency could be defined as the results of two types of agencies: predictive and retrospective agency. In the predictive agency, people perceive their actions as being shifted toward the time of the consequence of the action, whereas in the retrospective agency, the occurrence of a consequence of an action triggers a matching process that links responsibility to the action previously taken by the subject. Therefore, it becomes evident how a greater sense of agency, in terms of conscious intentionality to act, is strongly associated with a higher level of perceived responsibility in the action itself: where the situation is defined by uncertainty, it is therefore possible for people to choose actions to avoid feeling responsible for undesirable outcomes (Moretto et al., 2011).

Within this framework, individual differences, both in terms of decision-making styles and personality traits, are another key factor that should be considered when analyzing decision-making tendencies and their relationship with agency and responsibility (Acconito et al., 2023; Acconito et al., 2024b; Angioletti et al., 2024; Balconi et al., 2017; Balconi, Acconito, Rovelli, et al., 2023; Balconi, Angioletti, et al., 2023; Balconi et al., 2024; Rovelli et al., 2023). Among the variety of self-report questionnaires to explore these aspects, the General Decision-Making Style (GDMS) (Scott & Bruce, 1995) and the Maximization Scale (MS) (Schwarz, 2000) were shown to be sensitive in evaluating decision-making style both in terms of a rational, intuitive, dependent, avoidant, or spontaneous decision-making style and on the person's propensity to search for different alternatives or to consistently look for the optimal choice while making decisions. The 10-item Big Five Inventory (BFI) (Guido et al., 2015) instead consists of a brief version of the Big Five questionnaire, which assesses the traits of extraversion, agreeableness, conscientiousness, emotional stability, or openness.

Several studies highlighted how these individual differences influenced different aspects of the decision-making process (Davis et al., 2007). For instance, the GDMS Dependent and GDMS Avoidant styles have been linked to the perceived incapacity to manage individual effective decisions, as well as the fear of taking responsibility (Thunholm, 2008).

The BFI-Emotional Stability and BFI-Conscientiousness personality traits were positively related to high-order cognitive functions (Vaughan & Edwards, 2020), and perhaps can be linked with having higher evidence of the motivations behind a decision. The BFI-Agreeableness trait was found to be a significant predictor of morality (Abbasi-Asl & Hashemi, 2019), suggesting that individuals with this personality type could be more likely to prefer decisions with a higher degree of agency and greater responsibility. The BFI-Extroversion trait, instead, is typical of people characterized by excitability, sociability, talkativeness, and high emotional expressiveness (Guido et al., 2015), characteristics which make individuals more prone to help both themselves and others.

Based on these premises, this study aimed to explore the degree of agency and responsibility in critical decision-making situations and the ability to consciously report the motivations behind the decision in a sample of junior versus senior professionals, as well as their relationship with decision-making styles and personality traits.

A group of junior and senior professionals were exposed to organizational critical scenarios and asked, firstly, to decide how to solve the situation by choosing among four alternatives with increasing levels of agency and responsibility, and, secondly, to report the rationale behind the choice.

Behavioural data consisting of the type of decision, the number of motivations reported for the decision, and the reaction times (RTs – both for selecting the decision and writing the motivations) were considered. In addition, GDMS, BFI and MS were administered to investigate individual differences (decision-making styles and personality traits).

Going down to the specifics, and considering the literature findings previously mentioned, we suppose that seniority and individual differences both influence the propensity to make decisions requiring a high degree of agency and responsibility.

Firstly, considering the seniority, it was hypothesized that senior professionals would report a greater predisposition to make decisions with a high level of agency and that these decisions would be made faster compared to junior professionals, who might have less experience with critical organizational scenarios.

Secondly, for both groups, it was expected to find a correlation between the propensity to make decisions requiring a high degree of agency and responsibility and the ability to motivate the choice. Specifically, it is supposed that a greater predisposition to choose decisions with high responsibility and agency would be correlated with a better ability to motivate the choices made.

Finally, it was hypothesized to find a relationship between the level of agency and responsibility in the decision, as well as the ability to report the underlying motivations of choice, and specific personality traits and decision-making styles.

In particular, we expect to find a positive relationship between the BFI-Extroversion, as well as the BFI-Agreeableness trait, with the predisposition to select decisions with high responsibility and agency. Also, we expect that higher scores of the GDMS-Dependent and GDMS Avoidant styles could be associated with less predisposition to make agency decisions and the ability to motivate decisions. Finally, for the MS, it was expected to find a positive relationship between the MS High Standards subscale, which assesses the tendency to hold high standards in the decision, and the level of agency and responsibility in the decision, as well as the ability to self-report the motivation behind the decision.

2. Method

2.1 Sample

A sample of 189 professionals were recruited voluntarily to participate in this study and divided into two subgroups according to their professional experience: a group of junior professionals and a group of senior professionals

(divided based on their seniority). Specifically, the group of junior professionals consisted of 117 individuals (M_{age} = 29.10; SD = 12.96) at the beginning of their working experience, with a minimum expertise of 1 year (apprenticeship); while the group of senior professionals is composed of 72 individuals (M_{age} = 40.13; SD = 13.44) already placed on the labour market, who hold a managerial role for at least 5 years. All professionals belong to different companies in Northern Italy and were recruited from January to September 2023.

At the time of the experiment, they had all worked in the same job position for a minimum of one year. To prevent biases stemming from situational circumstances, such as the possibility of increased stress because of a new job position or a higher workload while adjusting to new responsibilities or commitments, this criterion was used (Balconi, Acconito, Rovelli, et al., 2023; Balconi, Angioletti, et al., 2023). Moreover, to improve the generalizability of the results and ensure the variety between specializations, professionals in both groups were recruited from different internal departments, such as human resource management, training and professional learning, engineering and maintenance management, service quality monitoring, infrastructure management, and others.

None of the individuals who composed the sample reported a history of psychiatric or neurological disease, intake of drug therapies that could alter neurofunctional responses or impair cognition or judgment, neurocognitive disorders, and alterations in normal global cognitive functioning. The entire sample also had normal or corrected-to-normal vision and hearing.

Participation in the study, approved by the Ethics Committee of the Catholic University of the Sacred Heart, Milan, Italy (approval code: 125/24 – Valutare il Decision-Making: consapevolezza e metacognizione decisionale; approval date: 23rd July 2024), conducted following the Helsinki Declaration (2013) and the GDPR – Reg. UE 2016/679 and its ethical guidelines, was provided by signing informed consent and was done without receiving any financial compensation.

2.2 Procedure

The experimental protocol lasted approximately 20 minutes and was conducted in a dedicated quiet room, in which participants were seated in a comfortable chair placed 80 cm from a screen. Participants, after their arrival, were briefed on the purpose of the research, asked to sign the informed consent, and introduced to the behavioural task. After the task was completed, the GDMS, the 10-item BFI, and the MS scale were administered.

2.2.1 Experimental task and behavioural scoring

The experimental task was designed to explore the tendency to select decisions with a high level of agency and responsibility and the ability to consciously report the motivations and the reasons behind the decision. The task was administered via PsyToolkit (version 3.4.4), a web-based experiment-management platform (Stoet, 2010, 2017) and was constituted by two realistic critical decisional scenarios in which participants were asked to make behavioural decisions.

Both scenarios represented critical real-life situations that could occur in the workplace and were designed to ensure the ecological validity of the setting and the relevance of the decision-making processes, in terms of salience to professions and emotional impact. Each scenario was composed of two distinct sections: i) a decision-making section, and ii) a motivation section.

In the first section, after reading the scenario, participants were asked to select one of four suggested solutions to solve the critical real-life situations that had been previously presented (see Table 1 for scenarios and alternative solutions). The four different alternatives proposed were created in a manner to represent a decision with an increasing level of responsibility for dealing with the situation and, at the same time, a varying degree of agency.

For this reason, each alternative is associated with a different score (1 to 4) depending on the level of responsibility and agency. One point was attributed to the first option, which suggested solving the situation involved choosing not to deal with the situation and not taking any responsibility. The fourth option, associated with four points in the scoring, involved dealing with the situation by taking full responsibility and trying to solve the problem as completely and accurately as possible.

In the second section, participants were asked to provide reasons and motivations for the choice selected, providing a minimum of three reasons. This section was designed to investigate decision-making awareness in terms of conscious evidence of the motivations that led to a particular choice, also investigating all the information that was retrieved to make the decision.

To make the decision-making process mentally demanding and to make RTs a valuable and discriminative indicator of cognitive load, all the task was administrated under time pressure. Participants were given a maximum of 30 seconds to choose the alternative they felt would best solve the scenario (first section), and an additional 30 seconds were given to provide up to three reasons for their choice (second section).

Regarding the scoring, participant performance was calculated with two indicators: an Agency Decision-Making score (ADM_{score}) and a Motivation score (Mot_{score}).

The ADM_{score} was calculated as the average of the responses given by the participants regarding the choice they selected from the available alternatives in the two distinct scenarios, plus an extra point (0.5–1 score) if they provided at least one motivation for each scenario. The Mot_{score} was calculated as the average of the number of motivations given in each scenario.

As previously mentioned, RTs were also collected during the task, and for each of these scores (ADM and Mot) the corresponding RTs were calculated. The ADM_{RT} was calculated as the average of the RTs taken to choose from the two scenarios; while the Mot_{RT} was calculated as the average of the RTs taken to motivate the decision in the two scenarios.

2.2.2 Self-report scales: GDMS, 10-item BFI and MS

To collect the self-report data, the General Decision-Making Style (Gambetti et al., 2008; Scott & Bruce, 1995), the 10-item Big Five Inventory (BFI) (Guido et al., 2015) and the Maximisation Scale (MS) (Nenkov et al., 2008; Schwartz et al., 2002) were administered.

The GDMS, specifically, permits the exploration of the decision-making style that characterizes an individual, through his or her responses given to 25 different items along a 5-step Likert scale, where 1 indicates completely disagreeing with the statement and 5 completely agreeing. From the answers provided, one of the following styles can be attributed to the individual: Rational (researching all options and weighing the pros and drawbacks before deciding), Intuitive (focusing exclusively on global factors and making a quick decision), Dependent (looking for advice and suggestions to help with decision-making), Avoidant (delaying and avoiding making decisions) or Spontaneous (tendency to make decisions as quickly as possible).

On the other hand, the 10-item BFI allows the investigation of the individual personality via a shortened version of the original Big Five Inventory. Indeed, through the response given to 10 items on a 5-step Likert scale (1 = strongly disagree to 5 = strongly agree), an individual's personality is defined according to the following five components: Extroversion (associated with energy and vivacity), Agreeableness (associated with warmth and friendliness), Conscientiousness (associated with organisation and self-control), Emotional Stability (associated with calm and equilibrium), and Openness (associated with creativity and openness to new experiences).

Finally, the MS enables to the assessment of how individuals approach decision situations distinguishing between their tendency to act. According to the answers given to 13 items on a 7-step Likert scale (1 = completely disagree to 7 = completely agree), the score for three subscales is calculated: Alternative Search (research for alternative options or solutions when deciding), Decision Difficulty

(subjective effort and frustration when deciding), and High Standards (commitment, desire and active search for the best option when deciding).

2.3 Data analysis

The data analysis in this study was designed according to three sequential steps.

The first step was employed to explore the presence of a possible difference between junior and senior professionals in terms of preferred decisions with a high level of agency and responsibility and the ability to consciously report the motivations and the reasons behind the decision. For this reason, four one-way ANOVAs were applied to the behavioural data with Group (2: junior, senior) as the between independent variable and ADM_{score}, ADM_{RT}, Mot_{score}, and Mot_{RT} as dependent variables. For all ANOVAs, the statistical significance was set at $\alpha = 0.05$ and the size of statistically significant effects has been estimated by computing eta squared (η^2) indices.

Subsequently, to investigate the relationship between the behavioural data within the two sub-samples, Pearson correlation coefficients (with $\alpha = 0.05$) were computed between the ADM_{score}, ADM_{RT}, Mot_{score} and Mot_{RT} in the junior and senior professionals' groups.

Finally, the third step of analysis studied, in each group of the sample, the pattern of correlations among the preference of decisions with a high level of agency and responsibility and the ability to consciously report the motivations behind the choice and decision-making styles and individual traits. Indeed, Pearson correlation coefficients (with $\alpha = 0.05$) were applied between behavioural data (ADM_{score}, ADM_{RT}, Mot_{score} and Mot_{RT}) and self-report data (GDMS score, BFI score and MS score).

3. Results

3.1 Step one: ANOVAs on behavioural data

The ANOVAs performed on the behavioural data reported no significant differences for the ADM_{score}, Mot_{score} and ADM_{RT} (Figure 1a-c). A significant main effect was found in the *Group* ($F[1, 187] = 8.196$, $p = .005$, $\eta^2 = .042$) for the Mot_{RT}, with higher RTs for the junior professional group compared to the senior p rofessionals one (Figure 1d).

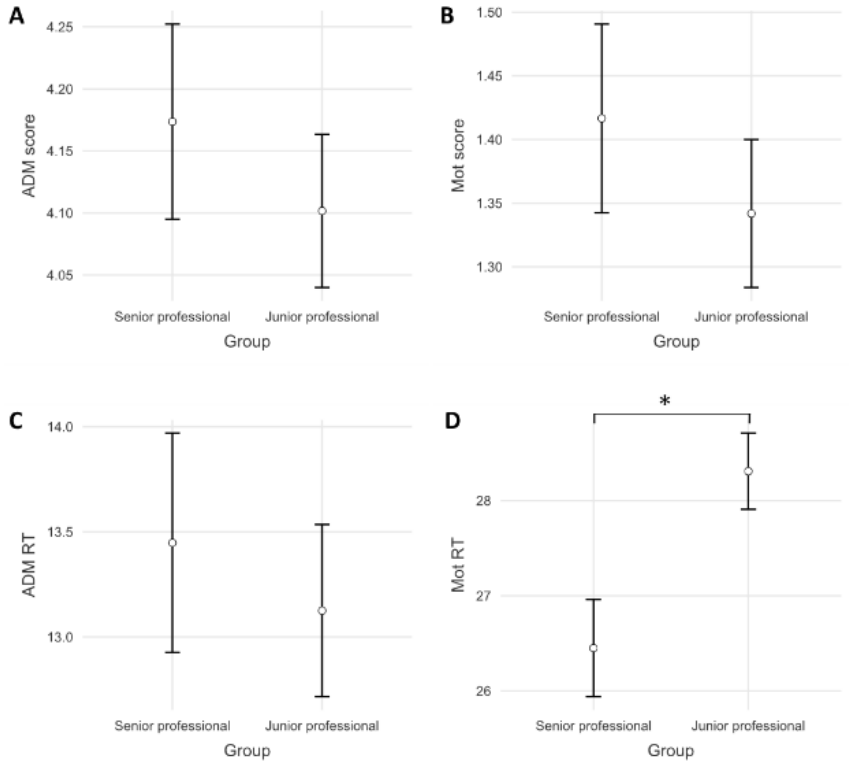

Figure 1 a-d. Trends in behavioural data. Graphs display (a) higher ADM_{score} for senior professionals compared to junior professionals; (b) higher Mot_{score} for senior professionals compared to junior professionals; (c) higher ADM_{RT} for senior professionals compared to junior professionals; and (d) significant differences between senior and junior professionals in Mot_{RT}: higher RTs for junior professionals compared to senior professionals. Bars represent the Standard Error (SE) of ±1

Additionally, to understand the ability to consciously report the motivations behind the decision, Table 2 provides an example of the most representative motivations reported by the group of junior and senior professionals.

Table 2. Examples of motivations reported in each scenario by junior and senior professionals to justify the decision made in terms of agency and responsibility

Scenario	Alternatives	Motivation
Scenario A	I am not attending the meeting.	Senior professional *"Responsibility."*
	I look for a dialogue with the boss, hoping he will be willing to postpone the meeting.	Junior professional *"I would prefer to avoid such stressful situations."* *"I would not feel comfortable."* *"Too responsibility."* Senior professional *"Possibility of being unprepared."* *"I am not aware of all the details of the project."* *"I am a person with a lower role."*
	I attend the meeting but manage to avoid having to discuss the project- for instance, by inventing an appointment that keeps me from staying for a long time.	Senior professional *"I believe that I am capable of handling such a situation."*
	I attend the meeting and try to do my best.	Junior professional *"To learn to take responsibility."* *"I complete my tasks."* *"I want to show what I'm worth."* Senior professional *"Responsibility."* *"Cannot be delayed, the project is important."* *"Sense of belonging."*
Scenario B	I decide not to contact the former employee and report this to my superiors.	Senior professional *"It is not directly my responsibility."*
	I ask my superiors to	Junior professional

	inform the company's lawyers.	*"Other professionals will manage the situation."* *"It is right to leave the situation to the lawyers."* *"I care about my job."* Senior professional *"I respect the employee's decision but protect the company."* *"Internal sharing is required."* *"Preservation of the company's reputation."*
Scenario B	I inform my superiors.	Junior professional *"Reputation belongs to superiors, and they take care of it."* *"Before making decisions independently I ask my superiors."* *"I don't want to make these decisions alone."* Senior professional *"It is important to make a shared decision at the various levels."* *"Responsibility."* *"Protect company credibility."*
	I contact the former employee and ask him or her to delete the shared content and not to post such comments again.	Junior professional *"I think I can convince him."* *"Helping the other to be problem-free as well."* *"Preserving company image."* Senior professional *"Confidence in the successful outcome of the situation."* *"I try an initial contact given my HR role."* *"Compromise."*

3.2 Step two: Pearson correlations between behavioural data

Correlation analyses computed between behavioural data in the junior professional group detected significant positive correlations between ADM_{score} and $Mots_{core}$ ($r = .378$, $p = \leq .001$) (Figure 2a), as well as between ADM_{RT} and Mot_{RT} ($r = .204$, $p = .027$) (Figure 2b).

No other significant correlation was found for the junior professional group. Furthermore, no significant correlation was found in the senior professional group.

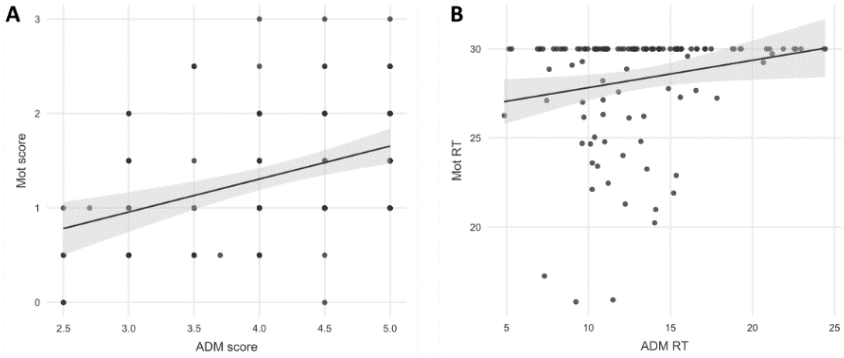

Figure 2 a-b. Correlational results between behavioural data. Scatter plots represent significant positive correlations (a) between Mot_{score} and ADM_{score} and (b) between Mot_{RT} and ADM_{RT}, for junior professionals' group. The straight lines represent the global linear trends, while the shades represent their 95% confidence interval

3.3 Step three: Pearson correlations between behavioural and self-report data

Correlation analyses performed between behavioural (ADM_{score}, ADM_{RT}, Mot_{score} and Mot_{RT}) and self-report data (GDMS, BFI, and MS subscales) in the two groups of professionals highlighted distinct significant correlations.

In the group of junior professionals, first, the ADM_{score} positively correlated with the BFI-Extraversion (r = .228, p = .040) (Figure 3a). Secondly, the ADM_{RT} negatively correlated with the MS-High Standards (r = -.226, p = .046) and with the MS-Decision Difficulty (r = -.250, p = .037) (Figure 3b-c). Finally, a positive correlation was found between the Mot_{score} and the BFI-Emotional Stability (r = .261, p = .018) (Figure 3d).

In the group of senior professionals, instead, correlation analysis showed a negative correlation between the ADM_{RT} and the BFI-Agreeableness (r = -.281, p = .038), as well as between the ADM_{RT} and the BFI-Extraversion (r = -.298, p = .027), and between the ADM_{RT} and the GDMS Rational style (r = -.350, p = .012) (Figure 4a-c). Additionally, the Mot_{score} correlated negatively with the GDMS Dependent style (r = -.307, p = .028) and positively with the MS-High Standards subscale (r = .382, p = .006) (Figure 4d-e).

No other significant correlation was found.

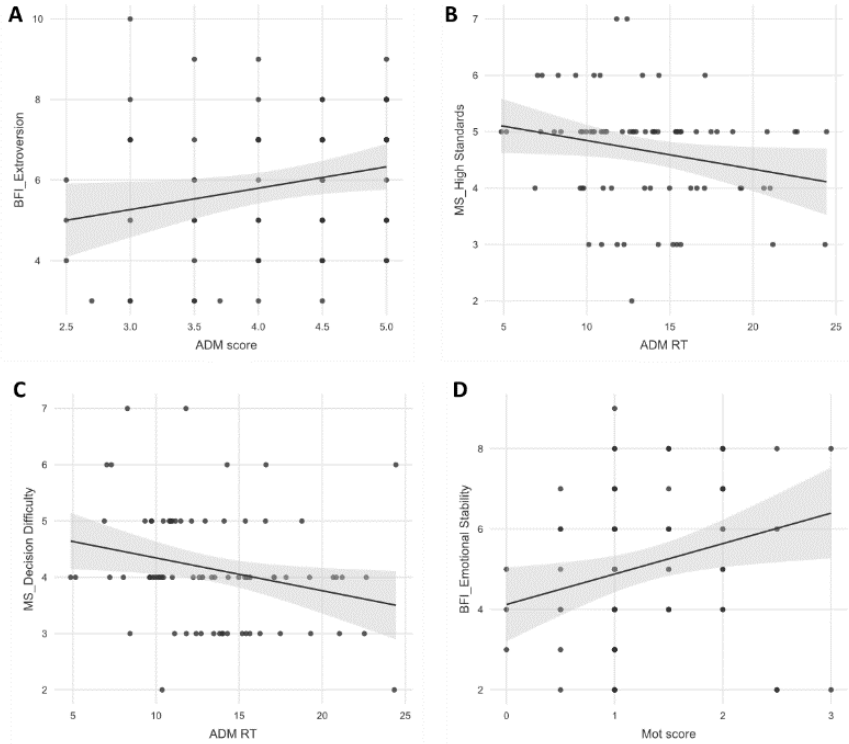

Figure 3 a-d. Junior professionals: correlation between behavioural and self-report data. Scatter plots represent for junior professionals' group (a) positive correlation between ADM_{score} and BFI Extroversion; (b) negative correlation between ADM_{RT} and MS High Standards; (c) negative correlation between ADM_{RT} and MS Decision Difficulty; and (d) positive correlation between Mot_{score} and BFI Emotional Stability. The straight lines represent the global linear trends, while the shades represent their 95% confidence interval

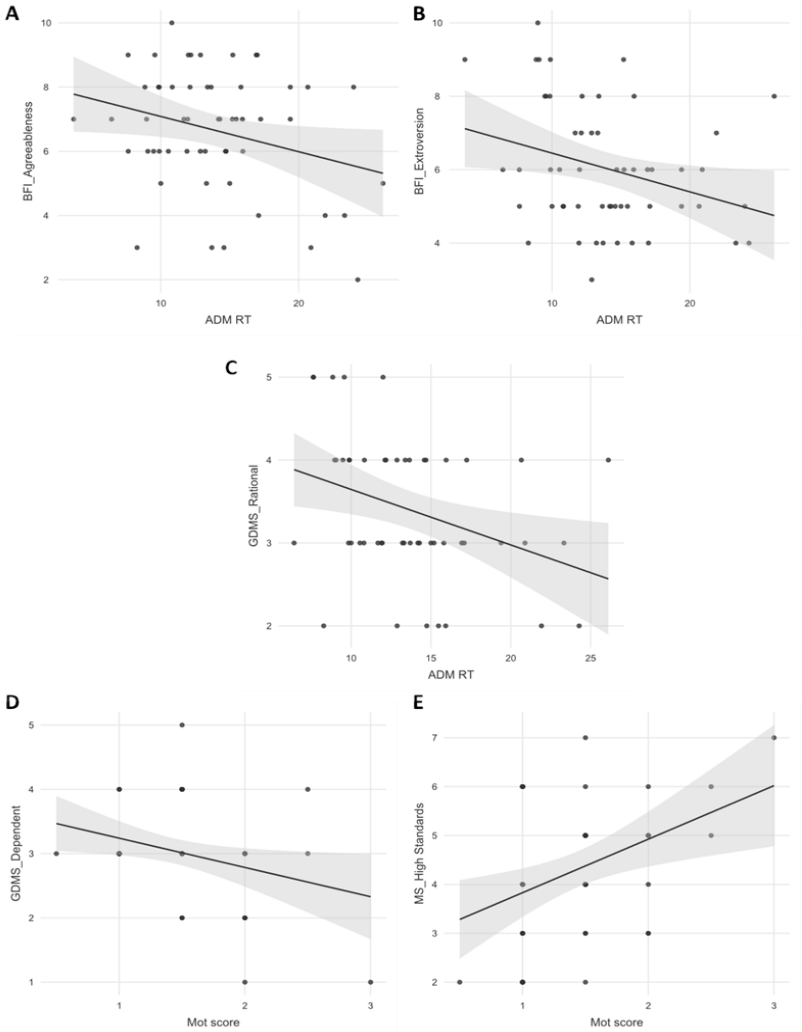

Figure 4 a-e. Senior professionals: correlation between behavioural and self-report data. Scatter plots represent for senior professionals' group (a) negative correlation between ADM_{RT} and BFI Agreeableness; (b) negative correlation between ADM_{RT} and BFI Extraversion; (c) negative correlation between ADM_{RT} and GDMS Rational style; (d) negative correlation between Mot_{score} and GDMS Dependent style; and (e) positive correlation between Mot_{score} and MS High Standards. The straight lines represent the global linear trends, while the shades represent their 95% confidence interval

4. Discussion

This study explored the degree of agency and responsibility in critical decision-making situations and the ability to consciously report the motivations behind the decision, comparing a group of junior professionals to senior professionals. Additionally, this research examined if differences between groups were related to individual differences in decision-making styles and personality traits.

Findings showed that taking responsibility for decisions and acting with a greater sense of agency is influenced by seniority level, as well as awareness of the reasons behind the choice. In particular, senior professionals were significantly faster in reporting the motivations behind the decision compared to the junior professionals' group. However, a second interesting result suggested that, in the group of junior professionals, there is a positive relationship between the level of responsibility and agency in decision-making and the ability to motivate the choice. Additionally, in this group, the level of responsibility and agency in decision-making is directly proportional to the RTs for making these decisions.

Finally, decision-making styles and personality traits proved to play a crucial role in both groups' tendency to make decisions with high degrees of agency and responsibility. Also, in both groups, the ability to motivate the decision was also shown to be linked to specific decision-making and personality profiles.

Starting from the first result, we observed how senior professionals were significantly faster in reporting the motivations behind their decisions when compared to junior professionals. Additionally, although there is no significant difference between the two groups, senior professionals displayed a stronger propensity to make decisions with a high degree of responsibility and agency and to do so more quickly than junior professionals. Overall, this evidence supports and confirms the first hypothesis, that a higher level of experience, both professional and personal, influences the predisposition to make decisions with a high level of agency and responsibility and in making more conscious decisions, being able to report quickly the motivation behind the choice (Daradkeh et al., 2013; Mishra et al., 2015).

Secondly, correlational analysis performed between the behavioural data only partially confirmed our second hypothesis. Indeed, only for the junior professionals, we observed a positive correlation between the propensity to make decisions with a high degree of agency and responsibility and the ability to motivate one's choice. Thus, the more a junior professional prefers responsibility and agency decisions, the more he or she can justify the motivations behind it.

Moreover, a positive correlation was also observed in the RTs employed to decide and the ability to motivate one's choice. In this perspective, the less time junior professionals take to decide in critical situations, the less time they dedicate to writing down the motivations behind the choice.

Taken together, these results could be explained in two ways. One possible explanation could be that making decisions with full agency and responsibility in critical situations requires a more detailed and deeper cognitive and conscious information processing (Garrigan et al., 2018; Shanks & Newell, 2014), and accordingly, more time to be processed. On the other hand, it could be that fewer RTs correspond to less awareness and, accordingly, less ability to justify their decision.

So, within the group of young professionals, there seems to be a trend that suggests the growth phase of this sample of professionals: the more a junior professional prefers to be in charge and responsible for the decisions, the more he or she can justify the motivations behind it. Also, the less time junior professionals take to decide regarding how to act under critical situations, the quicker they are in writing down the motivations behind the choice. Whether this is due to their talent or to individual differences (beyond what was considered in this study) needs to be explored further in future studies.

Thirdly, with regard to individual differences, correlational findings between behavioural data and individual decision-making styles and personality profiles highlighted the value held by individual differences even in organizational decision-making situations. The importance of decision-making styles and personality profiles in orienting the behavioural decision-making process has already been highlighted also in previous studies (Acconito et al., 2023; Balconi, Acconito, Rovelli, et al., 2023; Balconi, Angioletti, et al., 2023; Rovelli et al., 2023). Interestingly, in the current study, it was possible to identify some peculiarities and differences based on the seniority of the professionals.

Specifically, in the junior professionals' group, a more extroverted personality (BFI-Extroversion subscale) is positively correlated with a stronger tendency to make decisions with high agency and responsibility. This relationship could be interpreted according to the definition of the Extraversion trait, which represents people seeking excitability, sociability, talkativeness, and high emotional expressiveness (Guido et al., 2015). These personality traits make junior professionals more likely to help others and themselves, thus it seems reasonable that they would also tend to make more responsible decisions and exhibit more agency to gain the respect of all parties involved.

Additionally, shorter decision times in critical situations are related to the tendency to maintain high standards in decision-making (MS High Standard), but also to subjective effort and frustration in making decisions (MS Decision Difficulty). This evidence seems to be counterintuitive, however, it could be

that junior professionals who always tend towards the best decision and performance might be able to promptly recognize the best option to achieve their goals, without using their time to consider all the options. In a similar way, junior professionals with high Decision Difficulty may tend to decide as quickly as possible, to avoid the occurrence of frustration in decision-making.

Finally, junior professionals with high Emotional Stability trait were more able to report the motivations behind their choices. This result can be explained by the association between the Emotional Stability trait and greater use of high-order cognitive functions, as shown by Vaughan and Edwars (Vaughan & Edwards, 2020), which could spill over into greater awareness of one's actions.

On the other hand, in the group of senior professionals, the analysis reported how less time required to make decisions correlates with a profile characterized by greater BFI-Agreeableness and Extroversion as personality traits, as well as with a GDMS Rational decision-making style.

The first two findings specifically are in line with evidence from the literature, which indicates how the BFI-Agreeableness trait was found to be a significant predictor of morality (Abbasi-Asl & Hashemi, 2019), and that the BFI-Extroversion trait is typical of people prone to help both themselves and others, as formerly mentioned. In this sense, senior professionals with these personality traits may not need much time to decide how to behave in critical situations, because they immediately prefer decisions that also take into consideration the other. Even though there are no studies directly linking GDMS Rational decision-making style with rapid decisions, this evidence could be interpreted in line with the fact that a person with this style acts consciously, keeping the goal clearly in mind, and without being interrupted by external factors, which could interfere and lengthen the decision-making process.

Finally, in our sample of senior professionals the number of reported motivations behind one's decision is negatively correlated to a GDMS Dependent decision-making style and positively correlated to the MS High Standards. A possible interpretation of this relation is that senior professionals with a more dependent decision-making style report fewer motivations for their choice, while those who have high decision-making standards report more motivations. Before, the GDMS Dependent decision-making style was previously associated with the incapacity to manage decisions and the fear of taking responsibility (Thunholm, 2008): senior professionals who exhibit this style may consequently tend to make arbitrary decisions when faced with a short amount of time, making it difficult for them to later justify their choice.

On the other hand, the tendency to maintain high standards in the decision (Schwartz et al., 2002) could be responsible for a reasoned and informed choice, which would be reflected in a remarkable ability to motivate the decision itself.

Future qualitative-quantitative research that go deeper into the motivational systems of professionals could allow us to clarify better these relationships.

Despite the innovative aspects of this work, some limitations should be highlighted for improving future research. First, having shown that the degree of seniority influences the tendency to decide with higher responsibility and agency, it would be worthwhile to investigate whether this is also dependent on a particular work environment: potential disparities between professionals from various organizations might be investigated in more detail since the following were considered indiscriminately in this study. In addition, it might be interesting to explore a possible gender effect related to decision-making in critical situations. Finally, since this study correlates behavioural data with self-report measures, future research could adopt a multi-methodological approach that also includes psychophysiological and neurophysiological data. Indeed, the neuroscientific approach also allows the implicit aspects of decision-making to be explored, such as cognitive load and emotional involvement (Balconi, Acconito, Allegretta, et al., 2023; Balconi, Acconito, Rovelli, et al., 2023; Balconi, Angioletti, et al., 2023; Rovelli et al., 2023).

To conclude, this study highlighted how the tendency to decide by assuming one's responsibilities and the ability to report the motivations behind their decision are indeed influenced by seniority.

Although this is an average trend, senior professionals demonstrated a higher degree of agency and responsibility in critical decision-making situations compared to junior professionals. Moreover, senior professionals were significantly faster in reporting the motivations behind the decision compared to the junior professionals' group.

On the other hand, current findings also include an interesting growth trend in young professionals. In fact, the more a junior professional prefers to be in charge and responsible of the decisions, the more he or she can justify the motivations behind it. Also, the less time junior professionals take to decide regarding how to act under critical situations, the quicker they are in writing down the motivations behind the choice.

Since seniority and experience not only affect agency, responsibility in making one's decisions, but also the speed with which a professional is able to report the reasons for his or her choice, as a practical application this research might suggest the development of training on these skills in companies. Indeed, these skills could be interesting skills to develop and promote in young talents for managing critical conditions in the company. Another way to develop these abilities and awareness of the motivation behind a choice more quickly could be the inclusion of a tutor or mentor in organizational contexts, where a professional with at least 5 years of experience in a managerial role act as a mentor for young talents.

It is relevant to notice that based on these results, it seems that behavioural differences are mainly attributable to the seniority of the professionals. However, current findings underline how behavioural data for each group of professionals were also related to individual differences in terms of decision-making styles and personality traits. Therefore, in the proposal to match young talent with a senior mentor, for the development of these skills, the respective and distinct decision-making styles and personality profiles must also be taken into consideration.

Funding

This research was supported by the Catholic University of the Sacred Heart [D1 2023 - Funding acquisition: MB].

Declaration of interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Ethical statement

The study involving human participants was conducted in accordance with the Declaration of Helsinki (2013), reviewed and approved by the Ethics Committee of the Catholic University of the Sacred Heart, Milan, Italy (approval code: 125/24 – Valutare il Decision-Making: consapevolezza e metacognizione decisionale; approval date: 23rd July 2024).

Data availability

The data presented in this study are available on request from the corresponding author due to ethical reasons for sensitive personal data protection (requests will be evaluated according to the GDPR – Reg. UE 2016/679 and its ethical guidelines).

References

Abbasi-Asl, R., & Hashemi, S. (2019). Personality and morality: role of the big five personality traits in predicting the four components of moral decision making. *International Journal of Behavioral Sciences, 13*(3), 123–128.

Acconito, C., Rovelli, K., & Angioletti, L. (2023). Neuroscience for a new concept of decision-making style. *Neuropsychological Trends, 33*, 17–35. https://doi.org/10.7358/neur-2023-033-acc1

Acconito, C., Angioletti, L., & Balconi, M. (2024a). Orientation and mental representations in the decision-making process: a comparison between junior and senior professional. *International Studies of Management & Organization*, 1–16. https://doi.org/10.1080/00208825.2024.2386435

Acconito, C., Angioletti, L., & Balconi, M. (2024b). Can professionals resist cognitive bias elicited by the visual system? Reversed semantic prime effect and decision making in the workplace: reaction times and accuracy. *Sensors, 24*(12), 3999. https://doi.org/10.3390/s24123999

Angioletti, L., Acconito, C., Crivelli, D., & Balconi, M. (2024). Can professionals "keep the tiller straight" in organizations? Resistance to reframing and decoy alternatives in workplace decision-making. *Frontiers in Psychology, 15*, 1270012. https://doi.org/10.3389/fpsyg.2024.1270012

Balconi, M. (2023). Why a dynamic multicomponential model of decision making: Some milestones and a preliminary tool. *Neuropsychological Trends, 33*, 9–16. https://doi.org/10.7358/neur-2023-033-balm

Balconi, M., Acconito, C., Allegretta, R. A., & Crivelli, D. (2023). What is the relationship between metacognition and mental effort in executive functions? The contribution of neurophysiology. *Behavioral Sciences, 13*(11), 918–930. https://doi.org/10.3390/bs13110918

Balconi, M., Acconito, C., Rovelli, K., & Angioletti, L. (2023). Influence of and resistance to nudge decision-making in professionals. *Sustainability, 15*(19), 14509. https://doi.org/10.3390/su151914509

Balconi, M., Allegretta, R. A., & Angioletti, L. (2025). Metacognition of one's strategic planning in decision-making: the contribution of EEG correlates and individual differences. *Cognitive Neurodynamics*, *19*(1), 4–17. https://doi.org/10.1007/s11571-024-10189-8

Balconi, M., Allegretta, R. A., Rovelli, K., & Acconito, C. (2024). Exploring self-relevance in decision-making: First-person, shared, or impersonal professional choice. *Advances in Cognitive Psychology, 20*(4), 376–388. https://doi.org/10.5709/acp-0440-5

Balconi, M., Angioletti, L., & Acconito, C. (2023). Self-Awareness of Goals Task (SAGT) and planning skills: The neuroscience of decision making. *Brain Sciences, 13*(8), 1163–1178. https://doi.org/10.3390/brainsci13081163

Balconi, M., Venturella, I., & Finocchiaro, R. (2017). Evidences from rewarding system, FRN and P300 effect in Internet-addiction in young people. *Brain Sciences*, *7*(7), 81–96. https://doi.org/10.3390/brainsci7070081

Charness, G. (2000). Responsibility and effort in an experimental labor market. *Journal of Economic Behavior & Organization, 42*(3), 375–384. https://doi.org/10.1016/S0167-2681(00)00096-2

Charness, G., & Jackson, M. O. (2009). The role of responsibility in strategic risk-taking. *Journal of Economic Behavior and Organization, 69*(3), 241–247. https://doi.org/10.1016/j.jebo.2008.10.006

Corner, P. D., Kinicki, A. J., & Keats, B. W. (1994). Integrating organizational and individual information processing perspectives on choice. *Organization Science, 5*(3), 294–308. https://doi.org/10.1287/orsc.5.3.294

Crivelli, D., Acconito, C., & Balconi, M. (2024). What happens to information, situational cues, and individual strategies in decision-making? The contribution of latent decisional profiles in realistic decisions. *Decision*, *51*, 57–68. https://doi.org/10.1007/s40622-024-00374-3

Crivelli, D., Allegretta, R. A., & Balconi, M. (2024). Physiology of risk-taking and risk management in realistic decision-making scenarios. *Psychological reports,* 1–19. https://doi.org/10.1177/00332941241258919

Crivelli, D., Fronda, G., Venturella, I., & Balconi, M. (2019). Stress and neurocognitive efficiency in managerial contexts: A study on technology-mediated mindfulness practice. *International Journal of Workplace Health Management*, *12*(2), 42–56. https://doi.org/10.1108/IJWHM-07-2018-0095

Daradkeh, M., Churcher, C., & Mckinnon, A. (2013). Supporting informed decision-making under uncertainty and risk through interactive visualisation. In *Proceedings of the Fourteenth Australasian User Interface Conference* (AUIC2013), (pp. 23–32) Adelaide, Australia, February 2013

Davis, C., Patte, K., Tweed, S., & Curtis, C. (2007). Personality traits associated with decision-making deficits. *Personality and Individual Differences, 42*(2), 279–290. https://doi.org/10.1016/j.paid.2006.07.006

Frith, C. D. (2014). Action, agency and responsibility. *Neuropsychologia, 55*(1), 137–142. https://doi.org/10.1016/j.neuropsychologia.2013.09.007

Gambetti, E., Fabbri, M., Bensi, L., & Tonetti, L. (2008). A contribution to the Italian validation of the General Decision-making Style Inventory. *Personality and Individual Differences, 44*(4), 842–852. https://doi.org/10.1016/j.paid.2007.10.017

Garrigan, B., Adlam, A. L., & Langdon, P. E. (2018). Moral decision-making and moral development: Toward an integrative framework. *Developmental review*, *49*, 80–100. https://doi.org/10.1016/j.dr.2018.06.001

Guido, G., Peluso, A. M., Capestro, M., & Miglietta, M. (2015). An Italian version of the 10-item Big Five Inventory: An application to hedonic and utilitarian shopping values. *Personality and Individual Differences, 76*, 135–140. https://doi.org/10.1016/j.paid.2014.11.053

Guo, K. L., & Williams, L. (2008). DECIDE A decision-making model for more effective decision making by health care managers. *The Health Care Manager, 27*(2), 118–127. https://doi.org/10.1097/HCM.0000000000000299

Leonhardt, J. M., Keller, L. R., & Pechmann, C. (2011). Avoiding the risk of responsibility by seeking uncertainty: Responsibility aversion and preference for indirect agency when choosing for others. *Journal of Consumer Psychology, 21*(4), 405–413. https://doi.org/10.1016/j.jcps.2011.01.001

Mishra, J., Allen, D., & Pearman, A. (2015). Information seeking, use, and decision making. *Journal of the Association for Information Science and Technology, 66*(4), 662–673. https://doi.org/10.1002/asi.23204

Moretto, G., Walsh, E., & Haggard, P. (2011). Experience of agency and sense of responsibility. *Consciousness and Cognition, 20*(4), 1847–1854. https://doi.org/10.1016/j.concog.2011.08.014

Nenkov, G. Y., Morrin, M., Ward, A., Schwartz, B., & Hulland, J. (2008). A short form of the maximization scale: Factor structure, reliability and validity studies. *Judgment and Decision Making, 3*(5), 371–388. https://doi.org/10.1017/s1930297500000395

Pahlke, J., Strasser, S., & Vieider, F. M. (2015). Responsibility effects in decision making under risk. *Journal of Risk and Uncertainty, 51*(2), 125–146. https://doi.org/10.1007/s11166-015-9223-6

Panpatte, S., & Takale, V. D. (2019). To study the decision making process in an organization for its effectiveness. *The International Journal of Business Management and Technology, 3*(1), 73–78.

Rovelli, K., Angioletti, L., Acconito, C., & Balconi, M. (2023). Neurosciences tell us how to be adaptable, creative, and proactive agents in decision making:

A pilot study. *Journal of Neuroscience, Psychology, and Economics*, *17*(1), 30–45. https://doi.org/10.1037/npe0000184

Schwartz, B., Ward, A., Lyubomirsky, S., Monterosso, J., White, K., & Lehman, D. R. (2002). Maximizing versus satisficing: Happiness is a matter of choice. *Journal of Personality and Social Psychology, 83*(5), 1178–1197. https://doi.org/10.1037/0022-3514.83.5.1178

Schwarz, N. (2000). Emotion, cognition, and decision making. *Cognition and Emotion, 14*(4), 433–440. https://doi.org/10.1080/026999300402745

Scott, S. G., & Bruce, R. A. (1995). Decision-making style: the development and assessment of a new measure. *Educational and Psychological Measurement, 55*(5), 818–831. https://doi.org/10.1177/0013164495055005017

Shanks, D. R., & Newell, B. R. (2014). The primacy of conscious decision making. *Behavioral and Brain Sciences, 37*(1), 45–53. https://doi.org/10.1017/S0140525X13001507

Stoet, G. (2010). PsyToolkit: A software package for programming psychological experiments using Linux. *Behavior Research Methods, 42*(4), 1096–1104. https://doi.org/10.3758/BRM.42.4.1096

Stoet, G. (2017). PsyToolkit: A novel web-based method for running online questionnaires and reaction-time experiments. *Teaching of Psychology, 44*(1), 24–31. https://doi.org/10.1177/0098628316677643

Thunholm, P. (2008). Decision-making styles and physiological correlates of negative stress: Is there a relation? *Scandinavian Journal of Psychology, 49*(3), 213–219. https://doi.org/10.1111/j.1467-9450.2008.00640.x

Vaughan, R. S., & Edwards, E. J. (2020). Executive function and personality: The moderating role of athletic expertise. *Personality and Individual Differences*, *161*, 109973. https://doi.org/10.1016/j.paid.2020.109973

Wiggins, M. W., & Bollwerk, S. (2006). Heuristic-based information acquisition and decision making among pilots. *Human Factors, 48*(4), 734–746. https://doi.org/10.1518/001872006779166325