



# Factors for analytical and intuitive cognition in strategy consultants: A multivariate analysis

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## ABSTRACT

It is often claimed that strategy consultants exert an important influence on strategy processes of organizations ascribing a pointedly analytical way of working and thus thinking. This paper examines the cognitive styles of strategy consultants, specifically the balance between analytical and intuitive thinking. We use a quantitative research design employing statistical methods such as linear models, path analysis, non-parametric analyses, and principal component analysis – methods that go beyond standard applications and allow for more comprehensive modeling of interrelated factors. Our survey data of strategy consultants provides a robust analysis of cognitive styles, biases, debiasing approaches, and relevant control variables. The results reveal that while strategy consultants generally favor analytical thinking, senior consultants increasingly rely on intuition as their experience grows. The findings also highlight the role of bias awareness and debiasing measures in decision-making processes.

## 1. Introduction

Strategy consultants are frequently involved in the development and implementation of strategies (Cerruti et al., 2019; De Keyser et al., 2023; Sturdy, 2011; Werr, 2002; Whittington, 2006, 2019; Whittington et al., 2023), alongside other key actors such as CEOs, senior executives, strategic planners, and middle managers. “Today, consultants are ubiquitous in the business world even beyond their advisory role” (Clark & Kipping, 2012, p. 3). Strategy consultants are often the subject of both admiration and criticism – celebrated for their analytical expertise and influence on strategic decisions, yet also critiqued for high costs, a lack of accountability, or overly standardized approaches (Christensen et al., 2013; Clark & Kipping, 2012; O’Mahoney & Markham, 2013; Sturdy, 2011). These contrasting views raise important questions about the cognitive styles and decision-making approaches of strategy consultants – questions that our study seeks to explore through empirical analysis.

On the one hand, studies show that strategy consultants provide various services for organizations. These range from knowledge transfer (e.g., Armbruster, 2006; Fincham, 2006), to the provision of human

resources (e.g., Fincham, 2002; Kieser & Wellstein, 2008), and to the role of legitimizers for strategic decisions as well (e.g., Armbruster, 2006; McKenna, 2012). On the other hand, strategy consultants are viewed critically. For example, strategy consultants are claimed to create management fashions to win contracts (e.g., Abrahamson, 1996; Clark, 2004; Kieser, 2002; O’Mahoney & Sturdy, 2016). Negative views on strategy consultants can also be found in popular literature. For example, strategy consultancies and consultants are referred to as “witch doctors” (Micklethwait & Wooldridge, 1997), “dangerous companies” (O’Shea & Madigan, 1999), or “demons” (Pinault, 2001). Strategy consultancies also cause a stir in the public eye. The settlement of almost USD 600 million that McKinsey & Company reached with 49 states in the USA in 2021 is considered exceptional (Bogdanich & Forsythe, 2023). This was preceded by lawsuits in connection with McKinsey & Company’s consulting role with a manufacturer of an opioid drug (Bogdanich & Forsythe, 2021).

Nevertheless, strategy consulting is surrounded by a special, fascinating “aura” (Whittington, 2019, p. 91). “Strategy consulting is universally acclaimed as the ‘sexiest’ form of consulting and one with which

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students, jobseekers, analysts, and academics prefer to associate themselves" (O'Mahoney & Markham, 2013, p. 57). Strategy consultancies are among the most attractive employers for university graduates (e.g., Alvesson & Robertson, 2006; Clark & Kipping, 2012; O'Mahoney & Markham, 2013). Furthermore, strategy consultancies are considered to play an important role in the strategic decisions of organizations (Clark & Kipping, 2012; McKenna, 2006; O'Mahoney & Markham, 2013). However, very few studies have empirically investigated this central assertion. For example, Kipping and Westerhuis (2012) found that the actual influence of strategy consultants depends on specific contextual conditions, such as organizational power dynamics and the nature of client-consultant interactions.

This lack of empirical research leaves a gap in understanding how strategy consultants operate cognitively in high-stakes decision contexts (Cabantous & Gond, 2011). Our study addresses this gap by systematically analyzing the cognitive styles, biases, and debiasing approaches of strategy consultants, along with relevant personality-related and organizational characteristics. Our research aims to gain insights on following research questions on strategy consultant's cognitive characteristics:

- To what extent is the cognitive style of strategy consultants characterized by analytics and intuition?
- To what extent is work experience related to analytical and intuitive cognitive style of strategy consultants?
- How are analytical and intuitive cognitive style of strategy consultants connected to awareness of heuristics and biases, respectively debiasing measures?

Our study is distinct from prior research in three ways. First, we focus on strategy consultants. There are only very few contributions in the field of management consulting that take an explicit view on strategy consultants. In research on management consultants, there is often no explicit differentiation between different types of consulting services such as strategy, organization, HR, IT, supply chain or legal. The significance of these findings therefore remains rather general. It is therefore not surprising that research is required in specific areas of consulting (Calabretta et al., 2017). Our study is intended to contribute to the advancement of knowledge in the specific area of strategy consulting.

Second, we take a cognitive perspective – an approach that, while increasingly relevant in management research (e.g., Helfat & Peteraf, 2015; Hesselbarth et al., 2023; Hodgkinson et al., 2023; Hodgkinson & Sadler-Smith, 2018; Levine et al., 2017), has only occasionally been applied to consultants in general and strategy consultants in particular.<sup>1</sup> By that, we refer to three theory streams that have produced numerous findings in recent decades: a) dual process theories (e.g., Chaiken & Trope, 1999; Dane & Pratt, 2007; Epstein, 2010; Evans & Stanovich, 2013), b) prescriptive-analytical strategy process models (e.g., Andrews & Andrews, 1987; Mintzberg et al., 1976; Wheelen et al., 2018), c) research on heuristics and biases (e.g., Kahneman et al., 1982, 2011; Tversky & Kahneman, 1974). In the following, our central concept of investigation is the "cognitive style" of a strategy consultant which "(...) refers to individual differences in the representation, organization and processing of information during thinking" (Akinci & Sadler-Smith, 2013, p. 211).<sup>2</sup> By that, a "cognitive style" is seen as "(...) a dispositional, enduring preference in information processing approach" (Baldacchino et al., 2023, p. 1107).<sup>3</sup> In addition to numerous studies in a

wide range of application areas (De Neys, 2023), we are adding an empirical contribution to forms of dual-process theory. Our contribution thus lies in adding a specific contingency and thus an element to consolidate dual-process theory in the sense of a "medium-range" theory (Merton, 1949). We follow the call by De Neys and Pennycook (2019, p. 507) to examine individual differences in thinking in future research.

Third, we conduct a quantitative survey of strategy consultants which allows us to obtain statistically robust statements on their cognitive styles. Following a quantitative research approach we therefore intend to test hypotheses rather than build theories (Creswell & Creswell, 2023). As mentioned above, existing research on strategy consultants is based predominantly on qualitative research approaches. By applying a quantitative research design, we contribute to a broader methodological investigation of strategy consultants as important player in strategy processes.

We collected data from 125 strategy consultants. Our analyses show that strategy consultants can be characterized by a distinctly analytical thinking style. Further, our data show a clear connection of intuitive thinking style and experience. We also find evidence that strategy consultants are aware of some heuristics and biases and try to minimize them with specific approaches.

This article is structured as follows: First, we elaborate four hypotheses from the theory. Next, we provide a description of our empirical study. We then present the results. Finally, we discuss the findings. We close by concluding remarks.

## 2. Hypothesis development

In this study, we build on dual process theory (Kahneman, 2011; Stanovich & West, 2000), which distinguishes between two modes of thinking: an intuitive, fast, and automatic process ("type 1"), and an analytical, slow, and deliberate process ("type 2") (Evans & Stanovich, 2013). This framework has been widely used in psychology and behavioral economics (Tversky & Kahneman, 1974) and is increasingly relevant in organizational decision-making research (Atanasiu et al., 2025; Pavičević et al., 2025; Vuori et al., 2024). The growing research interest in heuristics in managerial and organizational contexts is reflected in the increasing number of recent publications (e.g., Atanasiu et al., 2025; Gigerenzer, 2022; Looock & Hinnen, 2015; Pavičević et al., 2025; Vuori et al., 2024), suggesting a renewed appreciation for the practical role of intuitive and heuristic decision-making. The following hypotheses are formulated based on theoretical considerations. Their empirical evaluation is conducted through multiple statistical techniques, including linear and path models, PCA, and non-parametric methods, as described in the Methods and Results sections.

### 2.1. Defining strategy consultants

The term "strategy consultant" is used to label professionals working in a strategy consulting company – a subgroup in management consulting (O'Mahoney & Markham, 2013; Whittington, 2019). A management consultancy is understood to be a company which provides advisory services "to organizations by specially trained and qualified persons who assist, in an objective and independent manner, the client organization to identify management problems, analyse such problems, recommend solutions to these problems, and help, when requested, in the implementation of solutions" (Greiner & Metzger, 1983, p. 7). Strategy consulting firms primarily offer advisory services in the field of strategic management, e.g. positioning and planning (O'Mahoney & Markham, 2013).

### 2.2. Strategy consultants and analytical cognitive style

Rational-analytical thinking principles have a long tradition in strategic management (Ahlstrand et al., 1998; Hodgkinson & Healey, 2011). This can be seen, for example, in the various prescriptive strategy

<sup>1</sup> Over the past 20 years, only nine articles empirically investigating strategy consultants have been published in highly ranked journals. Two articles deal with the topic of "knowledge," which can be classified under the broader field of cognition (Galunic et al., 2014; Van den Bosch et al., 2005).

<sup>2</sup> based on Messick (1984).

<sup>3</sup> based on Hodgkinson and Clarke (2007); Sadler-Smith and Burke (2009).

process models, which are divided into a sequence of individual steps (e.g., Andrews & Andrews, 1987; Wheelen et al., 2018). For example, Wheelen et al. (2018) propose a procedure containing four main phases (environmental scanning, strategy formulation, strategy implementation, evaluation and control) as well as topics for each phase. Overall, prescriptive strategy process models are based on an understanding that strategy processes should be controlled and consciously designed (Mintzberg, 1990). The basic logic can be recognized as a common feature (e.g., Andrews & Andrews, 1987; Hofer & Schendel, 1978; Mintzberg et al., 1976; Nutt, 1984; Wheelen et al., 2018): 1) gathering detailed information out of the external and internal context, 2) developing and evaluating strategic options, 3) choosing strategic option, 4) implementing strategic option.

Several studies suggest that strategy consultants are highly analytical in their work (Armbruster, 2006; Bäcklund & Werr, 2004; Cabantous & Gond, 2011; Kubr, 2002; O'Mahoney & Markham, 2013). Werr et al. (1997) found in a study that McKinsey & Company and Boston Consulting Group use methods of structured procedures with defined steps. These findings are consistent with the explanations in Rasiel et al. (2001), who provide an insight into the working methods of strategy consultants at McKinsey & Company. The authors describe three areas of a consultant's work: "analyzing", "presenting" and "managing". The activity of analyzing is divided into the four steps of understanding the problem, planning data collection, collecting data and interpreting data. Moreover, Kieser and Wellstein (2008) point out that strategy consultants can take on various functions, for example to legitimize and communicate management decisions. It can be assumed that this requires analytical work based on analytical thinking.

Analytical-rational thinking is seen as a main characteristic of dual process theories (e.g., Chaiken & Trope, 1999; Epstein, 2010; Hodgkinson & Sadler-Smith, 2018). Since the 1970s, dual process theories have gained attention and recognition in various scientific disciplines (Dane & Pratt, 2007; Hodgkinson et al., 2023; Hodgkinson & Clarke, 2007). At the core of dual process theories is the assumption that cognitive activities give rise to two forms of processes – "type 1" and "type 2" – that lead to observable behavior (Evans & Stanovich, 2013). While a variety of terms can be found for "type 1" and "type 2", there is mainly a uniform understanding of the characteristics of the respective types (Hodgkinson & Clarke, 2007). "Type 1" comprises "a largely automatic, pre-conscious process, involving the development and deployment of heuristics (i.e., basic rules of thumb)" (Hodgkinson & Clarke, 2007, p. 244). In contrast, "type 2" describes "a deeper, more effortful process, which entails the use of analytic capabilities" (Hodgkinson & Clarke, 2007, p. 244). In the following, we use the terms intuition and analytics to refer to "type 1" and "type 2".

Based on the preceding considerations, we formulate the following hypothesis:

**Hypothesis 1.** Consultants who provide consulting services in the field of strategic management exhibit a distinctly analytic cognitive style.

### 2.3. Strategy consultants and intuitive cognitive style

A key theoretical statement in dual process theories is the view of cognition as complementary, parallel analytical and intuitive thought processes (Hodgkinson et al., 2023; Hodgkinson & Clarke, 2007). Applied to strategy consultants, this means that their cognition is not only characterized by analytical but also to some degree by intuitive thinking. To date, numerous definitions for intuition have been proposed by scholars (Epstein, 2010). To illustrate the many conceptual disputes, here are three examples from recognized researchers:

- "Intuition and judgement – at least good judgment – are simply analyses frozen into habit and into the capacity for rapid response through recognition" (Simon, 1987, p. 63).

- "(...) thoughts and preferences that come to mind quickly and without much reflection" (Kahneman, 2003, p. 697).
- "Intuition involves a sense of knowing based on unconscious information processing" (Epstein, 2010, p. 296).

Intuition as a research subject has long been associated with "magic" and "mysticism" (Matzler et al., 2014c), and dismissed as "irrational" and "unreliable" (Pretz, 2011). While intuition was considered the "antithesis" of rational analysis for many years (Sadler-Smith & Burke, 2009), a more realistic and pragmatic approach can be increasingly observed in recent years (e.g., Dane et al., 2012; Elbanna et al., 2013; Hallo & Nguyen, 2022; Mi et al., 2024). An argument to study the phenomenon of intuition in more depth is the increasingly dynamic market environment (Hodgkinson et al., 2009). In that sense, intuition is understood as a component of "strategic competence", the ability to acquire, store, retrieve, interpret and translate information into action for the long-term survival of an organization (Hodgkinson et al., 2009, p. 278). Elbanna et al. (2013) go even further in justifying the consideration of intuition in decision-making processes in the realm of market dynamics; the authors point out that strategic decisions can rarely be made on the basis of complete, accurate, and timely information. It is obvious that these conditions also apply to the working context of strategy consultants.

Empirical studies in a business context show a positive correlation between intuition and experience (Baldacchino et al., 2023; Burke & Miller, 1999; Leybourne & Sadler-Smith, 2006; Matzler et al., 2014a). Domain-specific experience in particular is seen as a prerequisite for intuition to develop effectively (Baldacchino et al., 2023). Applied to strategy consultants, this would mean that generated knowledge can be drawn on with increasing experience, whereby the intuitive cognitive style would come into play even more. Result from two studies support this assumption (Werr et al., 1997; Werr & Stjernberg, 2003). Werr et al. (1997) investigated the use of methods – defined as guiding step-by-step models –, as well as experience in five management consultancies' practice. For junior consultants, the use of methods was found to be more important than for experienced ones (Werr et al., 1997). Werr and Stjernberg (2003) note that experience is the central source of the consultants' knowledge of how a project should be set up and implemented. "The more experience a consultant had, the less important methods and tools were said to be as guides for action" (Werr & Stjernberg, 2003, p. 896).

Based on the preceding considerations we put forward the hypothesis:

**Hypothesis 2.** The more experience strategy consultants have, the more intuitively they think.

### 2.4. Strategy consultants and considering biases respectively debiasing

Intuition is closely linked to the phenomena of heuristics and biases (Hodgkinson et al., 2023). The susceptibility of intuition to error can be seen as a key driver of the "Heuristics and Biases" research program (Hodgkinson et al., 2023; Sadler-Smith & Burke-Smalley, 2015). The scientific debate under the heading of "Heuristics and Biases" began in the late 1960s with research by Amos Tversky and Daniel Kahneman. Kahneman emphasizes the central role that intuition plays in heuristics and biases research: "Contrary to a common perception, researchers working in the heuristics and biases (...) mode are less interested in demonstrating irrationality than in understanding the psychology of intuitive judgment and choice" (Kahneman, 2000, p. 682). The research interest in heuristics in the context of organizational and management theory seems to be more topical than ever, as can be seen from the increase in published articles (Hodgkinson et al., 2023; Looock & Hinnen, 2015).

Various definitions have been proposed for both heuristics and biases. The following two definitions are examples of this:

- “A heuristic is a ‘rule of thumb’, or shortcut, that helps people make quick or intuitive judgements without apparent deliberation or calculation” (Carp & Shapira, 2016).
- “A bias is a systematically incorrect outcome generated using a heuristic. It differs from the correct, unbiased outcome that would result from the use of a normative rule to solve the same problem” (Carp & Shapira, 2016).

To date, numerous types of heuristics (over 40 heuristics; Shah and Oppenheimer (2008)) and biases (over 50 biases; Baron (2008)) have been described in the literature.

Heuristics and biases harbor many dangers that can have a negative impact on strategic decisions (Kahneman et al., 2011, 2019; Vermeulen & Sivanathan, 2017). Strategy consultants typically process a lot of information in a client project. In this respect, distortions can occur in all phases of an information processing process which can be modeled in distinct phases, e.g., information acquisition, information processing, output, and feedback (Hogarth, 1987). Furthermore, heuristics and biases can occur in all phases of strategic decision-making, e.g., goal formulation and problem identification, generation of alternatives, evaluation and selection (Schwenk, 1984). This means that strategy consultants must constantly deal with heuristics and biases in order to avoid being affected by their negative effects. It is reasonable to assume that strategy consultants have an interest in processing information that is as unbiased as possible in order to do the best possible job for clients. Several articles that have appeared in McKinsey Quarterly on heuristics and biases (e.g., Günther et al., 2017; Javetski & Koller, 2018; Kahneman & Klein, 2010; Koller & Lovallo, 2018; Lovallo & Sibony, 2010; Rosenzweig, 2007) can be seen as an indication that this topic has also gained importance in strategy consulting companies.

To understand this connection between cognitive style and thinking errors, it is useful to refer to the fundamentals of default-interventionist dual-process theories (e.g., Evans, 2007; Evans & Stanovich, 2013; Kahneman, 2011). Research on default-interventionist dual-process theories postulates that people default to “type 1” (automatic, intuitive processes) when making decisions, while “type 2” (controlled, analytical processes) is only used when absolutely necessary (Evans & Stanovich, 2013; Hodgkinson et al., 2023; Hodgkinson & Sadler-Smith, 2018). Following on from the comments in section 2.2 on the analytical thinking style of strategy consultants, it can be assumed that “type 2” processes are used in the phases of information processing and strategic decision-making mentioned above. In doing so, strategy consultants draw on their “methodical” knowledge base (Werr & Stjernberg, 2003). From the articles in McKinsey Quarterly listed above, it can be concluded that this also includes knowledge of specific thinking errors and how these should be taken into account in the consulting process.

From these considerations, the following hypothesis can be formulated.

**Hypothesis 3.** *Strategy consultants who demonstrate explicit knowledge of heuristics and biases exhibit a more reflective and analytical cognitive style.*

Further considerations can be made based on the hypothesis developed above. If strategy consultants have knowledge of heuristics and biases, the obvious consequence would be that targeted measures are used to reduce negative effects. This assumption is also based on the argument that strategy consultants ultimately want to achieve a “good” quality result for clients. According to this argument made here, a “good” result includes information that is as undistorted as possible, and based on which conclusions are drawn that are as error-free as possible. The consequence would be that debiasing would be seen as part of the professional work of strategy consultants in order to carefully design and support strategy processes with regard to heuristics and biases.

There are various approaches to debiasing described in academic literature. Among others, “consider the opposite” (Larrick, 2004), “devil’s advocacy” (Sadler-Smith & Shefy, 2004), “premortem” (Klein,

2004) and the design of the decision-making structure (Milkman et al., 2015) are proposed as suitable debiasing measures.

With regard to debiasing in the work of strategy consultants, it can be said that the topic has also received attention in practice-oriented journals such as Harvard Business Review (e.g., Kahneman et al., 2011; Vermeulen & Sivanathan, 2017) and McKinsey Quarterly (e.g., Javetski & Koller, 2018; Kahneman & Klein, 2010; Koller & Lovallo, 2018; Lovallo & Sibony, 2010; Rosenzweig, 2007).

These articles suggest that this also includes knowledge of specific methods for minimizing errors in reasoning and taking these into account in the consulting process. This, in turn, suggests the use of “type 2” processes, whereby strategy consultants demonstrate analytical cognition.

Although this study assesses five biases and three debiasing strategies, this asymmetry reflects the conceptual nature of debiasing approaches rather than a measurement imbalance. Debiasing strategies such as questioning assumptions, explicitly considering multiple alternatives, and using devil’s advocacy are deliberately general analytical interventions that can mitigate multiple biases simultaneously. For example, questioning assumptions can counteract both groupthink and overconfidence by encouraging critical evaluation of dominant viewpoints, while systematically considering alternatives may reduce confirmation bias and sunk cost tendencies. Consequently, the debiasing measures used here are not intended to map one-to-one onto specific biases, but rather to capture broader analytical interventions consistent with default-interventionist dual-process theories, in which controlled Type 2 processes (slow, deliberate reasoning) intervene to monitor and correct intuitive Type 1 responses (fast, automatic processing).

Based on these considerations, we postulate the following hypothesis:

**Hypothesis 4.** *Consultants who provide consulting services in the field of strategic management exhibit a distinctly knowledge of debiasing approaches.*

### 3. Research method

#### 3.1. Data collection

We conducted a cross-sectional study which means that the empirical data relate to a specific point in time and not to a period (Creswell & Creswell, 2023). The data was collected by means of a fully standardized survey, i.e., individuals – in this case strategy consultants – were asked to respond to closed questions with predefined answer options. The survey was conducted online. We used Qualtrics (Qualtrics, 2024) as the survey software. For statistical analyses, we used R (R Core Team, 2024).

The survey was conducted anonymously; the resulting discretion should have a positive effect on the response rate. The online survey was conducted between August and October 2020. We clarify that the survey was not sent out in two separate waves but rather distributed once through multiple recruitment channels. The temporal stability of the measured constructs (cognitive styles, biases, etc.) was not explicitly tested across time, given the one-time nature of the data collection. The quantitative survey described here corresponds to a field study, as data is generated from real economic activity and therefore in a natural environment and not from an artificial situation in a laboratory.

A central requirement for standardized surveys is comprehensibility (Creswell & Creswell, 2023). To ensure this as far as possible, a pretest was conducted with seven people who have experience in advising organizations on strategic issues. The purpose of the pretest was to check comprehensibility, identify possible problems when completing the survey, and make any necessary adjustments. The pretest was also used to check the technical processing and to gain an impression of user-friendliness. The pretests were carried out from May to August 2020.

Survey participants were recruited in several ways in order to achieve the highest possible response rate. Firstly, the country heads in Germany and Switzerland of McKinsey & Company, Boston Consulting

Group, Bain & Company and Roland Berger were contacted directly by email. These companies employ the most strategy consultants in these two countries (Kewes, 2022; Kowalsky, 2024). Secondly, the LinkedIn platform and a university alumni network were used to search for people who work at one of the aforementioned companies. Thirdly, people from the authors' network were contacted. A total of 191 people were contacted directly by email; a reminder was sent one week later. In each email, recipients were encouraged to forward the survey link to other eligible strategy consultants. This approach was intended to leverage snowball sampling, whereby existing study participants help recruit further participants from their professional networks, thereby increasing the overall response rate.

### 3.2. Sample

#### 3.2.1. Sample overview

Our final sample comprises 125 strategy consultants, primarily based in Germany (33%) and Switzerland (63%). The sample includes consultants from a broad spectrum of firms, ranging from small companies with fewer than 10 employees to major consultancies with over 1000 employees (66.4%). Consultants occupy various hierarchical levels: 30.4% are in junior positions (e.g., analysts, consultants), 31.2% in mid-level roles (e.g., managers), and 37.6% hold senior or partner-level positions. The majority of participants are male (80.8%) and hold a Master's or Bachelor's degree (68%), while 26.4% have completed a doctorate. In terms of professional experience, 60% of participants have worked in strategy consulting for less than 10 years, while 40% report more than 10 years of experience. This diversity contributes to a robust basis for analyzing cognitive styles, heuristics, and debiasing approaches in strategic consulting practice.

#### 3.2.2. Sample details

Data were collected from a total of 180 individuals. However, 55 questionnaires were excluded due to unit nonresponses, and responses from participants who reported working less than 50% of the time as a strategy consultant. Additionally, item non-responses, with a non-response rate of 1.5%, were addressed using k-nearest neighbor imputation (Kowarik & Templ, 2016). Specifically, 84 item non-responses were imputed out of 5500 entries in the dataset. This process resulted in a final sample of 125 complete questionnaires.

While our recruitment strategy initially targeted large international strategy consulting firms (e.g., McKinsey & Company, BCG, Bain & Company, Roland Berger), the final sample includes consultants from a range of company sizes. According to self-reported data, participants work in organizations ranging from small firms with fewer than 10 employees to large consultancies with more than 1000 employees. The majority (83 of 125) are employed by firms with over 1000 employees, while smaller firms are also represented (e.g., 21 participants from firms with fewer than 10 employees).

Fig. 1 presents descriptive statistics in visual form: it includes box-plots showing the distribution of the two cognitive style dimensions (analytic and intuitive) as well as years of professional experience. Additionally, bar charts illustrate the distribution of key control variables such as gender, qualification, company size, and position level. 19.2% of the evaluated questionnaires were completed by women, 80.8% by men.

32.8% of respondents have up to four years of professional experience, 27.2% between five and nine years, 18.4% between ten and 19 years, and 21.6% with 20 years or more.

Participants selected their position from a predefined list of typical roles in strategy consulting, including common title variants, namely

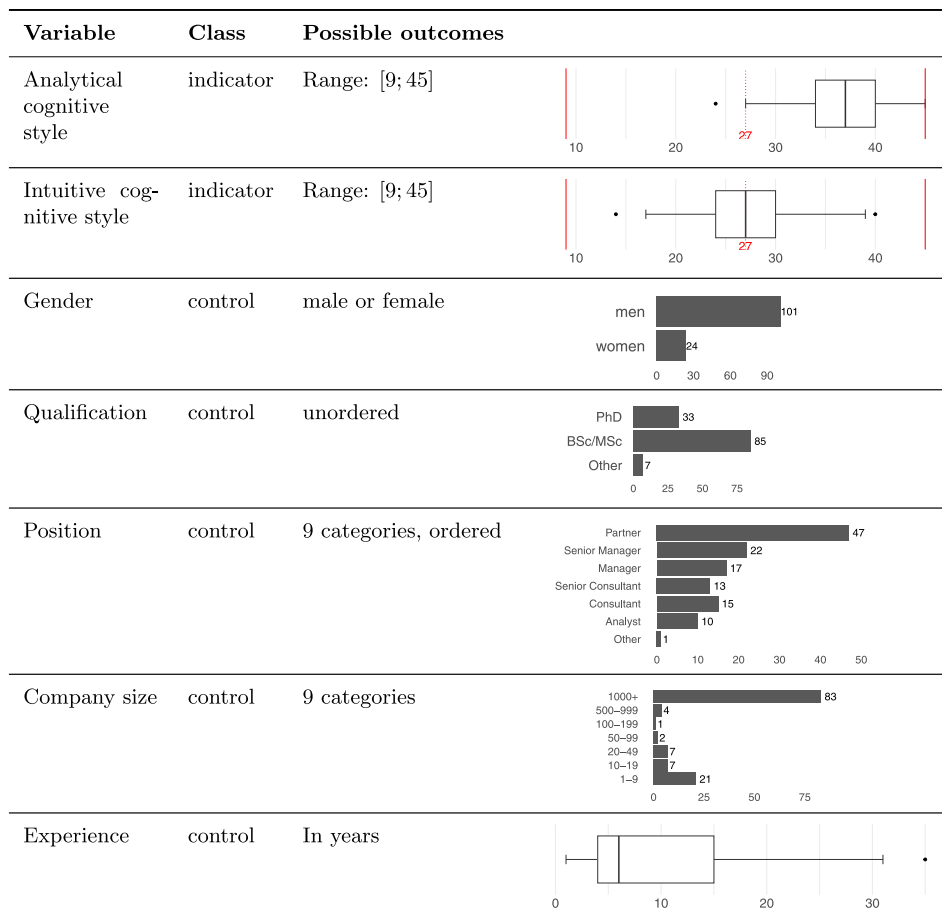


Fig. 1. Descriptive statistics of cognitive styles, bias awareness, and debiasing approaches among strategy consultants.

analyst (e.g., research associate, consulting analyst, associate consultant), consultant (e.g., junior consultant), senior consultant, manager (e.g., project manager, managing consultant), senior manager (e.g., associate partner, principal, senior project manager), partner (e.g., CEO, senior partner, executive board member, owner) and other position. Analysts, consultants, and senior consultants account for 30.4% of the sample. Mid-level positions including manager and senior manager roles represent for 31.2%, while 37.6% of respondents hold top-level positions such as partner. This distribution suggests an overrepresentation of partners and senior roles in our sample compared to the typical hierarchical structure in consulting firms which is often described as pyramid-shaped, with fewer individuals at higher levels (Dornheim, 2015). Industry sources indicate that consulting firms commonly maintain a leverage ratio of one partner to approximately six or seven non-partner consultants (Hansen et al., 1999; Whittington, 2019).

68% have a bachelor's or master's degree as their highest educational qualification, 26.4% have a doctorate; the remaining 5.6% have other degrees. 16.8% work in a company with up to 9 employees, 11.2% with 10 to 49 and 72% with 50 or more (see Fig. 1 for more details).

### 3.3. Variable measurement

#### 3.3.1. Analytical and intuitive cognitive style

Cognitive style was measured using the validated instrument "Preference for Intuition and Deliberation" (PID) developed by Betsch (2004). This inventory consists of two distinct subscales:

- Analytical cognitive style: measured by the subscale "preference for deliberation", comprising 9 items
- Intuitive cognitive style: measured by the subscale "preference for intuition", also comprising 9 items).

Each item was rated on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree), resulting in theoretical scores ranging from 9 to 45 for each subscale. The two subscales were analyzed separately, in line with prior studies (e.g., Betsch, 2004; Witteman et al., 2009), and were not combined into a composite score.

Internal consistency was evaluated using Cronbach's alpha, which indicated good reliability:  $\alpha = 0.67$  for the analytic scale and  $\alpha = 0.77$  for the intuition scale.

Example items from the inventory include (the whole information can be found in the questionnaire, which is provided as supplementary material) for analytical cognitive style are "I prefer to think carefully about decisions before making them." and for intuitive "I trust my gut feelings in complex situations." To prevent respondents from mixing their private and professional thinking when answering, we have added two contextualizing sentences in four places in the questionnaire ("Please estimate the extent to which the following statements apply to you. Please base your assessment on what usually applies to you in a professional context.")

The items from the questionnaire by Betsch (2004) have been used in full or in part in more than 30 studies (e.g., Matzler et al., 2014a; Richetin et al., 2007; Witteman et al., 2009). The validity and reliability aspects of the two subscales have been positively evaluated on several occasions (Betsch, 2004; Hodgkinson & Sadler-Smith, 2014; Koele & Dietvorst, 2009). Validity was assessed, among other things, on the basis of correlations with the Rational-Experiential Inventory (Epstein et al., 1996), another recognized questionnaire construction for assessing rational and intuitive thinking. The corresponding subscales correlate positively ( $r = 0.16, p < 0.05$  for the scales "preference for deliberation" and "need for cognition";  $r = 0.52, p < 0.001$  for "preference for intuition" and "faith in intuition") (Betsch, 2004, p. 184). In terms of reliability, studies by Betsch (2004) show a Cronbach's alpha value of 0.78–0.79 for the "preference for deliberation" scale and a Cronbach's alpha for the "preference for intuition" scale of 0.77–0.81 (Betsch, 2004, p. 184 and 190). Figures for the retest reliability indicates that the

subscales measure time-stable preferences (14-day interval,  $N = 198$ :  $r = 0.59$  for deliberation scale,  $r = 0.76$  for intuition scale; six-month interval,  $N = 21$ :  $r = 0.74$  and  $r = 0.76$  respectively) (Betsch, 2004, p. 190).

#### 3.3.2. Heuristics and biases

We assessed five phenomena that are commonly studied in the field of "heuristics and biases" and are especially relevant in strategic decision-making contexts: groupthink, self-interest, overconfidence, confirmation bias and the sunk cost fallacy. For debiasing approaches, we included items related to devil's advocacy, the consideration of alternatives, and use of analogies, drawing on widely recommended methods for improving decision quality in organizational settings (Larrick, 2004; Milkman et al., 2015). All items were presented as statements on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree).

In this study, five heuristics and biases were selected for further investigation (see Fig. 2, which reports the distribution of responses in percentages). It is beyond the scope of this survey to cover all the heuristics and biases identified in the literature. It is also not realistic to expect strategy consultants to have the time to answer such an extensive questionnaire. The selection is based first on the checklist of Kahneman et al. (2011), and then on the described heuristics and biases in the literature relating to strategic management (e.g., Carp & Shapira, 2016; Schwenk, 1984; Vermeulen & Sivanathan, 2017). In order to minimize the effect of "social desirability" when answering, the items are formulated without reference to heuristics and biases or corresponding terms such as "thinking errors". To prevent respondents from mixing their private and professional thinking when answering, each item begins with the phrase ("In strategy consulting, I consciously..."). Five items are included in the questionnaire:

- In strategy consulting, I consciously pay attention to groupthink in myself and those involved in the consulting process.
- In strategy consulting, I consciously pay attention to self-interest in myself and those involved in the consulting process.
- In strategy consulting, I consciously pay attention to overconfidence in myself and those involved in the consulting process.
- In strategy consulting, I consciously pay attention to the effect of confirmation in the argumentation of myself and those involved in the consulting process.
- In strategy consulting, I consciously pay attention to the effect of sunk costs in the argumentation of myself and those involved in the consulting process.

These statements are answered using a quasi-metric Likert scale of five (1 = does not apply, 5 = fully applies). Descriptive statistics are shown in Fig. 2. These heuristics were selected based on their prevalence in management and strategy consulting literature (see, e.g., Hodgkinson et al., 2023; Kahneman et al., 2011, 2019; Loock & Hinnen, 2015; Lovallo & Sibony, 2010). These cognitive shortcuts are known to influence judgment under uncertainty and are particularly pertinent when decisions must be made rapidly, with incomplete information – characteristics often associated with strategy consulting.

#### 3.3.3. Debiasing approaches

For the same reasons as described above for the variable "heuristics and biases", only a selection of debiasing approaches were surveyed in this study (see Fig. 2). Three items from the checklist by Kahneman et al. (2011) are considered. The following three statements are listed in the questionnaire:

- In strategy consulting, I consciously use the devil's advocacy or consider the opposite method.
- In strategy consulting, I consciously make sure to evaluate more than one alternative.

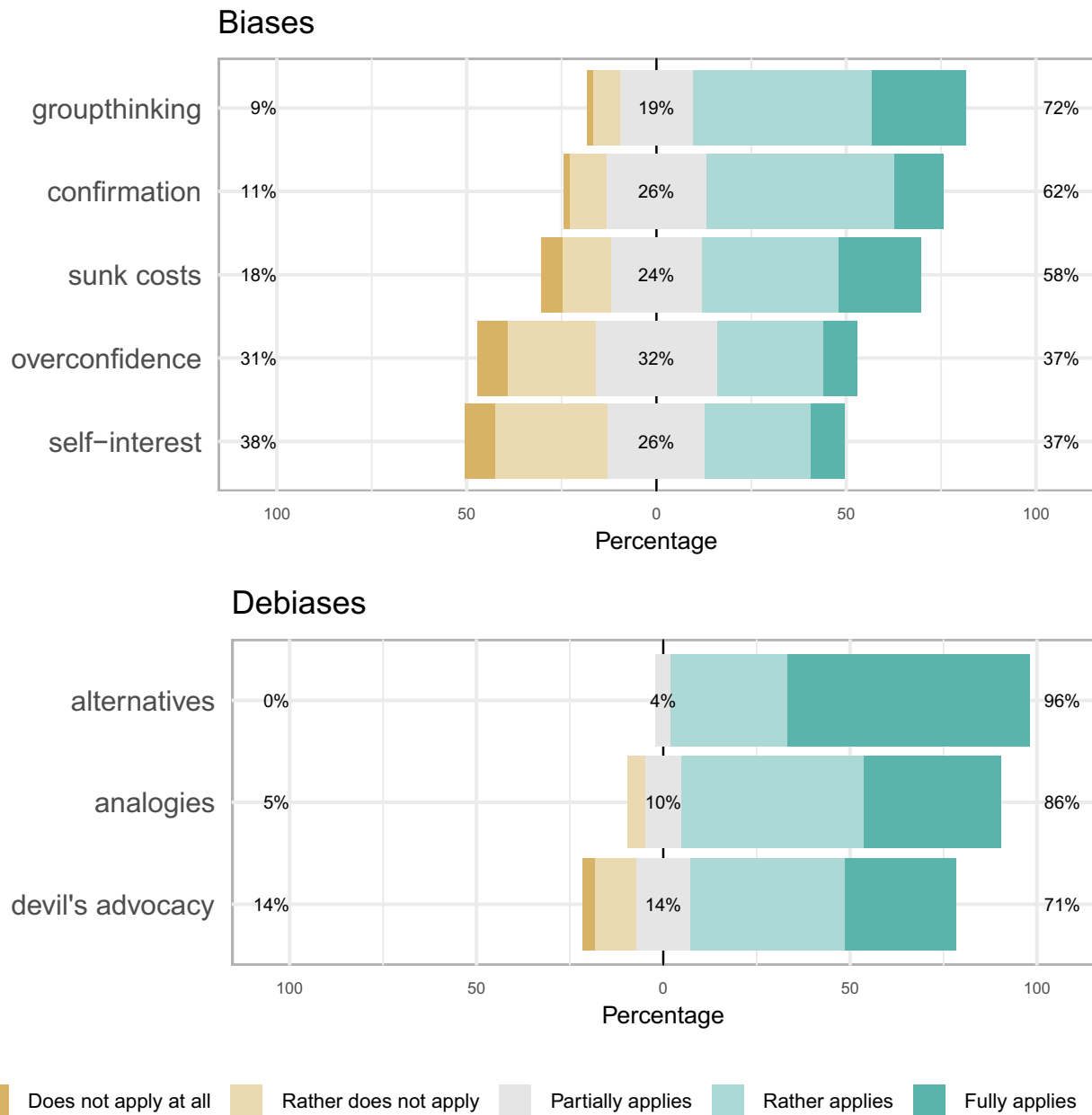


Fig. 2. Likert scale distribution of biases and debiasing.

– In strategy consulting, I make a conscious effort to question analogies (e.g. transferring assumptions from the past to the future).

For debiasing approaches, we drew on approaches commonly discussed in management science and psychology, focusing on those approaches that are practical and known to be applicable in organizational settings – such as devil's advocacy, considering alternatives, and use of analogies (see, e.g., Kahneman et al., 2011, 2019; Larrick, 2004; Lovallo & Sibony, 2010; Milkman et al., 2015). Again, these statements are answered using a quasi-metric Likert scale of five (1 = does not apply, 5 = fully applies). Fig. 2 shows that strategy consultants mostly rather or fully apply alternatives and analogies.

### 3.3.4. Control variables

Professional experience is operationalized here with the number of years spent in strategy consulting. By that, we follow (Richter & Schmidt, 2006, p. 374) and their assumption of a correlation between experience and age. In the questionnaire, experience is assessed using

one item: I have been working as a strategy consultant for ... years (at least 50% of my working time). This item is answered by entering a whole number. Further, we controlled for gender (female and male), qualification (Bachelor's, Master's, doctorate, other degree), position (analyst, consultant, senior consultant, manager, senior manager, partner), and number of employees in the company (1–9, 10–49, 50–99, 100–249, 250–499, 500–999, >1000). Details on our sample are shown in Fig. 1.

### 3.4. Statistical methods

#### 3.4.1. Linear model

Linear regression models were fitted using ordinary least squares estimation (e.g., Venables & Ripley, 2002), a standard method to estimate linear relationships between a dependent variable (e.g., analytical cognitive style) and one or more independent variables (e.g., indicators of bias, debiasing, and control variables). Model specification considered potential interactions and variable transformations. Assumptions of

linear regression were carefully examined, including checks for multicollinearity using variance inflation factors (VIFs). All tested models showed VIF values below 6, indicating no problematic multicollinearity (Fox & Monette, 1992). Two interaction terms, position  $\times$  experience and experience  $\times$  alternatives, were removed during model refinement to further ensure model stability.

### 3.4.2. Analysis of covariance (ANCOVA)

To examine differences in cognitive styles across consultant positions, we used analysis of covariance (ANCOVA) (Chambers & Hastie, 1992). This method allows comparison of group means (e.g., levels of intuitive or analytical thinking across job positions) while statistically controlling for continuous covariates such as professional experience. Adjusting for covariates reduces within-group error variance and improves the precision of group comparisons.

### 3.4.3. Path analysis

Path analysis was used to examine the direct and indirect relationships among observed variables. Specifically, we modeled the relationship between analytic cognitive style and decision biases, as well as the effect of biases on debiasing behavior. The analysis was implemented using the lavaan package in R (Rosseel, 2012). Model fit was assessed using standard goodness-of-fit criteria to ensure the adequacy of the hypothesized path structure.

### 3.4.4. Non-parametric analyses

To explore the relative influence of variables on cognitive styles, we fitted random forest models with impurity-based variable importance measures, implemented using the ranger package in R (Wright & Ziegler, 2017). Separate models were built to predict the analytic and intuitive cognitive style scores using a set of heuristic biases, control variables (e.g., experience, gender, position), and organizational characteristics. The random forest algorithm provides a non-parametric, non-linear approach that does not require distributional assumptions, and is well suited to capturing complex interactions between predictors. The resulting importance scores were visualized to identify the most influential factors associated with each cognitive style.

### 3.4.5. Principal component analysis

Principal Component Analysis (PCA) was applied to explore multivariate patterns and co-variation between cognitive styles (analytic and intuitive), decision-making biases, debiasing approaches, and control variables such as experience and number of employees. PCA reduces the dimensionality of complex datasets by identifying orthogonal linear combinations of the original variables – called principal components – that successively explain the most variance (Mardia et al., 1979).

We computed PCA on standardized variables using robust covariance estimation (via MCD, Minimum Covariance Determinant) to ensure stability against outliers. Biplots were used for interpretation and visualization, showing both observations (consultants, labeled by position) and variable loadings in the reduced two-dimensional space (Gabriel, 1971). The angles between loading vectors approximate correlations between variables, enabling intuitive inspection of clusters and gradients in consultant profiles.

Separate PCAs were conducted for three conceptually distinct subsets of variables: (i) cognitive styles with summary indicators of bias and debiasing, (ii) cognitive styles with individual bias items, and (iii) cognitive styles with individual debiasing approaches. Visualizations were stratified by gender and annotated with hierarchical position labels to facilitate interpretation. PCA has not previously been used in the context of cognitive profiling in strategy consulting, providing novel insights into how biases and debiasing approaches co-vary with analytic and intuitive styles.

## 4. Results

We test our hypotheses using a variety of statistical methods. First, we present the results, organized according to the hypotheses. Then we discuss additional results that we obtained using explorative statistical methods.

### 4.1. Hypothesis 1 on analytical cognitive style

#### 4.1.1. Univariate setting

In our study, we quantify the analytical cognitive style of strategy consultants using a scale from 9 to 45.<sup>4</sup> To determine whether the observed level of analytical cognitive style differs significantly from a moderate benchmark, we employ a one-sample *t*-test. Our null hypothesis posits that the mean analytical cognitive style score of consultants is  $\mu = 27$ , indicating a moderate level of analytical cognition. This sample statistics are min: 24, first quartile: 34, median: 37, mean: 36.78, third quartile: 4, max: 45. The null hypothesis is rejected ( $p$ -value:  $< 2.2e-16$ ) indicating that consultants' analytical cognitive style is significantly higher than the scale midpoint. This midpoint test provides a scale-based reference and should not be interpreted as evidence that consultants' analytical cognition differs from that of the general population.

#### 4.1.2. Consideration of effects of control variables

In addition, we considered effect of control variables on strategy consultants' analytical cognitive style. The summary of ANCOVA in Table 1 shows the significance of each control variable. The model suggests that differences in analytical cognitive styles can be attributed significantly to gender but not to experience, position, company size and qualification according to this model.

Note that the assumptions of ANCOVA – linearity, homogeneity of regression slopes, normality, homoscedasticity (Cook & Weisberg, 1986) – were checked (by residual diagnostic plots) and fulfilled. In addition, interaction effects, such as between experience and position and potential transformations, did not improve the fit of the model.

#### 4.1.3. Extended model with variable selection

The extended linear model (fitted by least squares) before variable selection contained 28 regression coefficients based on all available independent control variables and other covariables, including various interactions between experience with position, gender with position, qualification and position, experience with confirmation (bias), experience with sunk costs (bias), experience with devil's advocacy (debiasing), experience with alternatives (debiasing), and experience with analogies (debiasing). Some interactions were manually removed, because of multicollinearity issues. Table 2 shows the main results of the extended model after hybrid back- and forward selection (Venables & Ripley, 2002). The resulting linear regression model attempts to explain

**Table 1**  
ANCOVA for control variables.

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Experience	1	36.80	36.80	2.71	0.1022
Position	1	22.66	22.66	1.67	0.1987
Gender	1	84.46	84.46	6.23	0.0140
Company size	1	16.02	16.02	1.18	0.2794
Qualification	2	34.57	17.29	1.27	0.2835
Residuals	118	1600.66	13.56		

<sup>4</sup> The lowest value per question is 1. People who select the lowest value for all nine questions thus achieve the minimum value of 9. By contrast, people who select the highest value for each question (i.e., 5) achieve the maximum value of 45.

**Table 2**

Output from model 1 with response variable “analytical cognitive style” of strategy consultants.

	+Estimate	**Std. Error	t value	Pr(> t )	
(Intercept)	26.228	2.690	9.750	0.000	***
Position	-0.442	0.182	-2.432	0.016	*
Sunk Costs	0.661	0.277	2.385	0.019	*
Alternatives	2.200	0.555	3.963	0.000	***

R2 = 0.2 | p-value: 7.457e-06.

- + p < 0.1.
- \* p < 0.05.
- \*\* p < 0.01.
- \*\*\* p < 0.001.

the variability in the dependent variable – the analytical cognitive style – based on the independent variables position of a strategy consultant, sunk costs (bias) and alternatives (debiasing). Note that there is a multicollinearity issue between experience, position and the interaction between them, and thus either position or experience should be in the model, whereby the inclusion of position leads to a slightly better fit of the model. Other variables and interactions were excluded from the variable selection procedure, and interestingly also the variable gender that we saw in the previous model to be significant. The reason is that the effect of gender is substituted by other variables in the model.

The model is statistically significant (p value: 7.457e-06) but has a relatively low R2 value (0.2), suggesting that there is a substantial amount of unexplained variability in the dependent variable that is not captured by these independent variables. While this model has too low prediction power, that is, the uncertainty of the prediction of the analytical cognitive style for a junior strategy consultant is rather high, it is still very useful for interpretation and highlights significant linear relationships. Furthermore, the data fit the model well, with no violations of the assumptions regarding normally distributed errors.

The summary of the analytical cognitive style model of strategy consultants in Table 2 provides the following conclusions:

- Position has a significant negative effect on the analytical cognitive style (p < 0.05). This suggests that higher positions are associated with lower levels of analytical cognitive style.
- Considering sunk costs has a significant positive effect on the analytical cognitive style (p < 0.05). This indicates that a higher focus on sunk costs is associated with higher levels of analytical cognitive style.
- Considering alternatives has a significant positive effect on the analytical cognitive style (p < 0.001). This suggests that higher consideration of alternatives is associated with higher levels of analytical cognitive style.

Bear in mind that Lasso (Tibshirani, 1996), a widely used regularization method, yielded non-zero regression coefficients not only for position, sunk costs, and alternatives but also for experience of a strategy consultant.

In general, strategy consultants have a high analytical cognitive style, and this almost independently regarding experience and all control variables except for gender. In addition, the extended model highlights that certain factors significantly influence analytical cognitive style, such as position of a strategy consultant (negative effect), considering sunk costs (positive effect), and considering alternatives (positive effect). By that, we find support for Hypothesis 1.

**4.2. Hypothesis 2 on intuitive cognitive style**

We investigated the effect of experience on the intuitive cognitive style of strategy consultants while accounting for the effects of other variables. The full linear model included 24 regression coefficients with experience, group thinking (bias), self-interest (bias), overconfidence

(bias), confirmation (bias), sunk costs (bias), devil's advocacy (debiasing), alternatives (debiasing), analogies (debiasing), position, gender, and various interaction effects with experience. Results of the model – after variable selection – are presented in Table 3. This model explains approximately 16% of the variance in intuitive cognitive style. Although this relatively low R2 suggests that the model may not be highly predictive for junior strategy consultants, it remains significant and valuable for interpretation.

It should be mentioned that the position of strategy consultants has been excluded from the model due to multicollinearity issues with experience.

The summary of the intuitive cognitive style model of strategy consultants in Table 3 provides the following conclusions:

- Experience has a significant positive effect on intuitive cognitive style (p < 0.05). This suggests that more experience is associated with a higher level of intuitive cognitive style.
- Company size – measured by the number of employees – has a marginally significant negative effect on intuitive cognitive style (p ≈ 0.08). This suggests that strategy consultants in larger companies might slightly less rely on intuition.
- Considering sunk costs has a significant negative effect on intuitive cognitive style (p < 0.05). This indicates that a higher focus on sunk costs is associated with a lower level of intuitive cognitive style.
- The interaction between experience and considering alternatives has a significant negative effect on intuitive cognitive style (p < 0.05). This suggests that more experience combined with considering more alternatives might reduce reliance on intuitive cognitive style.

This model highlights the complexity of the factors that influence intuitive cognitive styles and suggests that experience plays a prominent role and has a positive effect on intuitive cognitive style, well supporting Hypothesis 2.

**4.3. Hypothesis 3 and 4 on considering biases and debiasing**

The main results of the path analysis are shown in Fig. 3. The model has a significant χ2-square test statistic, indicating a good fit (see details of the test statistics in Table 4).

The regression paths show:

- The variable considering biases (index) significantly predicts considering debiasing (index); the effect is positive. This suggests that an increase in considering biases is associated with an increase in debiasing efforts.
- Analytical cognitive style is not a significant predictor of considering biases. This indicates that while there may be a positive association, the evidence is not strong enough to conclude that higher analytical cognitive style leads to more engagement in considering biases.

**Table 3**

Output from modeling “intuitive cognitive style” of strategy consultants excluding position.

	**Estimate	Std. Error	t value	Pr(> t )	
(Intercept)	25.157	2.720	9.250	0.000	***
Experience	0.745	0.351	2.121	0.036	*
Company Size	-0.264	0.150	-1.759	0.081	+
Groupthink	0.904	0.502	1.800	0.074	+
Confirmation	0.754	0.490	1.538	0.127	
Sunk Costs	-0.817	0.380	-2.149	0.034	*
Experience:Alternatives	-0.153	0.073	-2.095	0.038	*

R2 = 0.16 | p-value: 0.001948.

- + p < 0.1.
- \* p < 0.05.
- \*\* p < 0.01.
- \*\*\* p < 0.001.

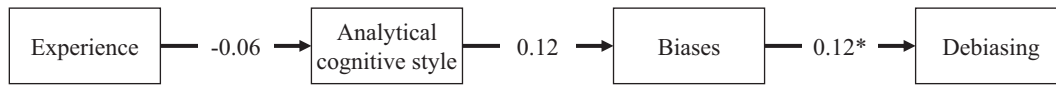


Fig. 3. Visualization of the path analysis showing how biases and analytical cognitive style, influenced by experience, contribute to debiasing.

Table 4

Structural equation model (using confirmatory factor analysis) results from the path analysis of three models glued together (debiasing ~ biases, biases ~ analytical cognitive style and analytical cognitive style ~ experience).

	Model			
	Estimate	Std. Err.	z	p
Regression Slopes				
Debiasing ~ Biases	0.12	0.04	2.87	0.004
Biases ~ Analytical Cognitive Style	0.12	0.08	1.47	0.142
Analytical Cognitive Style ~ Experience	-0.06	0.04	-1.62	0.106
Residual Variances				
Debiasing	2.74	0.35	7.91	0.000
Biases	11.61	1.47	7.91	0.000
Analytical Cognitive Style	14.07	1.78	7.91	0.000
Experience	80.83 <sup>+</sup>			
Fit Indices				
$\chi^2(df)$	14.86			0.002
	(3)			

- Experience has a negative, but not significant, effect on analytical cognitive style. This suggests that more experience may be associated with lower analytical cognitive style – however, the evidence is not strong enough to make a sound conclusion.
- The significant residual variance of each variable indicates that the unexplained variability is reliably different from zero, suggesting substantial unexplained variability in the model.

The model shows a significant positive relationship between considering biases and debiasing efforts. This implies that as the intensity of considering biases increases, efforts to debiasing also increase, which is a theoretically plausible finding – and by that supports Hypotheses 3 and 4. However, the relationships between analytical cognitive style and biases, and between experience and analytical cognitive style, are not statistically significant. This suggests that the data do not provide strong evidence to support these pathways in the model. Therefore, conclusions about these relationships are vague and should be interpreted with caution. Results of the robustness tests in Section 4.4 underline these findings.

4.4. Non-parametric and multivariate analyses deepening the hypotheses in exploratory manner

Robustness tests are crucial in our empirical research on strategy consultants to ensure reliability and stability of our findings. By employing random forest variable importance, PCA, and exploratory analysis, we can confirm that our results are not artifacts of specific methodologies or assumptions but hold true across various analytical approaches. This comprehensive validation strengthens the credibility and generalizability of our conclusions. While the previous parametric models can be used for interpretation of the effects, it is also of interest which variables are most important in a non-parametric, non-linear setting. The objective is to identify the primary influences on analytical and intuitive cognitive style.

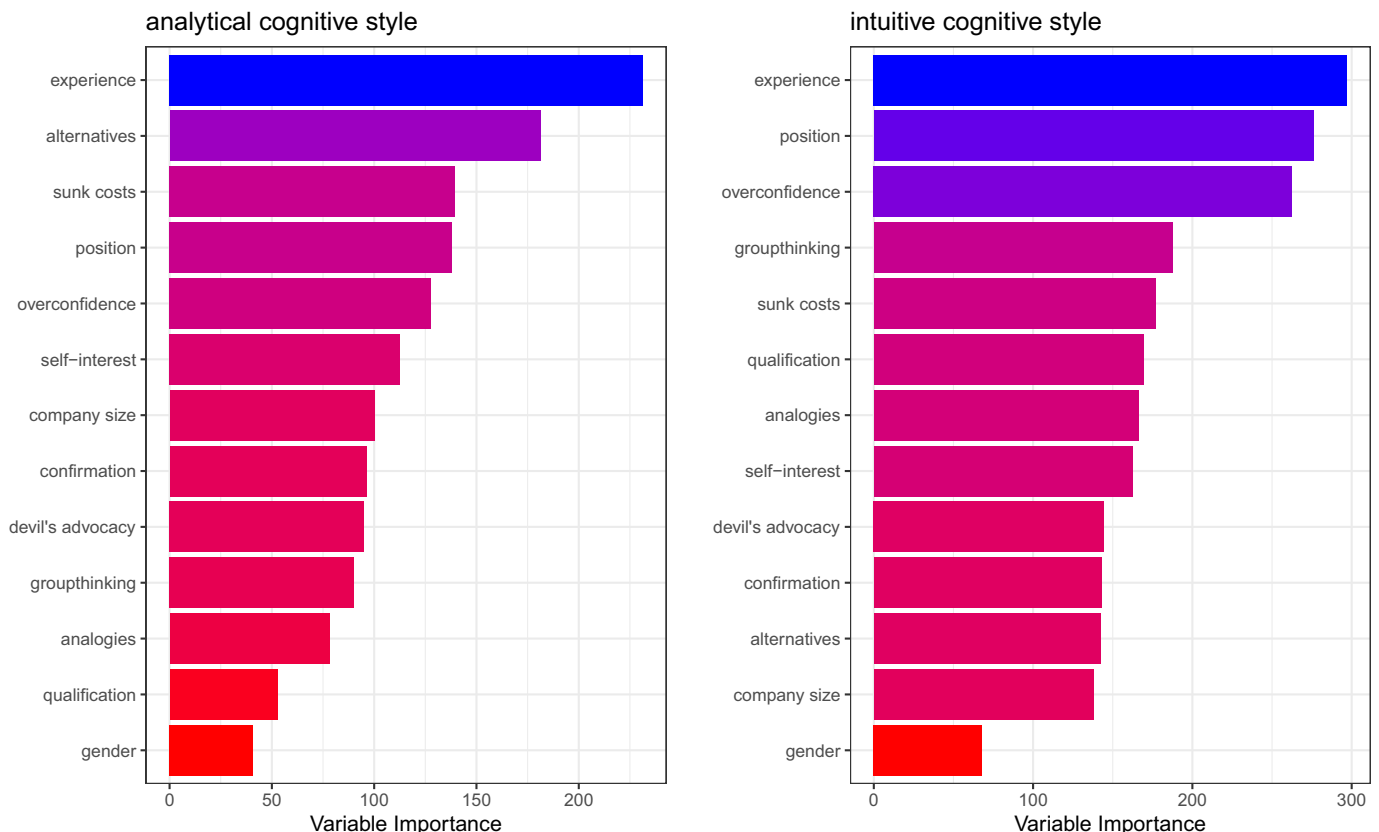


Fig. 4. Random forest variable importance for dependent variable analytical (left) and intuitive thinking (right).

4.4.1. Random forest variable importance

Fig. 4 shows the outcome of a random forest for variable importance on analytical (left graphics) and intuitive cognitive style (right graphics). The most important variable to explain analytical cognitive style is experience, followed by considering alternatives, sunk costs, position, overconfidence and self-interest. The least important variables are gender and qualification to understand analytical cognitive styles of strategy consultants. For intuitive cognitive style, the most important variables are experience, followed by position and considering overconfidence. This result shows the very strong relationship between intuitive cognitive style and experience of a strategy consultant, again underlying Hypothesis 2.

4.4.2. Principal component analysis

Fig. 5 shows the results of the multivariate relationship between the selected variables. The explained variances for the first two principal components of all three results are 0.43, 0.37, and 0.38. Since the explained variances of the first two components are not very high, it is also of interest to analyze several of the remaining components. Although this additional analysis was conducted, it was not included in the manuscript to adhere to page limits. Positions of strategy consultants are labeled with values from 1 to 7.

In all three graphics in Fig. 5, one can see that analytical and intuitive cognitive styles have opposite roles. For the upper left figure, one can see a strong negative loading for analytical and positive loading for intuitive cognitive style suggesting that these are inversely related. The second principal component is basically characterized by positive loadings values on considering biases and debiasing. Interesting to see is also the strong correlation between intuitive cognitive style and experience.

Additionally, strategy consultants in higher positions tend to align more with intuitive thinking, indicating they are associated with a more intuitive cognitive style compared to their counterparts in lower positions. These results indicate that experience is a main driving factor, and that strategy consultants in higher positions generally have more experience, and their cognition is characterized by intuition. This highly supports Hypothesis 2. Interestingly, women tend to rather have low values for considering biases and debiasing indicators.

The multivariate relationships of analytical cognitive style, consideration of biases, and experience are shown in the upper right of Fig. 5. The resulting components capture different explanations of considering biases, reflecting how strategy consultants balance various biases and influences in their professional work. The first two principal components in this PCA on considering biases show distinct patterns. The first component is associated with negative loadings on considering overconfidence, sunk costs, and confirmation, but also to analytical cognitive style – this component might represent a tendency towards conservative reasoning, resisting overconfidence and avoiding the sunk cost fallacy. It indicates a tendency to steer clear of excessively risky or emotionally driven work, and instead rely on consulting products driven by analysis. The second principal component shows a strong negative loading on company size and positive loadings on groupthink and intuitive cognitive style. This indicates that intuitive cognitive style is connected to considering groupthink. Again, strategy consultants in higher positions are associated with high values on considering groupthink, experience, and intuitive cognitive style. Intuitive cognitive style and experience are very strongly connected, and thus positively correlated. Again, Hypothesis 2 is strongly supported by these findings.

The PCA results for strategy consultants in considering debiasing

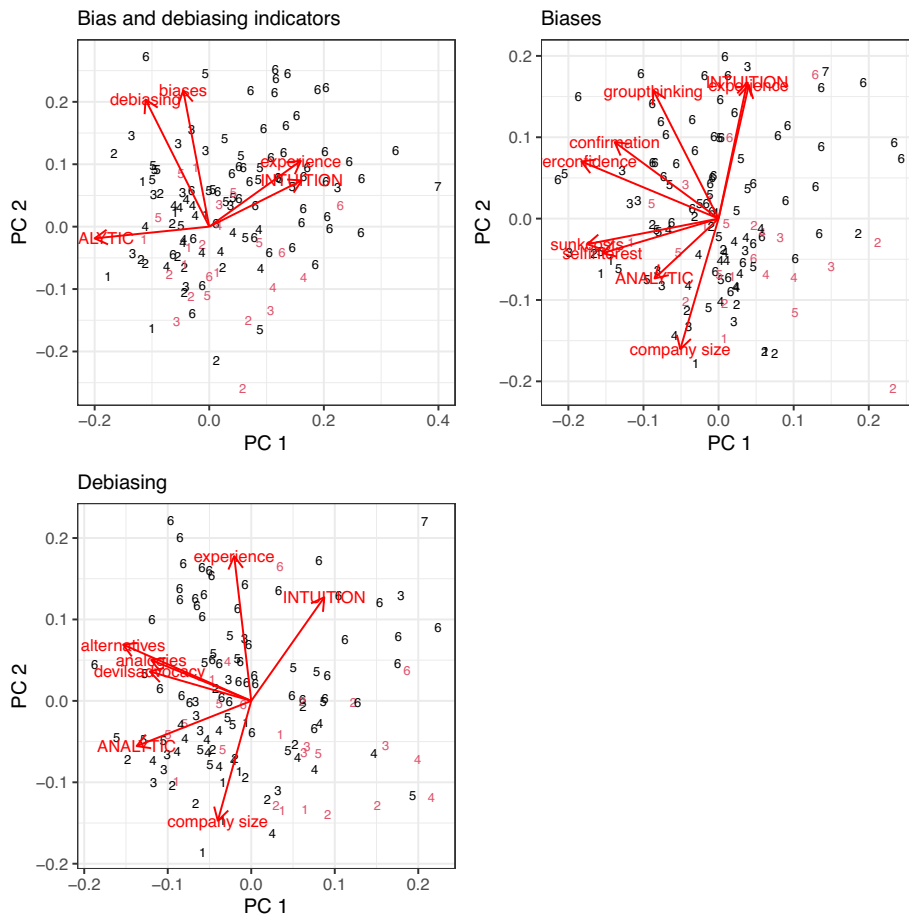


Fig. 5. The biplots display the first two principal components, utilizing various variables. The scores are represented numerically based on the strategy consultants' position. The scores are distinguished by color, with black indicating men and red indicating women.

(Fig. 5, lower left) reveal the following. The first component is characterized with negative loadings on analytical cognitive style, considering devil's advocacy, alternatives, and analogies; the latter three are positively correlated. Especially for higher values on experience it suggests a strong tendency away from analytical towards more intuitive cognitive styles. Analytical cognitive style has similar negative loadings in the first principal component to analogies, alternatives and devil's advocacy. This means that if a strategy consultant applies one of the debiasing approaches she or he probably will use the other two as well. If a strategy consultant doesn't take into account one debiasing measure, she or he will probably not consider the other two as well. Strategy consultants with high positions tend to have high experience and high intuitive cognitive style. The second principal component shows negative loadings for company size and positive loadings for experience, underlying the speculative statements in the interpretation of Fig. 5 that strategy consultants working in large companies apply a less intuitive cognitive style respectively a more analytical cognitive style. Again, mainly experience and intuitive cognitive style relate to higher positions of strategy consultants.

## 5. Discussion

In the following, the above results are discussed in relation to the existing literature and the derived four hypotheses (see Section 2).

### 5.1. Analytical cognitive style

As mentioned in the introduction and in the development of Hypothesis 1, existing literature suggests that strategy consultants exhibit a distinct analytical cognitive style (see references in Section 2.2).

Results from our study support this assumption, which show that consultants who provide consulting services in the field of strategic management can be characterized by a pronounced analytic cognitive style. This conclusion is robust as it can be drawn even when considering control variables such as experience, position, company size and qualification in a multiple modeling setting.

Our findings align with the larger body of knowledge in organizational behavior, strategic management and cognitive science, which emphasizes the importance of analytical cognition in complex problem solving and strategic decision-making characterized by systematic processing of information and evidence-based reasoning (Cabantous & Gond, 2011; Calabretta et al., 2017; Laureiro-Martinez & Brusoni, 2018; Luoma & Martela, 2021; Wheelen et al., 2018).

Interestingly, our study reveals that the position of a strategy consultant is negatively related to analytical cognitive style. This suggests that higher-ranking strategy consultants – in addition to analytical thinking – may rely on intuition based on accumulated experience. This phenomenon is supported by existing management literature, which indicates that as individuals ascend to higher positions, they often depend more on heuristics and intuitive approaches rather than analytical procedures, i.e., due to time constraints and the need for rapid decision-making (Burke & Miller, 1999; Matzler et al., 2014a, 2014b).

### 5.2. Intuitive cognitive style and experience

Our results show that experience is a key driver to understand intuitive cognitive style and by that supports Hypothesis 2. The more experienced a strategy consultant, the more pronounced is the intuitive cognitive style. This is shown – as all results – in a multiple and multivariate setting considering several potential effects on intuition. This is in line with some literature, e.g., Akinci and Sadler-Smith (2013); Baldacchino et al. (2023); Hodgkinson et al. (2009); Klein (2015); Miller and Ireland (2005); Sadler-Smith and Shefy (2004).

Further, as shown in Section 4.2, our results reveal an inverse connection between company size and intuitive cognitive style, as well as considering sunk costs and intuitive cognitive style. This finding

suggests that consultants in smaller firms may rely more on intuitive cognition, possibly due to less formalized processes and closer client engagement. In contrast, larger consultancies may foster more analytical thinking through standardized procedures and hierarchical structures. Although speculative, this interpretation is supported by the patterns observed in Fig. 5 and Table 3, and it aligns with existing organizational theory. That said, the literature does not provide a uniform picture of the relationship between company size and strategic decision-making processes (Elbanna et al., 2020), and further research is needed to understand how company size shapes cognitive tendencies in consultancy work. Our results from a multivariate analysis definitively show the strong positive dependency between experience and intuitive cognitive style of strategy consultants. We also want to highlight the contrast between intuitive and analytical cognitive styles which resonates with the understanding that strategy consultants often involve balancing data-driven analysis with intuitive judgment. However, the role of experience in influencing this balance may be more pronounced than traditionally expected, indicating that more experienced strategy consultants might lean more towards intuition than analytics. The multivariate analyses give a clear picture about it by revealing experience as the most important factor to explain intuitive cognitive style. In addition, our statistical model shows the positive significant effect of experience on intuition.

### 5.3. Considering biases and debiasing

Section 4.3 has shown that we can broadly concur with Hypotheses 3 and 4 regarding strategy consultants and considering biases respectively debiasing. As shown in this section, our data indicate that strategy consultants with a higher analytical cognitive style engage more in considering biases. In specific, our analyses have shown that greater consideration of sunk costs is positively related to analytical cognitive style. For strategy consultants, our results in Section 4.3 have shown that the recognition and proper consideration of sunk costs is crucial because it prevents escalation of commitment to failing projects. This supports the notion that deliberate contemplation on past investments involves analytical rigor thinking. These findings are consistent with literature that emphasize the role of reflective judgment in high-stakes strategic decision-making contexts (Garbuio et al., 2010; Kahneman et al., 2011).

Additionally, considering biases is positively associated with debiasing efforts. Our results described in Section 4.3 suggest that as the intensity of considering biases increases, efforts to debiasing also increase. This is a theoretically plausible finding and this significant relationship aligns with the understanding that recognizing biases is key to mitigating them, a principle widely accepted in managerial psychology (Bazerman & Moore, 2012; Kahneman et al., 2011; Larrick, 2004). However, this connection – to the best of our knowledge – has not been empirically demonstrated in quantitative manner so far in strategy consulting.

Results from the PCA (see Section 4.4) reveal a strong connection between intuitive cognitive style and the consideration of groupthink. This may initially seem unexpected, as groupthink is often viewed as a failure of critical (i.e., analytical) thinking. However, groupthink is a social phenomenon, and recognizing it likely requires sensitivity to group dynamics, emotional cues, and informal norms—facets better captured by intuitive processing. This aligns with findings from social cognitive neuroscience, which associates intuitive (“reflexive”) processes with social and sensory awareness, in contrast to the abstract, linguistic nature of analytical (“reflective”) cognition (Hodgkinson & Sadler-Smith, 2018; Lieberman, 2007; Satpute & Lieberman, 2006). Thus, the observed connection appears theoretically grounded.

Our examination indicates that increased consideration of alternatives is connected to analytical cognitive style (see Table 2 and interpretation in Section 4.1). This supports the idea that intentional reflection on various scenarios and strategic options strengthens

analytical precision – and vice versa. These results align with strategic management literature on predictive strategy process models which follow a rational based step-by-step procedure (e.g., Mintzberg et al., 1976; Nutt, 1984; Wheelen et al., 2018; Whittington et al., 2023) as well as decision-making literature (e.g., Bazerman & Moore, 2012).

Our results also suggest that considering alternatives, analogies and devil's advocacy are strongly connected, as shown in Fig. 5 and discussed in Section 4.4. If a strategy consultant doesn't take into account one debiasing measure, she or he will probably not consider the other two as well. All three techniques encourage cognitive diversity by bringing different perspectives and considerations into the decision-making process. This diversity helps counteract groupthink and other decision-making pitfalls. They all foster a culture of critical thinking and thorough evaluation and by that mitigate different biases. By systematically considering alternatives, drawing on analogies and challenging assumptions, strategy consultants are better equipped to identify the best approaches and avoid potential pitfalls.

Interestingly, the relationship between considering alternatives and analytical cognitive style appears to be ambiguous in our analyses. While Model 1 suggests a weak positive association and thus supports the theory (see Section 2.2, this effect disappears when interaction terms (e.g., with experience) are included. Likewise, the PCA results do not show a strong multivariate correlation between considering alternatives and the analytical dimension. This suggests that the act of considering alternatives may not be exclusively linked to one specific cognitive style. Rather, it might depend on situational factors such as experience or organizational context. We therefore refrain from drawing strong conclusions and recommend further investigation into the cognitive underpinnings of such debiasing approaches.

#### 5.4. Additional findings

The position of a strategy consultant is positively related to experience and intuitive cognitive style (see Fig. 5 and interpretation in Section 4.4). Note that in a multiple regression model including experience, cognitive styles, gender, and company size, education was not a statistically significant predictor of position, while experience emerged as the dominant factor. These regression results are not reported in detail here, as they are not central to the main focus of this study.

These findings – the relationship to professional experience and intuitive cognitive style – suggest that professional experience is a more robust predictor of hierarchical position than formal education in our sample. The literature supports the idea that as individuals ascend in organizational hierarchy, there is a shift towards intuitive decision-making processes, emphasizing the adaptive use of heuristics and reliance on intuition for efficient decision-making. From our study it can be concluded that mainly strategy consultants in higher positions work intuitively, and they generally also have high experience, whereas most strategy consultants in lower position and with low experience rely on an analytical cognitive style. The importance of position suggests that higher-ranking consultants may have more confidence or leeway to make intuition-based decisions, and they significantly apply a less analytical cognitive style.

Interestingly, our statistical analyses didn't reveal any meaning of qualification. It was not an important variable, and no significant effect was detected in any statistical model. The models were determined by other variables and interactions that played a much larger role than educational status. This observation leads us to the conclusion that analytical and intuitive thinking styles of strategy consultants are related to other factors than qualification.

## 6. Conclusion

Strategy consultants are seen as influential actors in strategy processes. However, research taking a cognitive perspective as well as quantitative studies are scarce. Our research aims to advance knowledge

in the field of strategy consulting by conducting a quantitative survey. Data from our study show that strategy consultants exhibit distinctive analytical cognitive styles. Furthermore, our analyses reveal a negative relationship between analytical cognitive style and position as well as experience. This leads us to the conclusion that higher-ranking strategy consultants – in addition to analytical thinking – rely on intuitive cognition based on accumulated experience rather than strict analytical processes. Also, we find evidence for the assumed connection between considering biases and applying debiasing measures.

As with most quantitative surveys, some limitations should be taken into account. Although participants were assured that responses would be treated anonymously, it cannot be ruled out that some answers are distorted by the effect of social desirability.

Our data are based on self-reports; therefore, participants' responses may not fully reflect their actual thoughts and behavior.

We conducted a multiple set of statistical procedures (non-parametric and multivariate analyses) to test robustness of our results and data interpretation.

Furthermore, the sample size of 125 evaluated questionnaires is relatively modest, which limits the generalizability of the findings. While the results provide informative insights into cognitive styles among strategy consultants in Germany and Switzerland, they should be interpreted with caution both within this population and when extending them to other national or professional contexts.

Nevertheless, several statistically significant results can be highlighted. Based on the inventory of analytics and intuition according to (Betsch, 2004) used here, it would be interesting to examine the extent to which similarities or differences to strategy consultants can be seen in other consulting areas. It can be hypothesized that HR consultants have lower scores within the analytical cognitive styles than strategy consultants. Likewise, it can be assumed that IT consultants have similarly high values as strategy consultants in the analytical but less in the intuitive cognitive style measure. It would also be interesting to examine whether the cognitive styles of consultants with a conceptual consulting focus differ from those with an implementation focus. One can speculate that consultants who develop an analytical basis and synthesis for clients differ from those who provide services in the context of implementing the agreed measures. Overall, extending the study to include various consulting fields and processes could help advance management consulting research by incorporating the cognitive perspective, which has been largely neglected so far.

An additional limitation of our study is its cross-sectional design. Since the data were collected at a single point in time, we are unable to make strong claims about relationships or changes in cognitive styles and decision-making approaches over time.

Another limitation of our study is the non-random sampling approach and the limited access to all consulting firms, a challenge previously noted in the literature (Ambos & Schlegelmilch, 2009). While our sample includes a range of company sizes and types, the variation in organizational context may influence how consultants apply cognitive approaches and biases. These potential effects should be considered when interpreting the findings. While our job title classification follows standard consulting hierarchies, differences between firms may lead to overlapping roles across levels, e.g., senior consultants may have different responsibilities depending on the company size or country.

#### CRediT authorship contribution statement

**Matthias Templ:** Writing – original draft, Visualization, Validation, Software, Methodology, Investigation, Formal analysis, Conceptualization. **Michael Stadler:** Writing – review & editing, Validation, Resources, Investigation, Data curation, Conceptualization.

## Declaration of Generative AI and AI-assisted technologies in the writing process

During the preparation of this work, the author(s) used ChatGPT 4o and Grammarly solely to improve the English language. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the published article.

## Declaration of competing interest

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.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.actpsy.2026.106251>.

## Data availability

The data that has been used is confidential.

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