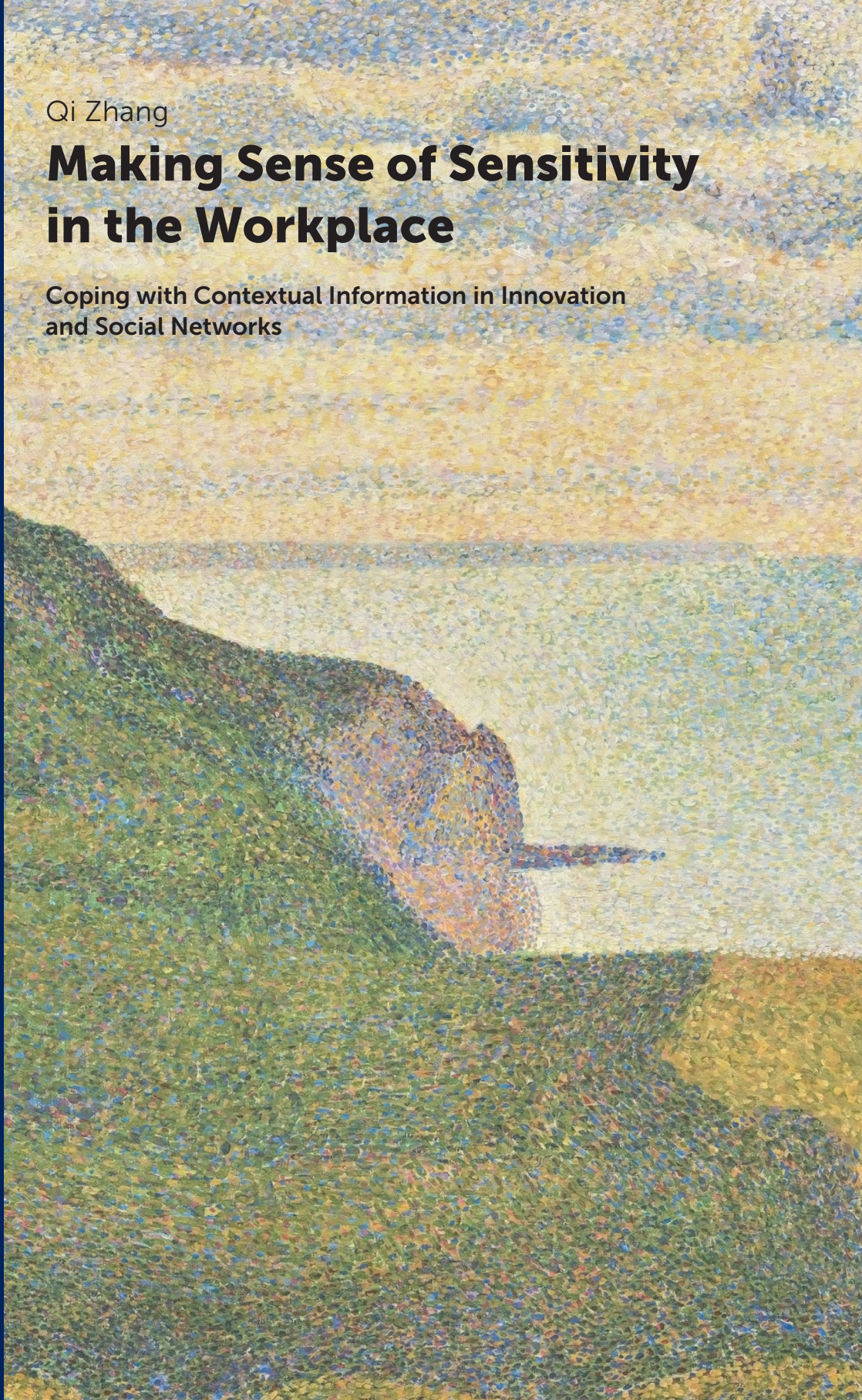
Qi Zhang

Making Sense of Sensitivity in the Workplace

Coping with Contextual Information in Innovation and Social Networks



Making sense of sensitivity in the workplace:

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Making sense of sensitivity in the workplace: Coping with contextual information in innovation and social networks

Gevoeligheid op de werkvloer begrijpen: Omgaan met contextuele informatie in innovatie en sociale netwerken

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CHAPTER 1

Introduction

"We must never forget that the world is, in the first place, a subjective phenomenon. The impressions we receive from these accidental happenings are also our own doing. It is not true that the impressions are forced on us unconditionally; our predisposition conditions the impression."

_ *Jung, 1913,* The Theory of Psychoanalysis, *para.400*

In modern knowledge-intensive industries, individuals cope with increasingly complex work demands. To achieve high performance and advance in their career, individuals need to not only efficiently make decisions and finish tasks, but also effectively build and utilize their social capital. This requires individuals to make sense of different types of information at work. In particular, organizational information – including task-related information, social information, and contextual information, can be complex, uncertain, and diverse, as it is often presented in an ambiguous way. This may challenge individuals' capability to process different types of information at work.

According to sensemaking theory (Maitlis, 2005; Weick, 1995), individuals draw on contextual cues to actively interpret information and make sense of their organizational environment. Such an understanding allows individuals to act based on the anticipation of their behavioral consequences (Liu et al., 2015) and establish a sense of stability and predictability (Schwandt, 2005) when confronted with otherwise obscure organizational situations. The

process of extracting cues from the environment and interpreting the registered information thus informs individual decisions and behaviors at work.

However, the process of perceiving and evaluating contextual cues can be idiosyncratic, constrained by an individual's cognitive orientation. For instance, recent research has examined the impact of individual information processing on investment decisions (Mount et al., 2021). Mount and colleagues demonstrated that the construal level (abstract versus concrete) on which managers process information and their prior experience with related ideas shape their perception of novel ideas and their propensity to invest in them. Moreover, information processing orientation can be shaped by the neurobiological function of the human brain. In other words, people can be prewired to process information in a specific way.

Critically, people differ in their innate responsiveness to their contexts (Belsky, 1997; Pluess & Belsky, 2013). Specifically, the trait *sensory processing sensitivity* delineates an innate orientation to pick up subtle contextual cues and process them in depth in their everyday information processing (Aron & Aron, 1997; Greven et al., 2019). This trait thus decides the amount and type of information an individual automatically attends to in a given situation. The higher the sensitivity, the more likely the individual will register richer, larger amounts of, and potentially more specific types of, information (e.g., social and subjective cues) in a complex work scenario. This fundamental innate individual difference in information perceiving and processing creates varying subjective experiences of the same event. For instance, people of higher

sensitivity report experiencing stronger emotional reactions, sensing others' moods and perspectives, and "perceiving the world in 'high definition'" (Bas et al., 2021: 4912). The subsequent sensemaking and interpretation of the work scenario based on these specific subjective experiences may further shape their decision making and behavior.

In particular, prior research shows that subjectivity in processing and making sense of available information critically influences innovation, especially, the evaluation of creative ideas (see Zhou et al., 2019 for a review). Moreover, research on social networks also demonstrates that the way the brain manages social information has an impact on how people form, maintain and exploit their social networks (see Smith et al., 2020 for a review). Therefore, an individual difference in how people process these different types of cues may eventually influence how people make decisions regarding creative ideas and how they manage social networks. Studying the impact of this differential responsiveness to various types of contextual information, including novel cues (Smolewska et al., 2006), emotional stimuli (Acevedo et al., 2014), and social cues (Bas et al., 2021), may allow us to understand how people make complex decisions and manage social relationships under the constraints of their innate neurobiological disposition and embedded specific situations or circumstances.

Jung stated in his Theory of Psychoanalysis that *"a certain innate sensitivity produces (…) a special way of experiencing (…) events, which in their turn are not without influence on the development of the (…) view of the world."* In this dissertation, I examine how sensory processing sensitivity

influences peoples' information processing at work and change their key work outcomes regarding creative decisions and social networks.

In this section, I will present the concept, conceptual distinctiveness, and influence of sensory processing sensitivity, discuss its connection to creativity and social network literature respectively, and offer an overview of the two empirical papers that constitute this dissertation.

Concept of sensory processing sensitivity

In the past few decades, scholars from a few subfields of psychology have developed different frameworks to characterize the individual difference in how people respond to contextual influences. In clinical and developmental psychology, researchers have proposed the concepts of *diathesis stress* (Ellis et al., 2011), which presents individual predispositions (e.g., emotional reactivity) as risk factors for suffering from environmental adversities, and *vantage sensitivity* (Pluess & Belsky, 2013), which stresses heightened individual responsiveness to positive experiences. These models are integrated in the framework of *differential susceptibility* (Belsky, 1997; Belsky & Pluess, 2009), which makes some individuals more sensitive to both positive and negative influences of the environment. From this perspective, sensitivity captures an individual endogenous plasticity to the effect of environmental or situational influence (Pluess & Belsky, 2013; Greven et al., 2019). In the meantime, scholars recognize the physiological basis (e.g., cortisol production, immune reactivity) of such individual differences in reactivity to environmental stimuli (Boyce & Ellis, 2005). In particular, such neurobiological differences allows

some people to benefit more from supportive environments but also make them more vulnerable to the hindrance of negative environments.

In the same vein, the concept of *sensory processing sensitivity* was proposed to capture the phenotypic temperament on individual reactivity to contextual stimuli (Aron & Aron, 1997). The authors have initially drawn on extensive studies from animal literature and personality research to identify two ubiquitous responsive strategies to novel environmental stimulation in extensive species: “exploration” and “quiet vigilance”. Laboratory studies in the field of evolutionary biology on various nonhuman species (e.g., canids, goats, rhesus monkeys, Aron & Aron, 2019) evidenced the wide adoption of these two basic strategies and their respective evolutionary advantages. Those findings drove the authors to reconsider the depiction of the two strategies in personality theories, as they are merely partly captured by extant personality constructs but named in different ways (e.g., extraversion vs. introversion, Eysenck, 1957; desinhibitedness vs. inhibitedness, Gray, 1981), generating discrepancy and inconsistency in literature. To address to this unresolved tension, Aron and Aron (1997) conceptualized *sensory processing sensitivity* to set this innate responsive strategy apart as an independent trait and explore new possibilities of explaining some puzzling phenomenon.

A genetically determined neurobiological trait, sensory processing sensitivity has been defined as an innate sensitivity to environmental stimuli (Aron & Aron, 1997). It captures a biological responsiveness to contexts, which makes people automatically attentive to even subtle environmental cues and

emotionally reactive to them (Aron et al., 2012). It should be noted that sensory processing sensitivity does not capture the activation or arousal in the sensation system in responding to sensory stimuli, but rather how the brain handles information (Greven et al., 2019). The environmental cues in this theory can refer to any salient internal or external stimuli perceived from and construing the physical environments (e.g., caffeine intake), social environments (e.g., other's mood), sensory environments (e.g., visual, tactile), and internal events (e.g., thoughts, bodily sensations such as pain, hunger) that people are situated in (Greven et al., 2019). Individuals that score higher on this phenotypic trait naturally manifest broader intake and deeper processing of various environmental information, experience stronger emotional reactivity and are more easily subjected to overstimulation (Aron et al., 2012). In short, they instinctively pay closer attention to and are more strongly impacted by even subtle changes in environment.

Based on the theoretical framework of sensory processing sensitivity, Aron and Aron (1997) developed the psychometric measure of this concept, the Highly Sensitive Person (HSP) Scale. The 27-item scale has been validated in multiple studies, translated to different languages (e.g., German, Dutch, Japanese, Turkish, Greven et al., 2019), and applied in most research and clinical practices on sensory processing sensitivity. Research using this scale shows that HSP scores tend to be normally distributed in the population (Lionetti et al., 2018).

Conceptual distinctiveness of sensory processing sensitivity

Capturing features of a "sensitive brain", sensory processing sensitivity was primarily studied in the field of neuroscience. Sensory processing sensitivity has been considered to be driven by a more sensitive central nervous system (Aron et al., 2012; Homberg et al., 2016). Great effort thus has been dedicated to unravelling the underlying neurobiological basis of this individual difference measured through the HSP scale. In studies on genotype, sensory processing sensitivity is found deeply rooted in nervous system and associated with 5-HTTLPR short-allele (Homberg et al., 2016). Hence, in contrast to social construed concepts such as Self-Monitoring (Snyder, 1074), sensory processing sensitivity is based on neural and physiological differences.

Specifically, people that are highly sensitive show substantive neurobiological specificity in cognitive tasks. In fMRI (Functional magnetic resonance imaging) studies where sensory processing sensitivity is measured through the HSP scale, highly sensitive individuals demonstrate a stronger cognitive capability, including making fine distinctions between stimuli (Jagiellowicz et al., 2011), reacting faster with fewer errors in visual detection task (Gerstenberg, 2012), perceiving information with reduced cultural difference (Hedden et al., 2008) and displaying increased neural activation to sad and happy faces of their partners (Acevedo et al., 2014). These findings provide support for characteristics defined in the theoretical framework of sensory processing sensitivity. Importantly, these cognitive features altogether attest a neural base for high-level cognitive abilities that may be critical for the successful fulfilment of complex functions at work, such as making creative

decisions (Bridges & Schendan, 2019) or maintaining interpersonal relationships (Bas et al., 2021; Tabak et al., 2022).

Overall, sensory processing sensitivity characterizes a genetic and neurobiological variability in responsiveness to environmental stimuli (Tabak et al., 2022) and differs from existing personality traits. Research found this biology-based temperament trait associated with high neuroticism (Aron & Aron, 1997), introversion (Aron & Aron, 1997), openness (Brohl et al., 2020), behavioral inhibition (Smolewska et al., 2006) as well as entrepreneurial intention (Harms et al., 2019). Yet, this construct differs from other extant personality traits as it captures a person's specific cognitive, emotional, and motivational orientations in the same concept. Recent research attests that it explains variance above and beyond the Big Five personality traits, especially in predicting interpersonal sensitivity, including empathy, social anxiety and theory of mind (Tabak et al., 2022).

Influence of sensory processing sensitivity at workplaces

So far, research on sensory processing sensitivity at the workplaces has mainly focused on the pathological side of sensory processing sensitivity, with limited attention to how this trait influences people's work outcome. Early research has extensively studied this trait as a factor of vulnerability to mental ailments at workplaces, including turnover intention, and burnout (Andresen et al., 2017; Bas et al., 2021; Vander Elst et al., 2019). Sensory processing sensitivity can predict perceived stress and ill-health (Benham, 2006). In particular, sensory processing sensitivity is associated with second-stage stress

facets: work displeasure and need for recovery (Evers & Schabracq, 2008). Highly sensitive people are also more prone to anxiety and depression than people low in sensory processing sensitivity (Hofmann, & Bitran 2007). Sensory processing sensitivity explains anxiety and depression above and beyond parental factors (Liss et al., 2005).

Recent research has started to examine how sensory processing sensitivity broadly relate to different work outcomes. People of higher sensory processing sensitivity tend to adopt a contemplative and deliberative mindset, e.g., in ethical decision-making (Stenmark & Redfearn, 2021) and take long to react to situations (Acevedo et al., 2014). Moreover, drawing on job demands-resources model, researchers found that highly sensitive individuals display more helping behavior when they receive more job resources but are also more vulnerable to emotional exhaustion when workload and emotional demands are high (Vander Elst et al., 2019). These findings indicate that sensory processing sensitivity indeed influences how people cope with basic work demands, including how they make decisions, interact with others, and perform in tasks.

However, though the uniqueness of sensory processing sensitivity mainly lies in how it predisposes individuals to perceive and process contextual information in a specific way, research has rarely examined how these predisposed processes influence key work outcomes. In particular, management research has drawn on various theories to explain how individuals draw on contextual information to inform their action. These theories vary from sensemaking theory that explains the ongoing process of giving meaning to

ambiguous, equivocal or confusing issues or events in organizational experiences to social cognition theories (Fiske & Taylor, 1984, 2013) highlighting that people draw on pre-existing knowledge to collect and interpret new information. According to these theories, an innate individual difference in registering and processing environmental stimuli may critically influence what information individuals draw from a work scenario and how they interpret and respond to it. The neurobiology-based orientation in information perception and processing can therefore shape people's subjective experiences at work and further influence related work outputs. It is therefore theoretically meaningful and practically relevant to investigate from an information processing perspective how this trait shapes key job outcomes by influencing the way people experience and interpret work situations.

Sensory processing sensitivity from an information processing perspective

In this dissertation, I take an information processing perspective of sensory processing sensitivity, focusing on how this neurobiological trait shapes the information perception and processing in critical work processes. This perspective offers a structure to anticipate and understand which work outcomes sensory processing sensitivity may influence. In particular, it allows for unraveling the cognitive processes underlying these influences, which enables new explanation of important phenomenon from different research fields in management.

Sensory processing sensitivity depicts an overall sensitivity to various types of environmental stimuli, including physical, physiological, emotional,

aesthetic, and social stimuli. It captures a specificity in how our brains are prewired to process information. Individuals engage in substantially different cognitive and emotional processes in dealing with a situation, depending on their sensory processing sensitivity. This means that individuals gather and focus on different amounts and types of contextual cues (e.g., task, emotional, social information) when they make sense of a situation. Specifically, people of higher sensitivity tend to be more responsive to novelty, rewards and other's thoughts and mood, which can be relevant to the evaluation and acceptance of creative ideas. Moreover, they are empathetic and other-oriented, but can be easily overloaded and need time to recover from social interaction, which make influence how they form and utilize social relationships. Hence, in this dissertation, I explore how sensory processing sensitivity can help address some important issues in how people make decisions on creativity and manage social networks respectively, focusing on how people attend to and make sense of complex information in these processes.

Recent research shows that subjectivity makes an important part of creative evaluation process (Zhou & Woodman, 2003; Zhou et al., 2017). Both individual personality traits (e.g., novelty-seeking, Manning et al., 1995) and induced information processing approach (e.g., construal level, Mueller et al., 2014; regulatory focus, Yeo & Park, 2006) of idea perceivers influence how they perceive and evaluate the same creative idea. Moreover, people are also influenced by social approval cues in their decisions regarding creative ideas (Mueller et al., 2018). Past studies have found in both survey and qualitative

studies that sensory processing sensitivity allows people to be open, novelty-seeking (Smolewska et al., 2006; Bas et al., 2021) and entrepreneurial (Harms et al., 2019). It also renders people attentive to social cues and others' perspective (Tabak et al., 2022). The special attention and responsiveness to novel and social cues may therefore change how people evaluate and make decisions about creative ideas.

Similarly, social network literature has examined the role of cognition in how people build and utilize social networks (Smith et al., 2020). In particular, scholars have examined the neural basis of network cognition (e.g., Dunbar et al., 1992), the encoding of social behavior in memory (Parkingson et al., 2017), and the recall of social networks (e.g., Brashears, 2013; Shea et al., 2015). Researchers also recognize that the utilization of network is situational, as different utilities may trigger different cognitive systems and influence the activation and mobilization of social networks (Smith et al., 2012). This line of research demonstrates the impact of information encoding and sensemaking in the formation and utilization of social networks. As sensory processing sensitivity conditions an innate automatic orientation that favors the processing of certain types of information (e.g., social cues, emotional cues), it may indeed shape how individuals experience and interpret social scenarios and form social relationships. In other words, sensory processing sensitivity may decide how individuals navigate the social world by changing how they perceive and mobilize social networks.

Overview of dissertation

Hence, in this dissertation, I aim to investigate the role of sensory processing sensitivity in complex creative decisions and the formation and consequence of social networks. In particular, I examine in two papers how sensory processing sensitivity influences the processing of contextual information in complex creative decisions and social networks respectively. The following section provides a brief overview of the two papers.

Sensitivity and complex decision making: creative forecasting

One challenge in innovation management is forecasting how a target audience may favor a creative idea. Prior research has explored the effectiveness of different decision making methods in creative forecasting but has neglected their potential (in)compatibility with the person who uses those methods. Taking an information processing view of creative forecasting, I develop a person-method fit model and propose that a decision making method may only yield accurate creative forecasting when it aligns with the person's inherent information processing orientation. We compare analytical with intuitive decision making methods as their underlying information processing strategies may differently serve people who vary in their innate sensitivity to contextual information. Drawing from socially situated cognition theory, I propose that individuals with higher sensitivity automatically involve more emotional, social cues in their information processing as they are more attuned to contexts. Therefore, using an analytical method may trigger deliberative and effortful processing of these various cues, complexifying information processing for highly sensitive individuals and undermining their forecasting accuracy.

However, for low sensitive individuals, an analytical method helps them systematically simplify information processing and facilitates creative forecasting. In a lab experiment, a field experiment, and a preregistered online experiment, I find support for this theory.

Sensitivity and social networks

Brokerage positions have been studied as an advantageous network structure through which individuals pursue benefits. These positions, however, are not equally beneficial to all occupants. We investigate when and why individuals occupy brokerage positions that would endanger their performance. We first identify sensory processing sensitivity as an innate trait misaligned with brokerage advantages, since it can cause people to be over-perceptive and easily overwhelmed by their social environment. We further draw on social cognition theory to propose that the highly sensitive individuals who use a communal schema to primarily notice solidarity-related cues in professional situations are more likely to occupy these misaligned brokerage positions. Evidence from two empirical studies shows that highly sensitive brokers underperform. Adopting an implicit lexical-decision measure of communal schemas, we find that low sensitive individuals tend to bridge structural holes when communal schemas are absent, whereas highly sensitive individuals only become brokers when they perceive social environments through a communal lens. The results of moderated mediation analysis indicate that the communal schema (mis)guides highly sensitive individuals to brokerage positions that undermine their task performance.

Abstract

This dissertation takes an information processing perspective of an innate neurobiological trait, sensory processing sensitivity, and examines its role in how people make complex decisions regarding creative ideas and manage social networks. In one paper, the author (s) investigate how individuals at different levels of sensitivity benefit from different decision making methods—an analytical versus intuitive one—to accurately predict how creative ideas would be received by the target audience. In the other paper, the author (s) explore how sensory processing sensitivity conditions the influence of relational schema on people's occupation of brokerage positions and the latter's subsequent impact on individual performance. We find in the two papers that sensory processing sensitivity is an innate trait that shapes the effectiveness of the adopted cognitive tools in coping with complex work demands, including creative forecasting and social network formation and utilization. The findings have important theoretical and practical implications for the fields of sensory processing sensitivity, creativity, social networks, and social cognition.

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CHAPTER 2

Too sensitive to analyze: sensory processing sensitivity and thinking processes in creative forecasting

Abstract

One challenge throughout innovation processes, especially in idea selection, is forecasting how a target audience favors a creative idea. Prior research has explored the effectiveness of decision making methods in creative forecasting, considering them as context-independent cognitive processes. Drawing on socially situated cognition theory, we propose that a decision making method only yields accurate forecasts when it aligns with a person's innate responsiveness towards contextual information, i.e., sensory processing sensitivity. We compare analytical with intuitive decision making methods as they induce different information processing strategies that differently serve people that vary in sensitivity. Although analytical methods can simplify or standardize information processing, they may trigger deliberative and effortful processing of the excessive emotional and social cues that highly sensitive individuals tend to perceive. This complexifies their information processing and undermines forecasting accuracy. In a lab experiment, a field experiment, and a preregistered online experiment, we found support for our theory.

Keywords: creative forecasting, sensory processing sensitivity, decision making methods, perspective taking, emotional activation

Introduction

Creative forecasting, or "predicting how successful the ideas will be with the intended audience," is crucial for organizations to successfully manage creativity and facilitate innovation (Berg, 2016: 458). Managers, creators, or investors can use different decision making methods when having to make their bet on the most promising creative idea. As creative forecasting can lead to spectacular success or dramatic oversights, research into creative forecasting and the right decision making method is ever more important. Think of the editors who rejected the classic Animal Farm, believing readers in the United States would not buy animal stories (Mueller et al., 2018), and Hollywood Studios who said no to Star Wars, asserting that science fiction was a dead genre (Konow, 2017). As these examples illustrate, accurate creative forecasting is important but difficult to achieve, as forecasters need to consider not only the creative idea itself but also the intended audience and future context while dealing with highly complex and uncertain information in their decision making.

Extant literature has examined the impact of organizational roles and idea stages (Berg, 2016; 2019) on forecasting accuracy of creative ideas. Particularly, their underlying information processing (e.g., divergent vs. convergent thinking, high vs. low construal level) colors the perception (Mount et al., 2021; Mueller et al., 2014; Zhou et al., 2017) and forecasts (Berg, 2019) about creative ideas. The decision making methods people use to process information on creative ideas thus shape forecasting accuracy. However, socially situated cognition theory (Smith & Semin, 2004; Semin et al., 2012) argues that

social cognition is not a stable, context-independent inner process. It rather depends on the person's interaction with the physical and social environment. The effectiveness of a decision making method is thus not universal but constrained by the physical and social cues a person perceives. Accordingly, our research seeks to understand the interaction between the adopted decision making method and people's perception of environmental cues in complex, high-risk decisions like creative forecasting, where people need to process a multitude of diverse, complex, and uncertain information (Huang, 2018).

In this paper, we focus on two decision making methods widely adopted in practice, yet understudied in creativity research: an analytical versus an intuitive decision making method. An analytical method requires people to use criteria and formal analysis in decision making (Huang & Pearce, 2015), drawing on objective, quantifiable information (Huang, 2018), rules, and structured evidence (Sloman, 1996). Yet, it may cause "analysis paralysis" (Huang, 2018) as people's working memory has limited processing capacity (Gigerenzer, 2007; Wilson, 2002). When applying an intuitive method, people think unconsciously, reconciling a multitude of considerations (Hisrich & Jankowicz, 1990) to form holistic impressions (Dijskerhuis, 2004) and affective associations (Dane & Pratt, 2007). This method allows people to process and integrate a larger number of subjective cues but hinders the processing of quantitative information (Dijskerhuis & Strick, 2016). The two methods thus reflect different information processing strategies and differ in the type and

amount of information that one can effectively process.

We further draw on socially situated cognition theory to identify sensory processing sensitivity as the innate trait critical to our research. Socially situated cognition theory highlights that human's decisions are informed and influenced not only by information on the task but also by their bodily state and the social environment of which they are part of, underscoring the importance of sensory and social cues that people perceive. In particular, the success of a decision task may critically depend on the interaction between decision making methods and the brain architecture (Smith & Semin, 2004). Hence, sensory processing sensitivity (Aron & Aron, 1997; Greven et al., 2019), a neurobiological awareness of the context, may shape the effectiveness of analytical versus intuitive decision making methods in creative forecasting.

Sensory processing sensitivity depicts the fundamental feature of a "sensitive brain" (Acevedo et al., 2014)—i.e., the extent to which our mind is automatically responsive to context information, including sensory, emotional, and social cues. A decision making method may only yield accurate creative forecasts when the mind "allows" a person to process the perceived information effectively using a given method. In practice, an analytical method is usually adopted to structure, simplify, or standardize information processing (Birney et al., 2016). Individuals of higher sensitivity may, however, benefit less from this method as they tend to perceive and cope with more emotional and social cues. The processing of these contextual cues will be deliberative and effortful for highly sensitive individuals when they use an analytical rather than intuitive

method to forecast. They may gauge and compare their feelings towards different creative ideas and draw on social cues to imagine the view of the target audience. Altogether, this can activate strong emotions and trigger perspective taking (Parker & Axtell, 2001), which may complexify information processing and hamper forecasting accuracy.

We designed three different experiments covering a range of organizational practices to test these ideas: a laboratory experiment, a field experiment, and a preregistered online experiment. We exmined creative forecasting in two ways. Forecasters were either asked to predict whether an idea would win an award (placement accuracy) or estimate their potential market success (evaluation accuracy). We also manipulated analytical method differently, asking participants to analyze using provided criteria or self-generated criteria. The results vary according to the design of the specific experiment but yield a clear interaction pattern across studies. Overall, highly sensitive people compared to less sensitive people forecast less accurately when using an analytical method than when using an intuitive method. Their poor performance can be explained by their stronger emotional activation and higher degree of perspective taking in the analytical condition.

Our research makes three contributions to research and theory. First, we advance research on creative forecasting. We draw on socially situated cognition theory to propose that the methods adopted to engage in creative forecasting interact with the person's innate responsiveness to contextual information. Research in this area has generally emphasized how different roles,

methods, or personalities (Zhou et al., 2019) influence creative evaluation or forecasting. We offer a person-method fit model that examines the compatibility between decision making methods and the person who adopts the method. Though decision makers are generally driven by their role to think of creativity in an analytical and rational way (Berg, 2016; Dane, 2010; Mueller et al., 2018), there is no single best method or person for creative forecasting. Instead, people need to adopt a method that fits their inherent information processing orientation regarding contextual cues.

Second, we show that individuals differ in the extent to which their mind innately stays aware of contextual information, including embodied emotions and social cues. Their sensory processing sensitivity changes the amount and type of information that they need to cope with in complex decision tasks such as creative forecasting, requiring them to use a decision making method that allow them to process information effectively. We thus contribute to the theory of sensory processing sensitivity by identifying the decision making method that enables people to use their sensitivity constructively at work. This finding is critical as highly sensitive individuals tend to 'pause and check' and 'overanalyze' (Aron & Aron, 1997; Bas et al., 2021; Stenmark & Redfearn, 2021).

Third, we identify and examine the emotional and cognitive pathways through which decision making methods and sensory processing sensitivity interact to influence creative forecasting. We demonstrate that emotional activation and perspective taking are triggered for highly sensitive individuals in

the analytical condition, increasing the complexity of information processing and hindering prediction accuracy. Our findings add to recent work on emotional attachment (Lazar et al., 2022) to creative ideas, subjectivity (Zhou et al., 2019) in creative evaluation and perspective taking (Grant & Berry, 2011) by focusing on the costs and biasing effects of such emotional and cognitive inference processes in creative forecasting. In particular, we provide evidence for the negative effect of perspective taking on complex decisions, as it may cause confusion when one needs to integrate different perspectives (Parker et al., 2008).

Theory Development

Decision Making Methods for Creative Forecasting

Creativity needs to be evaluated and forecasted throughout the creative process to ensure that organizational resources and opportunities are allocated to the most promising ideas (Berg, 2016). The great challenge in creative forecasting is to navigate through the vast amount of incomplete and uncertain information about a creative idea, its audience, and the competitive context to predict an idea's success chances. In practice, two decision making methods are often involved in predicting creativity: an *analytical method* where people rely on reasoning, rule-, and evidence-based analyses, and an *intuitive method* where people form affective, holistic, and associative judgments (Dane & Pratt, 2007; Huang, 2018). These methods, we argue, each describe unique ways to process information about creative ideas.

Using an analytical method, people's attention usually focuses on

objective, quantifiable cues and "hard" data, such as business viability data, which allows for numerical analysis and cognitive deliberation (Huang & Pearce, 2015). When applying an analytical method, people often disassemble ideas into different components (Dziallas, 2020; Sukhov et al., 2021) or characterize ideas with just a few attributes (Dijksterhuis, 2004). Furthermore, people weigh retained information according to usually precomposed, formal criteria. These evaluative criteria can be self-generated (Hammedi et al., 2011) or specified by an organization to standardize the idea evaluation process (Zhou et al., 2019). Analytical methods appear more controlled, credible, and less uncertain because people can use rational reasoning (Evans, 2008) to analyze the details and existing evidence about an idea when making a creative forecast. Overall, analytical methods offer a structured simplification of complex and extensive data to cope with abundant information. However, when applying an analytical method, people might also experience an analysis paralysis (Huang, 2018), a state of information overload or over-analysis that paralyze people in their decision making. Particularly, deliberative and normative analysis may hinder decision making when the information being processed exceeds the capacity of working memory (Gigerenzer, 2007; Dijksterhuis, 2004). Indeed, an analytical treatment of creative ideas inhibits effective creative forecasting when more information becomes available (Byrne et al., 2010). In addition, extensive deliberation suppresses subjective experiences of creativity or novelty (Calic et al., 2020) and may lead to risk aversion (Zhu et al., 2017).

When using an intuitive method, people unconsciously process and

reorganize large amounts of information (Dijksterhuis, 2004; Wilson, 2002). They form affectively charged and integrated impressions and make inferences based on holistic associations (Dane & Pratt, 2007; Dijksterhuis, 2004). Such an intuitive method relies on an associative system (Sloman, 1996) and weaves together "trains of images suggested by one another" (James, 1950, p. 325) rather than strictly following causal and logical rules. It thus allows people to evaluate creative ideas holistically and register associations and connections (such as visual, metaphorical, or analogical) among them (Epstein, 2014). Hence, the intuitive method enables a better reorganization, integration, and interpretation of large amounts of diverse information (Dijksterhuis & Nordgren, 2006; Reinhard et al., 2013), especially the non-logical ones that are possibly undervalued when people use an analytical method (Calic et al., 2020). Prior research also shows that an intuitive method improves peoples' memory of the meaning of information about an idea (e.g., its category or qualitative attributes) rather than the information per se (e.g., its exact wording or quantitative attributes, Abadie et al., 2013). This enables people to omit surface information and focus on decision-relevant attributes. Overall, this method helps people process a multitude of diverse information—especially subjective cues—about ideas (Dane & Pratt, 2007).

Analytical and intuitive decision making methods therefore structure the creative forecasting task in specific ways. However, their effect on creative forecasting may not be universal, especially from the perspective of socially

situated cognition theory.

Socially Situated Cognition Theory and Sensory Processing Sensitivity

Compared with the traditional view that sees social cognition as a stable, context-independent inner process, socially situated cognition theory suggests that a person's social cognitive processes adapt to the person's social goals, communicative context, and bodily state (Smith & Semin, 2007). It argues that social cognition is situated in, and dependent on, the person's physical and social environment, involving a bodily interaction with the environment (Clark, 1997), and social-cognitive processes such as the understanding of others (Semin, 2007). Past research has shown that sensory signals like heartbeat influence attitudes and evaluations such as liking (Valin, 1966). The perception and motor action thus change the information input for decision making and the eventual evaluative judgment (Semin et al., 2012). Altogether, this theory highlights that social cognition is embodied and constrained by the sensori-motor system and the brain, which point us to examine the role of sensory processing sensitivity in decision making tasks.

As a neurobiological temperament trait primarily studied in neuroscience, sensory processing sensitivity is characterized by high awareness of the environment, in-depth information processing, high emotional reactivity and empathy, and high likelihood of feeling overstimulated (Aron et al., 2012; Greven et al., 2019). It captures the general ability of people to register and process context stimuli (Greven et al., 2019) and is measured through the "highly sensitive person scale" (Aron & Aron, 1997). Research on sensory

processing sensitivity has widely used this scale in functional magnetic resonance imaging (fMRI) studies (Acevedo et al., 2014, 2017; Aron et al., 2010; Jagiellowicz et al., 2011) and found that the scale captures the brain activity described in the construct framework (Greven et al., 2019). Recent survey and qualitative research has also shown that sensory processing sensitivity is associated with high perceptiveness (Bas et al., 2021), empathy and relatedness to others (Tabak et al., 2022), and cognitive overload and burnout (e.g., Vander Elst et al., 2019). Sensitivity thus predicts how an individual selectively perceives, cognitively processes, and emotionally responds to external cues. Although it correlates with personality traits such as openness, neuroticism, and introversion (Aron & Aron, 1997; Smolewska et al., 2006), it is distinct from them (Pluess et al., 2017), especially in predicting empathy and social anxiety (Tabak et al., 2022). Still understudied in organizational studies, this trait may explain a vast range of organizational phenomena. For instance, highly sensitive peoples' high attentiveness to contextual cues can be relevant for the effectiveness of a particular decision making method.

Overall, highly sensitive individuals' cognition can be seen as more socially situated, as they perceive more contextual, bodily, and social cues and may incorporate these cues in their decision making. Moreover, socially situated cognition argues that an individual's "brain architecture" and the methods used to process information when unraveling problems together enable but also "constrain human cognition" (Smith & Semin, 2004: 98). An individuals' degree

of sensory processing sensitivity and the properties of analytical versus intuitive decision making methods may thus jointly decide the accuracy of creative forecasting.

Decision Making Methods, Sensory Processing Sensitivity, and Creative Forecasting

In creative forecasting, large amounts and various types of potentially relevant information about creative ideas, audiences, and contexts is involved. We theorize that the higher the forecaster scores on sensitivity, the more likely the application of an analytical method will hamper their creative forecast compared to when they apply an inituitve method.

An analytical decision making method usually helps people structure the task of creative forecasting (Birney et al., 2016). The method draws people's attention to the analysis of objective cues and allows them to simplify and standardize decision making. However, given the prewired information orientation of highly sensitive people, we suggest that the application of an analytical method might undermine their forecasting performance. In contrast to their lower sensitive counterparts, people with higher sensitivity have a natural tendency to pay attention to details of external stimuli. Therefore, they need to deliberatively analyze a larger amount of information and handle a higher cognitive load when engaging an analytical decision making method. However, the multitude of various cues that highly sensitive people perceive, including visual, bodily, and social cues, are less suited to be processed with an analytical method that is better aligned with rule-based reasoning using quantifiable cues.

For instance, deliberation of feeling-based information input could impair decision quality (Mikels et al., 2011). Moreover, processing diverse cues may exhaust highly sensitive peoples' processing capacity and create noises that possibly bias their final prediction. In addition, highly sensitive individuals are emotionally responsive and easily overwhelmed when exposed to huge amounts of information in a short period of time (Aron & Aron, 1997). Hence, when applying an analytical method, they may be more prone to "analysis paralysis," with cognitive resources tightened up and creative forecasting hampered.

We suggest that the effects are different when highly sensitive people apply an intuitive decision making method. This method might be better aligned with the inherent information processing orientation of people with higher, rather than lower, sensory processing sensitivity. An intuitive method allows people to process a larger amount of information as it invites them to form holistic impressions of creative ideas rather than to focus on specific details (Dijksterhuis, 2004; Huang, 2018). This can accommodate highly sensitive individuals' high awareness of external cues, helping them to effortlessly process a lot of information in a non-overwhelming way. Moreover, highly sensitive individuals tend to register multiple types of cues, including subjective cues that are not effectively processed using an analytical method. An intuitive method may thus facilitate highly sensitive peoples' forecasting by helping them to integrate various types of information and form an affect-based and holistic impression.

Taken together, we suggest that an analytical method, in contrast to an

intuitive method, complexifies information processing for highly sensitive individuals, which leads to less accurate creative forecastings.

> *Hypothesis 1:* Sensory processing sensitivity moderates the effect of decision making methods on creative forecasting accuracy, such that the higher people score on sensory processing sensitivity, the less they benefit from an analytical method (compared to an intuitive method) in creative forecasting.

The Mediating Roles of Emotional Activation and Perspective Taking

We draw on socially situated cognition theory to propose a mismatch between an analytical method and highly sensitive individuals as this method may not allow them to effectively process the emotional and social cues that they tend to register. The ineffective processing of emotional and social cues therefore constitute mediating processes that explain the interaction effect between decision making methods and sensory processing sensitivity on creative forecasting. Hence, we explore the mediating effect of two corresponding inference processes that can be triggered more strongly when deliberatively processing these emotional and social cues for highly sensitive individuals: emotional activation and perspective taking.

We first argue that highly sensitive individuals may experience a stronger emotional activation when they use an analytical method to forecast creativity. We draw on socially situated cognition theory (Semin et al., 2008) to define emotional activation as a conscious emotional state brought about by the target ideas that influence peoples' decision making. Compared to their low sensitive counterparts, highly sensitive individuals tend to register more sensory input and experience stronger emotional reaction. The sensory input, including

bodily (e.g., light, noise, hunger), emotional, and aesthetic perceptions (Aron & Aron, 1997; Bas et al., 2021) may increase processing load. This can become an issue when people use an analytical method. Unlike the intuitive method that allows individuals to integrate a multitude of information and form a holistic impression of the creative idea, the analytical method channels peoples' attention to only a limited amout of details of the idea (Dijksterhuis, 2004). Deliberatively analyzing attributes of creative ideas may trigger highly sensitive individuals to react strongly to specific attributes that fit their preferences or provoke strong emotions. Overall, a high processing load and unfitted method may cause "emotional arousal" (Schachter & Singer, 1962), distracting highly sensitive individuals from formal analysis of objective cues and triggering stronger embodied emotion about the idea they endorse.

Strong emotional activation may then negatively influence creative forecasting. Past research has found that high-arousal emotion increases peoples' risk-taking (Loewenstein, 1996) and can lead to polarized judgments (Mano, 1992; To et al., 2018). Moreover, for ideas that elicits more feeling or emotional attachment (Jimenez & Voss, 2010), people tend to be less risk-averse and evaluate them as more novel (Lazar et al., 2022). Hence, when people report a stronger emotional activation, this could signal high emotional arousal or subjective attachment that they experience with creative ideas. It may prevent highly sensitive individuals from evaluating ideas holistically and bias their judgment of ideas. We thus formulate the following hypothesis:

> *Hypothesis 2:* Emotional activation mediates the moderation effect of sensory processing sensitivity on the relationship between decision

making methods and creative forecasting accuracy, such that the higher people score on sensory processing sensitivity, the more likely an analytical method (compared to an intuitive method) leads to stronger emotional activation and lower creative forecasting accuracy.

We also argue that highly sensitive individuals draw on social cues to inform their creative forecasting. The deliberative processing of such social cues to understand other people's perspectives is called perspective taking (Caruso et al., 2006; Parker & Axtell, 2001; Parker et al., 2008). It is an "other-oriented" inferential process that asks people to analyze another person's point of view.

An analytical method may lead highly sensitive individuals to engage in more perspective taking than an intuitive method. Highly sensitive individuals have been found more empathetic and attentive to others' feelings and perspectives than low sensitive ones in both functional magnetic resonance imaging (Greven et al., 2019) and qualitative studies (Bas et al., 2021). They are more other-oriented and prosocial, which usually motivates and facilitates perspective taking (De Dreu et al., 2000; Grant & Berry, 2011; Meglino & Korsgaard, 2004). Hence, highly sensitive individuals' tendency to "act on what they know about other people's emotional or cognitive states" (Bas et al., 2021, p. 8) may entail deliberative analysis of how a target audience would evaluate ideas when they use an analytical method to forecast. In other words, forecasting creativity with an analytical method provides a processing structure for highly sensitive individuals to consciously draw on the social cues they gathered about the target audience and imagine how creative ideas would look from their perspective.

Perspective taking can help people develop useful and creative ideas

(Grant & Berry, 2011; Mohrman et al., 2001). However, it may lead to less accurate creative forecasts by complexifying information processing and creating confusion. Compared to idea generation that benefits from new perspectives and diverging views in developing ideas, creative forecasting is a complex decision that asks people to integrate large amounts of diverse information and converge on one conclusion. In creative forecasting, perspective taking may increase awaress of diverging perspectives and invite deliberative analysis of them (Hoever et al., 2012). Being aware of many viewpoints can make one feel unsure about which direction to take and what to conclude (Parker et al., 2008). In addition, past research has found that contemplating a decision may cause frustration (Lerner et al., 2015), especially when the options are equivalent or feature difficult trade-offs (Luce et al., 1997). Simultaneously thinking of creative ideas and taking the perspectives of the target audience may increase cognitive load and create confusion, which may hinder forecasting accuracy. Past research has indeed suggested that too much perspective taking can be stifling and overwhelming (Parker et al., 2008). Moreover, active perspective taking does not guarantee an accurate understanding of the other's perspective—it can entail erroneous conclusions when one is less familiar with, or less similar to, the target audience (Axtell et al., 2007).

Overall, highly sensitive individuals are more likely to engage in perspective taking when using an analytical method to forecast, yet it may hamper their creative forecasting accuracy, as this effortful deliberation further

complexifies information processing in creative forecasting. Hence, we propose the following:

> *Hypothesis 3:* Perspective taking mediates the moderation effect of sensory processing sensitivity on the relationship between decision making methods and creative forecasting accuracy, such that the higher people score on sensory processing sensitivity, the more likely an analytical method (compared to an intuitive method) leads to more perspective taking and lower creative forecasting accuracy.

Overview of Studies, Transparency, and Openness

We designed three experiments to test our theory. In each experiment, we asked participants to forecast the success of creative products using a specific method. We chose advertisements as the target of creative forecasting in these studies for several reasons. First, advertising is a typical creative industry that requires thinking of target audiences (e.g., award jury, markets, clients) via clear examples of creative forecasting in professional practices. Second, people are widely exposed to advertisements and thus generally feel comfortable making judgments about them. This creates the face and ecological validity needed for running studies with various participants. Third, advertisement campaigns rely on functional and experiential appeal to convey messages effectively (Couwenberg et al., 2017). Functional appeal is directed at factual information with a rational focus on product features and benefits (Abernethy & Franke, 1996). Experiential appeal enlists emotional and experiential elements that associate the product with desirable images, symbols, or experiences and evoke sensations, feelings, imaginations, and behavioral responses (Schmitt & Zarantonello, 2013). Therefore, consistent with prior creative forecasting research (Byrne et al., 2010), we selected advertisement campaigns as

experiment material. This choice is closely linked to our theoretical framing. It ensures that our findings provide wider generalizability among creative works expected to be useful and found novel.

Our studies aimed to establish the interaction effect between decision making methods and sensory processing sensitivity on forecasting accuracy. In Study 1, a laboratory experiment, university students forecasted which campaign the jury would choose as the winner of a prestigious international creative award. Study 2 is a field scenario experiment where employees predicted how different markets would react to local commercials of their company's brands. Study 3, a preregistered online experiment enlisting professionals of varying expertise in advertising, investigated the mediating effects of emotional activation and perspective taking on creative forecasting.

We designed the experiments in a complementary logic, covering a range of organizational practices relevant to creative forecasting and the analytical method. In Study 1 and 3, participants forecasted idea selection results, allowing us to test placement accuracy whereas Study 2 involves predicting markets' reaction to creative ideas, testing evaluation accuracy. In Study 1 and Study 2 we also provided different types of criteria to help structure the thought process in the analytical condition as defined by our theory. In Study 3, we asked participants to use self-generated criteria to forecast the selection of a creative idea. Combining these studies, we demonstrate the impact of an analytical method regardless of whether the criteria in this method were given or

self-generated.

We received the approval for data collection from the Institutional Review Board at the university where the authors are affiliated. Data are original and have not been used in any previous publications. Data, analysis code, and research materials of Study 2 are not available due to their proprietary nature. Data, analysis code, and research materials of Study 1 and 3 are available upon request. Data were analyzed using SPSS, version 23 and Hayes (2017) PROCESS procedure, version 4.0. The design, hypotheses, and analysis of Study 1 and 2 were not preregistered. Study 3's design, hypotheses, and analysis were preregistered (https://aspredicted.org/VKK_F1L).

Study 1

We conducted a lab experiment to test the interaction effect between decision making methods and sensory processing sensitivity on successful forecasts of award winners in advertising campaigns. We enlisted a simple forecasting task. Participants were asked to forecast which advertisement the award jury would choose to receive a creative award. We manipulated the decision making methods (analytical and intuitive) they use in creative forecasting. In the analytical condition, participants first rated advertisements on provided criteria before forecasting the winner. In the intuitive condition, participants first performed a filler task before predicting the winner (Dijksterhuis, 2004). We gave participants in both conditions a comparable amount of time to process information, consciously or unconsciously, before

asking them to make a prediction.

Data and Sample

A total of 180 students from a large Dutch university participated in exchange for course credits and the possibility of winning ten Euro vouchers for a correct forecast. Due to the interruption of Covid-19, the data collection occurred in two rounds. We suspended the original data collection (N = 105) in the lab because of the sudden lockdown. After six months, we resumed the data collection for a second round (N = 75). In the following sections, we present the results based on the full dataset of Study 1. We conducted separate analyses for the two samples and found consistent results. The mean age of all participants was 22.2 years (SD = 1.75); 67 percent of participants were male. Participants were randomly assigned to one of the two decision making method conditions (analytical versus intuitive) in a between-subjects design.

Procedure and Material

During data collection of the first round, participants were seated in solo cubicles equipped with computers in the university behavioral lab. Due to restrictions caused by the Covid-19 pandemic, we conducted the second round of data collection online using the same procedure and material as in the lab experiment. Respondents first received an introduction about advertisement campaigns and the creative award for advertisement campaigns. In particular, we give a description of the jury comprising experts in the advertising industry invited from all over the world, to help participants imagine the profile and preference of the jury. Participants were told their task was to forecast the most

creative advertisement campaign they thought the jury would select as the winner among the three presented. They wore headphones and watched videos of three candidate advertisement campaigns (our selected experiment material) in randomized order. We then manipulated the decision making methods that participants applied to predict the winner. Then, participants self-assessed their sensory processing sensitivity and answered other questions before being debriefed.

We selected the Cannes Lions International Festival of Creativity, the largest advertising and creative communications industry gathering that grants one of the most prestigious international advertisement awards, as the context for our first study. We featured three candidate advertisement campaigns as targets of creative forecasts. Participating advertisement agencies submit a two-minute video to the award jury each year. These videos communicate core information (e.g., purpose, strategy, content, design, visual style, impact, and effectiveness) regarding the advertisement campaign. We then collected videos from between 2017 and 2019 and enlisted a subset of 12 campaigns from the pool of award candidates. We established three ranks of campaigns according to the award levels (ranging from shortlisted, Bronze, Silver, Gold, to Grand Prix) and the number of awards each campaign won. We selected videos of three advertisement campaigns serving social purposes as our test material to avoid bias of personal experience or preference related to the brands presented in commercials. We chose a top-ranked winning campaign (i.e., receiving at least one Grand Prix and one Gold award) and two bottom-ranked campaigns (i.e.,

shortlisted in the category "creative effectiveness" with no Grand Prix award in any category) to ensure a substantial difference in all dimensions of creativity between the winning and shortlisted campaigns as rated by the award jury.

Manipulation and Measures

Manipulation of the Decision Making Method

We adapted our manipulation of the decision making method following Dijksterhuis (2004). After watching three videos, participants were randomly assigned to a decision making method condition. In the analytical condition (N = 92), participants first forecasted the jury's evaluation of each of the three advertisement campaigns in four dimensions (novelty, quality, effectiveness, and impact) on a scale from 1 to 7 (1 = *very poor*, 7 = *exceptional*) on the same webpage. We asked questions like "Please think and choose from below how the competition jury would grade the campaign on the following dimensions" and provided criteria to ensure that participants used formal analysis of campaign information by weighing each campaign on the given criteria (Rusou et al., 2013; Sloman, 1996). We adapted the four dimensions from the award jury's evaluation criteria. At the bottom of the same webpage, participants predicted which campaign the jury selected as the award winner.

In the intuitive condition (N = 88), participants watched the videos and finished a two-minute filler task designed to occupy conscious information processing (Dijksterhuis et al., 2009) and inhibit the use of analytical methods in the forecasting task. We used a brief lexical-decision task (Bargh et al., 1995) as a filler task, in which participants needed to focus on the center of the screen

and identify whether the strings of letters, each appearing for only 750 milliseconds, were valid English words. After the filler task, participants forecasted the winner as selected by the jury. Participants' mean correctness of in the lexical decision task was 84.8 percent (*SD* = .13), and mean response time was 2.1 seconds per word (*SD* = 1.55). This confirmed that they were consciously focused on the lexical task and detached from any analytical processing of campaign content.

Sensory Processing Sensitivity

We used the 12-item version of the scale by Pluess (2013) to measure sensory processing sensitivity. Participants indicated to what extent each statement correctly described their overall experience in life on a scale from 1 to 7 (1 = *not at all*, 7 = *extremely*). A sample item is: "Are you easily overwhelmed by bright lights, strong smells, coarse fabrics, or sirens close by?" (α = .80; *M* = 4.08, *SD* = .82).

Creative Forecasting – Placement Accuracy

Following Berg (2016), our measure captures the placement accuracy of a creative forecast: the accuracy of how the creativity of a target idea ranks compared with others. We asked participants to predict which of the three presented campaigns the jury selected as the award winner. We coded a correct forecast as 1 and an incorrect forecast as 0.

Results

Table 1 presents descriptive statistics and correlations. To test Hypothesis 1, we ran a one-way analysis of covariance (ANCOVA) with

decision making method as a fixed factor and sensory processing sensitivity as a covariate, controlling for the round of data collection. Supporting Hypothesis 1, we find a marginally significant interaction effect between sensory processing sensitivity and decision making method on creative forecasting ($F(1, 175) = 3.56$, $p = .06$, $\eta^2 = .02$; (see Table 2; The interaction is illustrated in Figure 1). We then ran a simple slope analysis to compare high versus low sensitive people (+/- 2 *SD*). There is a fit between sensitivity levels and decision making methods: highly sensitive individuals are less likely than low sensitive ones to forecast accurately using an analytical method ($b = 0.17$, $t = 1.69$, $p = .09$) whereas they forecast more accurately than low sensitive ones using the intuitive method ($b = -0.17$, $t = -1.71$, $p = .09$).

Discussion

This study revealed an interaction effect between decision making methods and sensory processing sensitivity. Highly (low) sensitive people demonstrated incompatibility with analytical (intuitive) decision making methods in forecasting the award winner. During the experiment, we provided the evaluative criteria that were used by the real jury to respondents in the analytical condition. This may have facilitated their forecasting and may have led to the positive main effect of analytical method on forecasting accuracy. It may also explain the small effect size of the interaction. Hence, in designing Study 2 for a professional context, we adopted the emotion-based evaluative criteria used by the hosting company in their daily practice. These criteria are less predictive of creativity and may no longer favor forecasting in the analytical

condition.

Study 2

We conducted a second experiment with a multinational consumer goods company to replicate the interaction between decision making method and sensory processing sensitivity in a professional context. Moreover, we tested the estimation accuracy of creative forecasting (Berg, 2016)—i.e., to what extent a target audience enjoys a creative idea. We used two commercials the company developed for and aired in two countries as experiment materials. We focus on local markets' enjoyment of these commercials because the company saw it as evidence for market success and measured it in their market research. We thus use it for calculating employee accuracy in forecasting the two commercial's market success.

Data and Sample

We conducted our study at the headquarters of the company in the Netherlands. A total of 132 participants from the R&D and marketing departments were recruited to participate in the experiment. We asked participants whether they knew the two commercials we used as experiment materials, and 57 of them recognized at least one of two commercials. We excluded them from our dataset, yielding a final sample of 75 participants. The mean age was 35.1 years (SD = 10.45), with 69 percent female. Their mean work experience in the current department was 5.15 years (SD = 4.80). To understand how this data exclusion influences our results, we conducted the same analyses with a larger sample (only excluding participants who knew both

commercials; $N = 111$). The results are consistent.

Procedure and Material

Participants received the invitation to participate in a task predicting market reactions to commercials of their company's brand at their work email addresses. They were informed that the company had conducted consumer research for two commercials of the same brand designed for airing in two target countries (France and Germany). Next, they were asked to predict how local consumers would evaluate the commercials in those countries. They watched one of the commercials designed for the French or German market and used the analytical or intuitive method to forecast how local consumers evaluated the commercial in the market research. Next, they viewed the second commercial in the other market (French or German) using the same method to predict consumer evaluations. We then measured sensory processing sensitivity and other information before debriefing the particpants.

We featured two 20-second commercials recently developed for the same food brand for two markets (France and Germany) as our experiment materials. After having aired the two commercials in local media for some time, the company conducted market research on them in the two countries. We thus used the local market's enjoyment evaluation of the commercials from this market research as the reference for calculating creative forecasting accuracy. We chose creative works that had been developed for and evaluated by different target audiences whose mindsets and preferences may differ from our participants working in the Netherlands. This variation is in line with our

theorization of creative forecasting. The commercials were translated or subtitled in English for the participants.

Manipulation and Measures

Manipulation of the Decision Making Method

We adopted similar manipulations as used in Study 1. In the analytical condition ($N = 40$), participants were instructed to predict how much local consumers enjoyed the commercial. As in Study 1, we provided criteria to ensure that participants assessed each commercial deliberatively based on explicit rules and evaluative structures. We used the same 12 dimensions (e.g., involving, distinctive, boring) that were used in the company's market research to assess market reaction to its commercials. We adopted these criteria to align our experiment design with the company's field practice. In contrast to the criteria used in Study 1, these 12 dimensions were more emotion- and experience-based and less predictive of creativity. Participants then forecasted local consumers' overall enjoyment of the commercial. We repeated the same procedure for the second commercial.

In the intuitive condition ($N = 35$), participants first did the same lexical decision task (Bargh et al., 1995) as in Study 1. Next, they predicted the enjoyment level of the commercial by local consumers as reported in the market research. Afterward, they watched the second commercial and repeated the same procedure. The mean correctness of participants in the lexical decision task was 85 percent ($SD = .08$), and the mean response time was 2.02 seconds per word ($SD = 0.76$). This shows that participants were consciously focused on the

lexical task and detached from any processing of commercial content.

Sensory Processing Sensitivity

For practical reasons, we kept the survey as short as possible using a six-item version of the sensitivity scale advised by Aron and Aron (2013). Questions such as "Do you seem to be aware of slight changes in your environment?" were featured in this survey (α = .94; M = 4.31, SD = 1.58). However, the mean and variance of this measure differed substantially between the intuitive condition (α = .97; M = 3.04, SD = 1.88) and the analytical condition (α = .75; M = 4.93, SD = .81) due to 18 extreme values in the intuitive condition. To avoid the biasing effect of outliers (DeCoster et al., 2009), we used a median split to create two categories for this variable: highly versus low sensitive levels (cut-off point sensory processing sensitivity = 4.68). It is common to treat sensory processing sensitivity as a categorical trait (Lionetti et al., 2018; Pluess et al., 2018). We ran the same analysis using the continuous sensitivity measure for a robustness check and found similar results.

Creative Forecasting – Estimation Accuracy

The test material comprised 20-second videos of two commercials for the same brand designed for the French and German markets. The company conducted market research on local consumers' enjoyment of respective commercials (on a scale of 0-100). The results of this market research were used as a reference for scoring the prediction accuracy of participants. We computed the absolute deviations of participants' estimations from the actual result in overall enjoyment from the market research and used the reversed mean

deviation to score the estimation accuracy of creative forecasting (Berg, 2016). Estimation accuracy reveals the extent to which forecasting correctly predicts how successfully a target audience favors each creative idea (Berg, 2016).

Control Variables

Domain expertise can influence the effectiveness of intuition (Dane et al., 2012). We thus controlled for *domain expertise* in our analysis. We saw the field of marketing as the relevant domain for assessing market communication and predicting market reactions to commercials. We categorized participants working in the R&D department as of low domain expertise (coded as 0) and those in the marketing department as of high domain expertise in creative forecasting of advertisements (coded as 1). We controlled for *work experience* (measured as a categorical variable; 1 = *0-3 years*, 6 = *above 15 years*), as it may also indicate different levels of expertise. Finally, we controlled for *nationality* (1 = *French or German*, 0 = *Other nationalities*) since our materials, markets, and participants involved multiple nationalities.

Results

Table 3 presents the descriptive statistics and correlations. Given our between-subjects design, we first ran a 2 × 2 analysis of variance (ANOVA) to estimate the interactions between decision making methods and sensory processing sensitivity, controlling for domain expertise, work experience, and nationality. As shown in Table 4, we found a significant interaction effect between decision making method and sensory processing sensitivity ($F(1,62) = 5.23$, $p = .03$, $\eta^2 = .08$; see Figure 2 for the interaction pattern), supporting

Hypothesis 1. Simple slope analysis shows that highly sensitive individuals benefited from the intuitive method to form predictions that deviated less from the market reaction (b = 11.47, t = 2.62, p = .01). For low sensitive individuals, this was not the case (b = -1.53, t = -.35, p = .73). As each participant predicted the success of two campaigns, their forecasted ratings were nested within the same rater. We conducted a multi-level regression analysis in Stata to test the same model as in Table 4 and found similar results.

Discussion

Study 2 replicated the interaction between decision making method and sensory processing sensitivity in a professional context adopting a scenario and materials close to the company's practice. The findings provide support for Hypothesis 1. We adopted in this experiment criteria that were less predictive of creativity in the analytical condtion. This could explain why we no longer see a positive main effect for the analytical method, but a negative one. It indicates the influence of the provided criteria on the effectiveness of an analytical method. Taking this a step further, in Study 3, we ask participants in the analytical condition to anticipate criteria themselves.

Study 3

Data and Sample

To ensure a balanced sample of professionals with varying expertise in advertising, we recruited 398 professionals from the Science and Marketing sectors from Prolific. The rationale for this sample size was based on a power analysis. We calculated the effect size based on our previous studies. We

expected a small effect ($\Delta R^2 = 0.02$, Cohen, 1988, p. 413-414) of the decision making methods on creative forecasting. As estimated by the software G*Power (Faul et al., 2009), the sample size required to identify such an effect at an error probability of 0.05, two-tailed, with a power of 0.80, with four tested predictors is 387. We thus chose a sample size above this limit. The mean age of all participants was 30.63 years (*SD* = 9.39). 52 percent of participants were female. The average work experience was 5.55 years (*SD* = 6.55). The experiment was preregistered[1]. We see failing the manipulation check as violation of our experiment design and excluded the respective participants from our data. We end up with a final dataset of 341 respondents.

Manipulation and Measures

Manipulation of the Decision Making Method

We used the same manipulation of intuitive method as in Study 1. Participants' mean correctness in the lexical decision task was 84.9 percent (*SD* = .11). Their mean response time was 2.08 seconds per word (*SD* = 2.25). In the analytical condition, after watching the campaigns, participants first anticipated three to five criteria the award jury would use for selecting the award winner. They then rated how the jury would evaluate each campaign on each of these criteria. At the end of the same webpage, participants predicted which campaign the jury selected as the award winner. In both conditions, participants were

[1] We also tested in Study 3 the analytical method using the same evaluative criteria as in Study 1 to compare the effects of provided versus self-generated criteria. Provided criteria has a very strong effect on accurate forecasting. This explains the positive main effect of analytical method in Study 1 on forecasting accuracy.

asked the manipulation-check and mediator questions right after making the prediction.

Manipulation Check

Immediately after predicting the creative winner, participants rated the following question: "Was your selection on the previous page mainly based on your gut feel/intuition or your analysis?" This question was adapted from Godek and Murray (2008) and evaluated on a 8-point Likert scale, with 0 = *Your gut feel/intuition* and 7 = *Your analysis*.

Sensory Processing Sensitivity

We used the same 12-item scale (Pluess, 2013) as in Study 1 to measure sensory processing sensitivity (α = .76, M = 4.37, SD = .86).

Emotional Activation

We used one question to measure participants' emotional activation regarding their endorsed campaign, as this concept is clearly defined and narrow in scope (Allen et al., 2022). It measures a concrete attitude towards a singular target (Bergkvist & Rossiter, 2007). The question intends to capture the person's conscious awareness and use of the emotion activated by the endorsed creative target in forecasting. Participants rated the following question: "Did the [campaign] you chose as the winner trigger strong feelings in you?" on a 8-point Likert scale (0 = *Not at all*, 7 = *Yes, very strong feelings*) (M = 4.46, SD = 1.71). In Study 3, we also measured related constructs using the 10-item "International Positive and Negative Affect Schedule Short-Form" (Thompson, 2007) and cognitive load (Paas, 1992) to test the discriminant validity of our measure. The

results show that emotional activation is distinct from these constructs and predicts forecast accuracy above and beyond them.

Perspective Taking

We adapted two questions from the perspective taking scale by Davis (1983): "Did you try to imagine how the campaigns look from the jury's perspective?" and "Before making the prediction, did you try to imagine how you would feel if you were in the jury's place?" These questions were rated on a 8-point Likert scale of 0-7 (0 = *Not at all*, 7 = *Yes, very much/I tried very hard*) (α = .77, M = 4.76, SD = 1.39).

Creative Forecasting – Placement Accuracy

As in Study 1, participants predicted which of the three presented campaigns the jury selected as the award winner. We coded a correct forecast as 1 and an incorrect forecast as 0.

Control Variable

We controlled for *domain expertise* in advertising by categorizing based on whether participants worked in Science (coded as 0) or Marketing (coded as 1).

Results

Table 5 presents descriptive statistics and correlations. According to our manipulation check, participants in the analytical condition based their creative forecast more on their analysis than on gut feel or intuition (M = 4.6, SD = 1.52, $t(339)$ = -7.32, p = .000) compared to those in the intuitive condition

(M = 3.4, SD = 1.49).

Supporting Hypothesis 1, the regression analysis shows an interaction effect between decision making methods and sensory processing sensitivity on creative forecasting (b = .53, p = .04; see Table 6 and Figure 3). Only individuals of higher (+1 SD) sensitivity forecast more accurately when using an intuitive compared to an analytical method (b = .62, p = .056). People of lower (-1 SD) sensitivity do not differ in their forecasting accuracy when using analytical or intuitive methods (b = -.32, p = .31).

We employed the PROCESS procedure (Model 7) to test the mediating role of emotional activation, controlling for domain expertise, and found support for Hypothesis 2. The interaction effect between decision making methods and sensory processing sensitivity on emotional activation is marginally statistically significant (b = -.37, p = .069; see Table 6 and Figure 4). Emotional activation further predicted creative forecasting accuracy (b = -.19 (SE = .07), 95% CI [-.32, -.06], p = .005). As the interaction effect between decision making method and sensory processing sensitivity is only marginally significant, the moderated mediation model is not significant at a 95% confidence interval (*index* = .07 (*SE* = .05), 95% CI [-.004, .17]) but only at a 90% confidence interval [.005, .17].

We employed the PROCESS procedure (Model 7) to test the mediating role of perspective taking, controlling for domain expertise, and found evidence for a full mediation. As predicted in Hypothesis 3, sensory processing sensitivity interacted with decision making methods to influence people's perspective taking (b = -.42 (*SE* = .16), 95% CI [-.74, -.11], p = .009, R^2 = .02; see Figure 9

for the interaction pattern). Perspective taking predicted creative forecasting accuracy (*b* = -.17 (*SE* = .08), 95% CI [-.33, -.01], *p* = .04). The moderated mediation effect is significant (*index* = .07 (*SE* = .05), 95% CI [.001, .19]; see Table 7). The indirect effect of decision making method on creative forecasting via perspective taking is significant for highly sensitive individuals (*boot b* = .14 (*SE* = .08), [.01, .33]) but not for low sensitive ones (*boot b* = .01 (*SE* = .04), [-.07, .09]). Hence, the more sensitive people are, the more likely they would take the jury's perspective into account in analytical condition, which hampers their creative forecasting.

Discussion

Study 3 replicates the interaction effect between decision making methods and sensory processing sensitivity on creative forecasting. It also provides support for the mediating effects of emotional activation and perspective taking in how decision making methods differently influenced highly versus low sensitive individuals in creative forecasting. Highly sensitive individuals were more inclined to consciously draw on activated emotion and take the audience's perspective into account in forecasting using analytical methods. Doing so complexified information processing and further hampered their creative forecasts.

General Discussion

Our research takes an information processing view of creative forecasting and draws from socially situated cognition theory to propose a person-method fit between decision making methods and sensory processing

sensitivity for accurate creative forecasts. We conducted three experiments to test this interaction effect and its underlying mechanisms by adopting varying experimental designs. Although the results of the three studies varied with the nature of the design, we generally found support for our theory that the analytical method may complexify information processing for highly sensitive individuals in creative forecasting and hamper their forecasting accuracy. Compared with an intuitive method, the analytical method triggers emotional activation and perspective taking for highly sensitive individuals, leading to less accurate creative forecasts. These results have important implications for theory and practice.

Theoretical Implications

Our research contributes to the field of creative forecasting. We theorized how the two widely used yet understudied decision making methods (analytical and intuitive) guide people to follow different information processing strategies and use different amounts and types of cues in the decision. We further draw on socially situated cognition theory (Smith & Semin, 2004) and highlight a necessary fit between a person's innate responsiveness to contextual cues and the adopted information processing methods. As highly sensitive individuals' neurobiological perceptiveness increases the input of emotional and social cues in their forecasting tasks, formal analysis does not allow them to effectively process this contextual information—they are better off using an intuitive method. Analytical thinking thus only helps low sensitive people in processing information for creative forecasting, but not highly sensitive people.

Altogether, our research shows that the forecaster needs to adopt a method suited to their brain architecture to process information effectively and forecast creativity accurately. It also means that there is no single best method or person for creative forecasting.

Second, our study draws on socially situated cognition theory to explain the effect of sensory processing sensitivity on complex decisions. By depicting features of a "sensitive brain," sensory processing sensitivity captures a person's innate orientation to perceive a large amount of various contextual information (e.g., task, emotional, social cues). This trait thus depicts an individual difference in the extent to which a person's cognition is socially situated—meaning how much diverse information a person register and cope with in complex decisions. We demonstrate that such disinhibited and unrestrained attention to contexts (Bridges & Schendan, 2019) aligns with the information processing strategy of intuitive—but not with analytical—methods. Our paper thus provides a theoretical framework and empirical evidence to unravel the effect of sensory processing sensitivity on complex decisions.

Third, our research unravels the mechanisms of how decision making methods and sensory processing sensitivity interact to influence creative forecasting. We identify emotional activation and perspective taking as the deliberative inference processes that are easily triggered for highly sensitive individuals using an analytical method. We show that both emotional activation and perspective taking are cognitively costly and distractive—they may increase processing complexity and lead to poor forecasts. Our research thus adds to

recent work on emotions (Lazar et al., 2022) and subjectivity in creative perception (Zhou et al., 2019) by demonstrating the biasing effect of emotional activation in creative forecasting. We show that deliberative, formal analysis of emotional cues is indeed not effective (Mikels et al., 2011) and leads to worse forecasts. Moreover, research suggested that perspective taking benefits creative idea generation by facilitating the integration of different perspectives and by attending to users' needs (Grant & Berry, 2011). However, it may create confusion in creative evaluation as too much perspective taking can be immobilizing and overwhelming (Parker et al., 2008). Our research highlights the cognitive demands and costs of this mental activity. In particular, it may hinder the convergence of information and hamper forecasting.

Practical Implications

Our research offers important insights for decision-makers that engage in creative forecasting. Decision-makers include financiers, executives, or boards who need to decide whether to support a creative idea, make an investment, submit a project to an award contest, or launch a creative product on the market. We unveil when and how commonly-used and trusted analytical methods may not be an ideal approach for everyone. In contrast, intuitive methods may also be beneficial for some people in creative forecasting. Highly sensitive individuals should be encouraged to use intuitive methods, to make decisions that "feel right." Our manipulation of the intuitive method (i.e., ask people to engage in a filler task to take their minds off the matter before making a forecast) suggests an easy way for practitioners to put intuitive methods into

practice. Low sensitive individuals should rely on formal analysis, high-quality criteria, and solid reasoning, avoiding using intuitive methods in creative forecasting. Our research implies that both decision making methods can lead to good creative forecasting, yet their effectiveness depends on their *fit* with the person.

Our research also informs practice on how to better cope with sensory processing sensitivity at work. In recent years, sensory processing sensitivity has attracted attention from health practitioners as an innate risk factor for mental ailments, leading to work stress, burnout (Evers et al., 2008; Vander Elst et al., 2019), and turnover (Andresen et al., 2017). Our research focuses on the information processing specificity of this trait and suggests a decision making method suitable for the "sensitive brain" (Acevedo et al., 2014). Indeed, analytical thinking is required in many professional practices and tasks, but it seems incompatible with the inherent information processing orientation of highly sensitive individuals, leading to emotional activation, perspective taking, and poor performance, which may, in turn, increase work stress. Our research implies that current workplace methods could be adapted to better accommodate the innate cognitive abilities of highly sensitive individuals. Adopting more intuitive methods and welcoming "hunches" could, for instance, leverage peoples' innate sensitivity as a resource and advantage at work.

Limitations and Future Directions

This paper has several limitations. First, our studies are experimental and only capture a limited set of organizational practices and processes. The

tasks and materials used in our experiments have high face validity as we conducted a scenario study in the field using a task similar to our participants' daily professional practices. However, we cannot vouch for the generalizability of our findings in practice. Although our experiments provide strong causal evidence for the processes we investigated, replicating our findings using more field research and exploring the boundary conditions of our tested effects may still be necessary.

Second, we use advertisement campaigns as targets in our creative forecasting tasks. Advertising campaigns incorporate both functional and experiential appeals and are designed so that people can easily grasp the key message. They are also the creative works that people see regularly. However, it is unclear whether our findings can be generalized to, for instance, complex innovation projects that require conscious effort for understanding or highly experience-based artworks that are more open to subjective interpretation. Future research could investigate whether the effectiveness of analytical and intuitive methods changes as the creative forecasting targets vary across the experiential-versus-functional spectrum. The campaigns and commercials we used in our analysis were finished creative products. Future research could explore whether our findings can be extended to creative forecasting of ideas in other development stages (e.g., early-stage or initial ideas, Berg, 2019) or to ideas with varying originality (e.g., radical ideas).

Finally, we intentionally created variations between the designs of the three experiments to cover a range of aspects of creative forecasting worth

investigating and establish an overall pattern regarding our theory. Our studies consistently showed that a fit is necessary between decision making methods and sensory processing sensitivity across different creative forecasting practices (placement and estimation), scenarios (predicting jury decisions and market reactions), and criteria (decomposed informative criteria, feeling-based criteria, and self-generated criteria). However, our explanation of the results in each specific condition is only tentative. Future research can focus on one or two specific design of creative forecasting. For example, studies could further investigate how the formal analysis of objective versus subjective cues using different types of criteria influences the effectiveness of analytical methods. It is also interesting to investigate how different decision making methods influence the forecasted acceptance of different aspects of creativity including usefulness and novelty. For instance, it can be expected that analytical methods may benefit the forecasting of usefulness while intuitive methods may help to forecast novelty.

Conclusion

Our research takes an information processing view of creative forecasting and offers guidance for scholars and practitioners alike about a suitable decision making method in creative forecasting. We drew on socially situated cognition theory to present a person-method fit between highly sensitive individuals and intuitive methods and between low sensitive individuals and analytical methods. We showed that an analytical method is incompatible with highly sensitive individuals in creative forecasting because it

increases their emotional activation and perspective taking—both complexify information processing with negative effects for forecasting accuracy.

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Table 1
Means, Standard Deviations and Correlations, Study 1

Variable	Mean	SD	1	2	3	4	5
1. Gender (1 = male, 0 = female)	*.67*	*.47*					
2. Age	*22.22*	*1.75*	.08				
3. Nationality	*113.78*	*28.13*	-.09	-.16*			
4. Decision making method	*.49*	*.50*	.00	.18*	-.04		
5. Sensory processing sensitivity	*4.08*	*.82*	-.24**	.11	-.14	-.04	
6. Creative forecasting – Placement accuracy	*.41*	*.49*	-.07	-.05	-.05	.11	-.05

Note. N = 180; all coefficients below -.15 and above .15 are significant at the .05 level. † p < .10, *p < .05, **p < .01; Decision making method: 1 = Intuitive method, 0 = Analytical method.

Table 2
ANCOVA Predicting Creative Forecasting from Decision Making Method and Sensory Processing Sensitivity, Study 1

	Creative Forecasting	
	F	η^2
Round of data collection	.00	.00
Decision making method	4.54*	.03
Sensory processing sensitivity	.00	.00
Decision making method * Sensory processing sensitivity	3.56†	.02

Note. N = 180; † p < .10, *p < .05, **p < .01.

Table 3

Means, Standard Deviations and Correlations, Study 2

Variable	Mean	SD	1	2	3	4	5	6	7	8
1. Gender (0 = male, 1 = female)	*.69*	*.55*								
2. Age	*35.05*	*10.45*	.03							
3. Nationality	*.16*	*.37*	.10	-.39**						
4. Work experience (in current department)	*5.15*	*4.80*	.22	.57**	-.18					
5. Decision making method	*.47*	*.50*	.19	-.16	.25*	.02				
6. Sensory processing sensitivity (categorical)	*.45*	*.50*	.15	.11	-.18	.09	-.32**			
7. Sensory processing sensitivity (continous)	*4.05*	*1.70*	.02	.14	-.30**	.06	-.56**	.74**		
8. Domain expertise	*.33*	*.50*	.08	-.24*	.31	-.24*	.02	-.02	-.12	
9. Creative forecasting – Estimation accuracy	*25.78*	*12.65*	.07	-.08	.12	-.28*	.14	.09	-.06	.09

Note. N = 75; all coefficients below -.23 and above .23 are significant at the .05 level.

† p < .10, *p < .05, **p < .01; Decision making method: 1 = Intuitive method, 0 = Analytical method.

Table 4

ANOVA Predicting Creative Forecasting from Decision Making Method and Sensory Processing Sensitivity, Study 2

	Df	F	p-value	η^2
Step 1 Covariates				
Constant	1	116.71	.00	.64
Nationality	1	.18	.67	.00
Work experience	5	1.66	.16	.11
Domain expertise	1	.03	.87	.00
Error	154.6			
R^2	.13			
Step 2 Main effects				
Constant	1	120.26	.00	.65
Nationality	1	.10	.76	.00
Work experience	5	1.93	.10	.13
Domain expertise	1	.02	.89	.00
Decision making method	1	2.18	.14	.03
Sensory processing sensitivity	1	3.05	.09	.05
Error	149.8			
R^2	.18			
Step 3 Two-way interaction				
Constant	1	90.88	.00	.59
Nationality	1	.97	.33	.02
Work experience	5	2.35	.05	.16
Domain expertise	1	.54	.46	.01
Decision making method	1	3.43	.07	.05
Sensory processing sensitivity	1	4.90	.03	.07
Decision making method * Sensory processing sensitivity	1	5.23	.03	.08
Error	140.7			
R^2	.24			

Note. N = 75.

† p < .10, *p < .05, **p < .01; Decision making method: 1 = Intuitive method, 0 = Analytical method.

Table 5

Means, Standard Deviations and Correlations, Study 3

Variable	Mean	SD	1	2	3	4	5	6	7	8	9
1. Gender (0 = male, 1 = female)	*.50*	*.54*									
2. Age	*30.66*	*9.48*	-.09								
3. Nationality	*143.9*	*104.5*	.08	.06							
4. Work experience	*5.49*	*6.68*	-.08	.76**	.05						
5. Domain expertise	*.43*	*.50*	-.00	-.01	-.02	.02					
6. Decision making method	*.47*	*.50*	.05	.09	-.07	.09	-.02				
7. Sensory processing sensitivity	*4.40*	*.89*	.29**	-.06	.05	-.04	.07	.06			
8. Perspective taking	*4.64*	*1.49*	.08	.02	.08	.07	.08	-.14**	.10		
9. Emotional activation	*4.42*	*1.70*	.12*	.06	.09	.05	.13*	.00	.12*	.09	
10. Creative forecasting – Placement accuracy	*.43*	*.50*	-.11*	.00	-.11*	.01	-.09	.03	-.11*	-.07	-.16**

Note. N = 341; all coefficients below -.11 and above .11 are significant at the .05 level.

† p < .10, *p < .05, **p < .01; Decision making method: 1 = Intuitive method, 0 = Analytical method.

Table 6

Results from Moderation and Moderated Mediation Analyses, Study 3

	Model 1 Emotional Activation (path a)	Model 2 Creative Forecasting
Moderation Models		
Domain Expertise	.43*	-.35
Decision Making Method	1.65†	-2.17†
Sensory Processing Sensitivity	.41**	-.53**
Decision Making Method * Sensory Processing Sensitivity	-.37†	.53*
H2: Moderated Mediation Model via Emotional Activation		
Main effects (path b)		
Domain Expertise		-.28
Decision Making Method		.13
Emotional Activation		-.19**
Direct effect (path c)		.04
Conditional indirect effects (path c'):	Index of Moderated Mediation: .07 (.05) 95% CI [-.004, .17]	
Moderator variable: Sensory processing sensitivity	Boot b (SE)	Boot CI
Low Sensitive (-1SD)	-.06 (.06)	[-.20, .03]
Middle Sensitive (Mean)	-.0002 (.04)	[-.08, .08]
Highly Sensitive (+1SD)	.06 (.06)	[-.03, .20]

Note. N = 336

† p < .10, *p < .05, **p < .01; Decision making method: 1 = Intuitive method, 0 = Analytical method.

Table 7

Results from Moderation and Moderated Mediation Analyses, Study 3

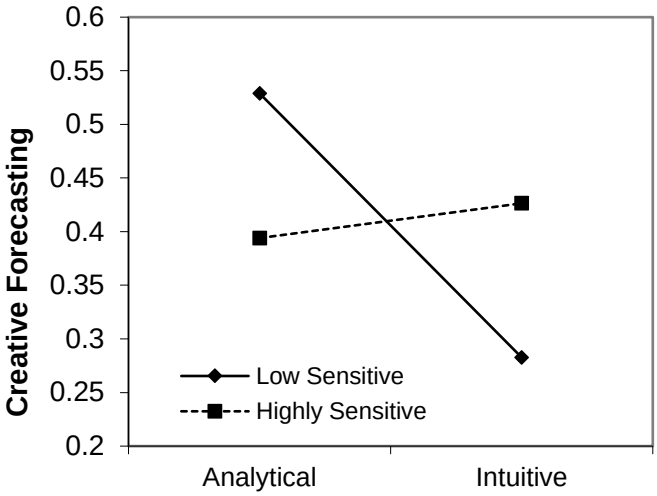
	Model 1 Perspective Taking (path a)	Model 2 Creative Forecasting
Moderation Models		
Expertise	.28†	-.35
Decision Making Method	-.1.43*	-2.17†
Sensory Processing Sensitivity	-.41**	-.53**
Decision Making Method * Sensory Processing Sensitivity	-.42**	.53*
H3: Moderated Mediation Model via Perspective Taking		
Main effects (path b)		
Domain Expertise		-.32
Decision Making Method		.04
Perspective Taking		-.17*
Direct effect (path c)		.04
Conditional indirect effects (path c'):	Index of Moderated Mediation: .07 (.05) 95% CI [.001, .18]	
Moderator variable: Sensory processing sensitivity	Boot b (SE)	Boot CI
Low Sensitive (-1SD)	.01 (.04)	[-.07, .09]
Middle Sensitive (Mean)	.07 (.05)	[.00, .18]
Highly Sensitive (+1SD)	.14 (.08)	[.01, .33]

Note. N = 341.

† p < .10, *p < .05, **p < .01; Decision making method: 1 = Intuitive method, 0 = Analytical method.

Figure 1

Interaction Between Decision Making Methods and Sensory Processing Sensitivity on Creative Forecasting (Placement Accuracy), Study 1

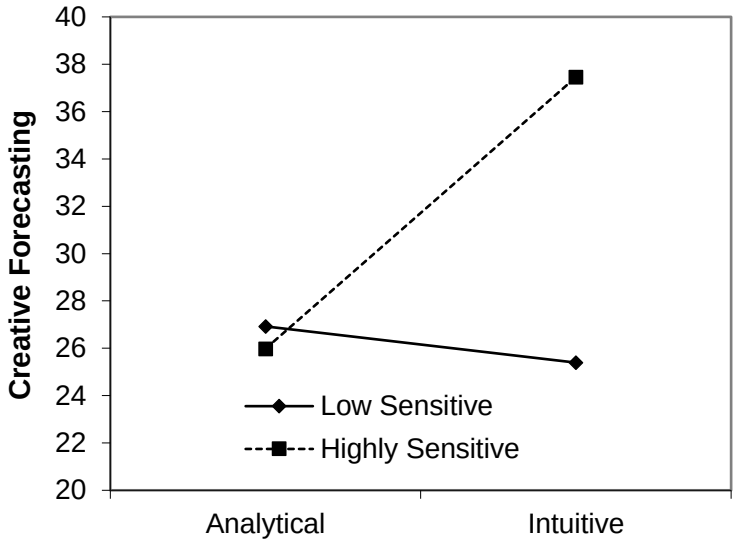


Note. Creative forecasting accuracy of individuals of higher and lower sensitivity (+/- 1 SD) are shown for analytical and intuitive decision making methods.

Figure 2

Interaction Between Decision Making Methods and Sensory Processing Sensitivity on Creative Forecasting (Estimation Accuracy), Study 2

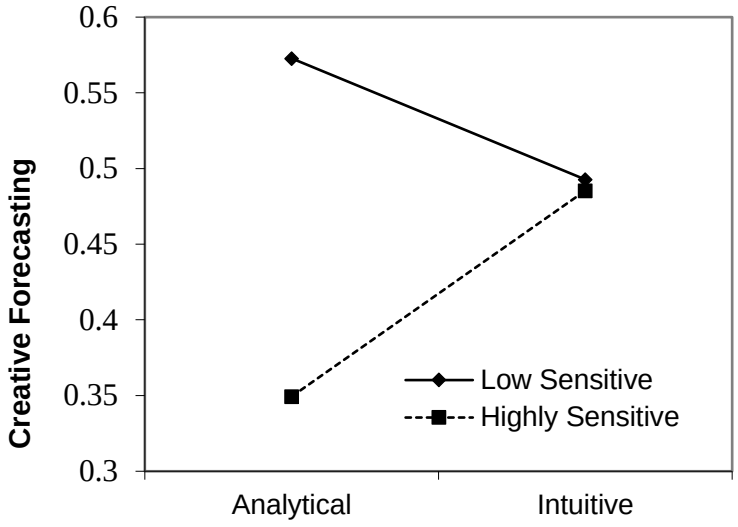
Note. Creative forecasting accuracy of individuals of higher and lower



sensitivity (+/- 1 SD) are shown for analytical and intuitive decision making methods.

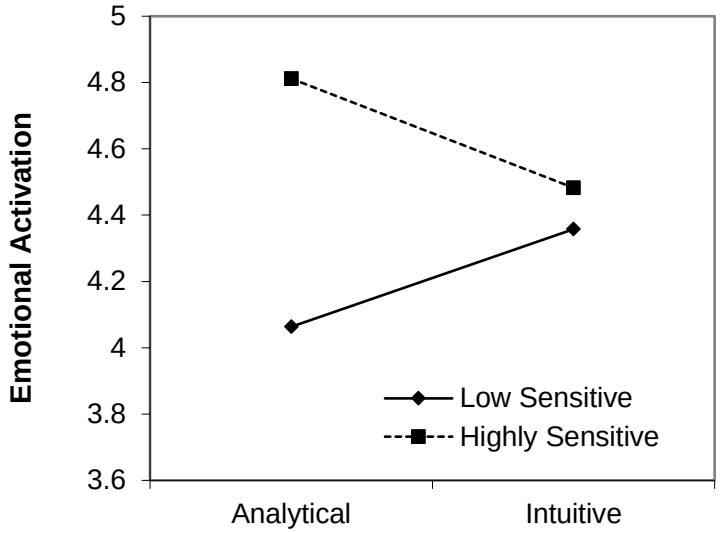
Figure 3

Interaction Between Decision Making Methods and Sensory Processing Sensitivity on Creative Forecasting (Placement Accuracy), Study 3



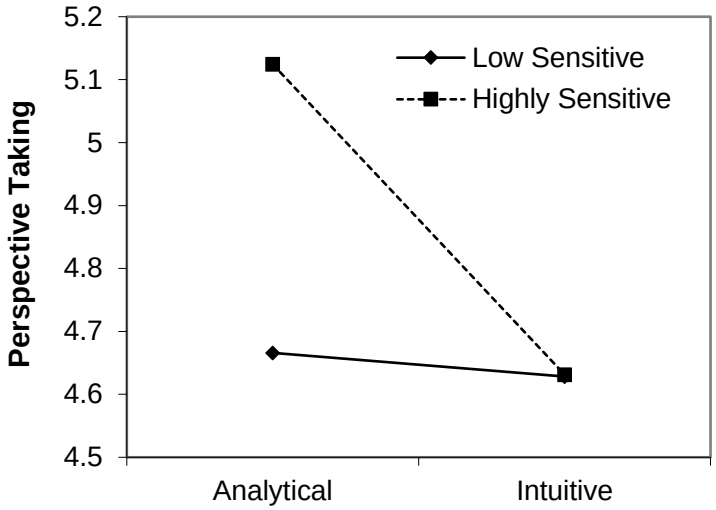
Note. Creative forecasting accuracy of individuals of higher and lower sensitivity (+/- 1 SD) are shown for analytical and intuitive decision making methods.

Figure 4
Interaction Between Decision Making Methods and Sensory Processing Sensitivity on Emotional Activation, Study 3



Note. Emotional activation of individuals of higher and lower sensitivity (+/- 1 SD) are shown for analytical and intuitive decision making methods.

Figure 5
Interaction Between Decision Making Methods and Sensory Processing Sensitivity on Perspective Taking, Study 3



Note. Perspective taking of individuals of higher and lower sensitivity (+/- 1 SD) are shown for analytical and intuitive decision making methods.

CHAPTER 3

Moth to a flame: How communal schemas lead highly sensitive individuals to brokerage positions that hamper performance

Abstract

Brokerage positions have been studied as an advantageous network structure through which individuals pursue benefits. These positions, however, are not equally beneficial to all occupants. We investigate when and why individuals occupy brokerage positions that would endanger their performance. We first identify sensory processing sensitivity as an innate trait misaligned with brokerage benefits, since it can cause people to be over-perceptive and easily overwhelmed by their social environment. We further draw on social cognition theory to propose that highly sensitive individuals who tend to use a communal schema to preferentially perceive solidarity and care in professional situations are more likely to occupy these misaligned brokerage positions. Evidence from two empirical studies shows that highly sensitive brokers underperform. Adopting an implicit lexical-decision measure of communal schemas, we find that low sensitive individuals tend to bridge structural holes when communal schemas are absent, whereas highly sensitive individuals only become brokers when they perceive social environments through a communal lens. The results of moderated mediation analysis indicate that the communal schema (mis)guides highly sensitive individuals to brokerage positions that undermine their task performance.

Keywords: social networks, brokerage, sensory processing sensitivity, communal schema, task performance

Introduction

In organizations, network brokers connect individuals disconnected from each other (Burt, 1992). This structural position allows them to influence the flow of information and interactions, endowing them with vision and control advantages to outperform others (e.g., Mehra et al., 2001). Drawing on rational actor models (e.g., social exchange theory; Klein et al., 2004), network literature has mainly portrayed individuals as self-interested agents seeking social relationships that maximize benefits and minimize costs. Brokerage has thus been seen as the strategic position through which people pursue high performance (Burt, 1992), quicker promotion (Brass, 1984), and novel ideas (Burt, 2004).

However, many brokers cannot derive benefits to their individual performance (Burt et al., 2013). Research has shown that performance advantages dissolve for brokers who act collaboratively (Obstfeld, 2005; Soda et al., 2018). Moreover, there are substantial costs of occupying brokerage positions, such as elevated anxiety (Brands & Mehra, 2019) and endangered trust (Tasselli & Kilduff, 2018) for specific profiles. The rational actor model of brokers falls short of explaining why those individuals occupy "misaligned" brokerage positions where they miss performance advantages (Soda et al., 2018, p. 901). Past research has studied collaborative brokers who play the broker's role because of formal structure or work design (e.g., Kellogg, 2014). Hence, we

question when and why people would self-select misaligned brokerage positions that are detrimental to their performance.

We first identify sensory processing sensitivity (Aron & Aron, 1997; Aron et al., 2012) as a neurobiological trait misaligned with brokerage advantage. This trait is characterized by an innate perceptiveness and responsiveness to environmental stimuli. People who are high in this trait have been found to be novelty and reward-seeking (Smolewska et al., 2006), entrepreneurial (Harms et al., 2019), and empathetic (Greven et al., 2019). However, they are also susceptible to job stressors (Vander Elst et al., 2019) and easily overwhelmed (Bas et al., 2021). They may be drawn to brokerage positions for novelty and opportunities but may quickly get emotionally exhausted coping with the associated high demands and underperform in daily tasks.

According to rational actor models, highly sensitive individuals would avoid brokerage positions given their misalignment with brokerage advantages. However, this rational view of network action has been increasingly challenged in network literature (e.g., Kilduff & Brass, 2010; Kuwabara et al., 2016; Nebus, 2006) as individuals are only "subjectively rational" (Vroom, 1996, p. 18). They may make the decision they believe to be optimal at the moment yet their sensemaking is constrained by the perception of the social situation. Social cognition theory (Fiske & Taylor, 1984, 2013; Neisser, 1967) suggests that people rely on pre-existing knowledge (e.g., schemas, scripts, stereotypes) to quickly collect new information and judge whether their needs or expectations

can be met. We thus propose that the formation of a misaligned network is decided by how people subjectively experience and habitually perceive social environments. In particular, heuristics and cognitive shortcuts may play a special role in this process as they can lead to "a degraded version of the optimal process" (Nebus, 2006, p. 626).

We argue that communal schemas (Blatt, 2009; Fiske, 1992) explain when highly sensitive individuals occupy such misaligned brokerage positions. This schema favors the perception of 'communal sharing' cues (Fiske, 1992) signaling solidarity, equivalence, and care, and heuristically creates a positive illusion of social contacts, regardless of actual relationship history (Blatt, 2009; McMillan & Chavis, 1986). Such schematic communal perception may make highly sensitive people feel safe to bridge structural holes and befriend even individuals with whom they have no shared contacts but hinders them from realistically assessing the gain and cost of such relationships.

To test our theory, we collected data from two complete student cohorts – a Master's and an MBA cohort. We chose student cohorts in their first year to ensure that the network structure was not a product of formal structure, work design, or prior interaction history. We developed a lexical-decision measure of communal schema to test how people schematically process words characterizing different relational schemas. This implicit measure captures how people interpret naturalistic organizational settings and act in complex situations (Uhlmann et al., 2012). We first show that sensory processing sensitivity offsets the benefit of brokerage in task performance. Moreover, communal schemas

only help highly sensitive persons to occupy brokerage positions, which eventually endangers their task performance.

Our paper has important theoretical and practical implications. First, we join recent discussions on the downsides of brokerage (Barnes et al., 2016; Burt et al., 2019; Mell et al., 2022; Tasselli & Kilduff, 2018) and identify for whom brokerage is a liability. Stressing the affective experience of brokers, we show sensory processing sensitivity as an intrapsychic lens that amplifies the affective costs in brokerage positions and nullifies the information advantage for performance. Second, we advance research on cognition and misperception in social networks (Byron & Landis, 2019; Smith et al., 2020) by identifying the relational schema that implicitly drives the formation of misaligned brokerage. Drawing on social cognition theory, we argue that people's network position results from how they experience and heuristically perceive the social world. Due to innate sensitivity and communal schema, people may form a positive illusion of social reality and occupy an eventually self-diminishing network position. This further exemplifies how 'docile' individuals are 'taxed' in individual fitness for responding to 'altruist' social calls (Simon, 1993) and complements the rational choice models (e.g., social exchange theory) in how people build social networks. Third, we add to research on traits, genetic heritage, and social networks (S. A. Burt, 2008, 2009; Fang et al., 2015) an examination of the misalignment between individual characteristics and structural positions. Sensory processing sensitivity, a heritable trait expressed since a young age, may entail a self-diminishing risk in occupying costly

network positions. Specifically, the highly sensitive individuals holding communal schemas may occupy brokerage positions seeking belongingness and kindness but become the sources of emotional support and advice themselves in social cohorts. These findings provide important insights for developing theories and inventions for vulnerable individuals who are needed for building communal, inclusive organizations.

Theory Development

Brokerage has been associated with numerous structural benefits (Burt, 1992; Kwon et al., 2020; Li et al., 2018; Wang et al., 2014), yet not all brokers equally enjoy the performance advantages (Buskens & Van de Rijt, 2008). These structural advantages often rely on brokers' exclusive, timely access to the nonredundant information held by their disconnected contacts (Kwon et al., 2020). However, the structure is merely a proxy of exposure to unique, diverse information (Brands & Mehra, 2019). Acquiring and making use of diverse information is a more complex process. Recent research (Soda et al., 2018) has addressed the differences in value harvested from brokerage and has examined brokers' strategic orientation and behavior in acquiring and integrating heterogeneous information. Specifically, to cover the coordination costs of open triads and derive individual benefits to their task performance, brokers' actions need to be aligned with brokerage advantages. They need to actively collect information and maintain the informational advantage without redistributing it among their direct contacts.

Affective experiences in brokerage also influence how brokers perform tasks. In their experiment, Brands and Mehra (2019) found that women become anxious when performing tasks in brokerage roles because of the stereotype of women brokers (Brands & Kilduff, 2014). The anxious state curtails the cognitive resources that could have been mobilized to fulfill the ongoing task and detriments performance. We thus propose that people more easily feel emotionally exhausted in demanding situations, as are individuals of high sensory processing sensitivity (Vander Elst et al., 2019), will get worn out from coping with the informational and emotional demands in brokerage positions and show worse task performance.

Misalignment between Sensory Processing Sensitivity and Brokerage Advantages

Sensory processing sensitivity captures a person's innate perceptiveness and emotional reactiveness to the environment (Greven et al., 2019). Highly sensitive individuals have a low threshold for registering external stimuli and are more susceptible to the impact of environments. They benefit more from supportive experiences yet suffer more harm in negative environments (Pluess & Boniwell, 2015; Slagt et al., 2017). They are easily overwhelmed (Aron et al., 2012; Homberg et al., 2016), socially anxious (Tabak et al., 2022), and vulnerable to compassion fatigue and burnout (Pérez-Chacón et al., 2022). They are prone to emotional exhaustion when exposed to high job demands, including task and emotional demands (Vander Elst et al., 2019; Pérez-Chacón et al., 2022). Research has found that emotional exhaustion

usually distances individuals emotionally and cognitively from their work (Maslach et al., 2001) and decreases job performance (Baer et al., 2015; Halbesleben & Bowler, 2007; Wright & Cropanzano, 1998).

Brokerage is a network position that places high demands on its occupant (Stovel et al., 2011). Effectively gathering and processing heterogeneous information from diverse sources requires considerable cognitive resources from brokers, who need to manage the "tension between the personal ties that make brokering possible and the gains ...from the brokering role" (Stovel & Shaw, 2012, p. 154). Specifically, brokers may face conflicting demands (Burt, 1992), role conflicts (Mehra & Schenkel, 2008), and are more likely to be questioned about their loyalty and ethics (Stovel & Shaw, 2012). Moreover, the intransitivity of relations characterized in brokerage (Gould & Fernandez, 1989) causes distress (Festinger, 1957) in sentiment relationships and is less bearable for friendly persons (Hallinan & Kubitschek, 1988). Hence, the network of many structural holes primarily satisfies the needs of mastery and efficacy but not the dialectically contradicting need for safety, support, and affiliation (Kadushin, 2002).

Altogether, brokerage positions place high demands on cognitive and emotional resources yet provide little safety or support. This may create an informational and emotional overexposure that more easily leads to emotional exhaustion for highly sensitive individuals. Such a drained mental state may constrain the amount of information these individuals can aggregate and use

intelligently in brokerage positions. The reduced cognitive resources and negative feelings may ultimately impair their performance in daily tasks.

Low sensitive individuals, who are better at filtering external influence (Bas et al., 2021), tend to be more emotionally resilient dealing with high job demands (Vander Elst et al., 2019). As they are less attentive to others' moods and less empathetic (Greven et al., 2019), they may be more adept at gathering information focusing on their own interest and benefit from the informational advantage provided by brokerage positions.

> *Hypothesis 1:* The higher an individual scores on sensory processing sensitivity, the less likely individual performance will benefit from brokerage positions.

Communal Schema and Sensory Processing Sensitivity in Brokerage Formation

Highly sensitive brokers are examples of individuals who occupy brokerage positions despite the misalignment between their innate trait and brokerage advantages. The question is whether and why people would occupy misaligned brokerage positions for non-exogenous reasons. Research on the origin of network structure (e.g., Klein et al., 2004) and networking (e.g., Porter & Woo, 2015) has drawn on social exchange theory (e.g., Blau, 1986), expectancy theory (Mitchell, 1982), and other rational-choice models (Emirbayer & Mische, 1998) to explain how individuals strategize to build social relationships that bring desired outcomes. Similarly, the brokerage literature has seen structural holes as 'maneuvered' by purposeful agents engaging in entrepreneurial activities and pursuing instrumental value through

social relations (Ahuja et al., 2012; Burt, 1992; Nohria & Eccles, 1992). However, the rational view of social actors may be incomplete – rather than making optimal decisions, people make decisions "they believe to be optimal at the time they make them" (Vroom, 1995, p. 18). Specifically, people do not have sufficient information to assess the value and cost of the relationship with each contact before knowing the person and may adopt heuristics in acquainting processes (Nebus, 2006).

Social cognition theory (Fiske & Taylor, 1984, 2013; Neisser, 1967) highlights that people draw on pre-existing knowledge to collect and interpret new information. Hence, when explaining why some people occupy the brokerage positions that endanger their performance, we examine the social cognition that (mis)guides people to brokerage positions. In particular, relational schemas (Baldwin, 1992), the mental templates that people use to perceive and interpret cues on social relations, may guide social actors to selectively "focus upon only a small area of reality" and reactivate "received structures" a priori (Emirbayer & Mische, 1998, p. 979). Such schemas help process a huge amount of uncertain social information efficiently but can hardly yield a "perfectly accurate picture of reality" (Carnabuci et al., 2018, p. 120). They show the type of relationship people desire and seek from others and further shape how they interpret experiences and construct relationships (Blatt, 2009; Reis et al., 2000). We focus on the schema that seems misaligned with what brokers seek in social relationships – the *communal schema* (Blatt, 2009; Fiske, 1992).

Communal schemas create elevated attention to cues signaling the 'communal-sharing model of relationship' (Fiske, 1992). This model expects relationship partners to be socially equivalent and the benefits and resources allocated based on needs (Clark & Mills, 1979; Fiske, 1992). Hence, people would not offer help in exchange for benefits, but to satisfy others' needs, express concerns, and show commitment to relationships (Blau, 1986; McMillan & Chavis, 1986). These schemas increase trust, strengthen group identification, and enhance obligation among group members (Blatt, 2009). Network studies (Kadushin, 2002) have drawn on psychological theories (e.g., Greenberg, 1991; Haidt & Rodin, 1999) to propose safety and effectiveness as two basic human needs people seek to satisfy through social networks. As brokerage positions primarily satisfy the need for efficacy and mastery but not for safety and affiliation, people seeking solidarity and care may avoid brokerage positions (Kalish & Robins, 2006). People with communal schemas would thus be less inclined to occupy these positions. Yet, this tendency may be contingent on a person's level of sensory processing sensitivity. In particular, communal schemas may drive low sensitive individuals away from brokerage positions but lure highly sensitive individuals into becoming brokers.

Without communal schemas, individuals may learn from repeated interaction what to expect from their contacts (e.g., whether they show affection, offer help, or return a favor, Porter & Woo, 2015) and develop accurate estimations of the costs and benefits of each contact. As low sensitive individuals are less empathetic and attentive to others (Greven et al., 2019), they

may more easily develop an instrumental view of social relations and are less bothered by the moral impurity associated with instrumental networking (Casciaro et al., 2014). Hence, they are more likely to occupy brokerage positions for 'the value buried in structural holes' (Burt, 2004, p. 60). However, the more accessible communal schemas are, the more likely low sensitive individuals may generalize all contacts as benevolent without tracking the value or maintenance costs associated with different relationships. As they are less entrepreneurial and novelty- and reward-seeking (Andresen et al., 2017; Smolewska et al., 2006), they would be less able and motivated to strategize in networking to pursue brokerage positions for information and control benefits.

In contrast, highly sensitive individuals are entrepreneurial, novelty- and reward-seeking. But they are also empathetic, socially anxiously (Tabak et al., 2022) and need a nurturing environment to flourish. They may be interested in brokerage positions, which offer nonredundant information and various advantages. However, in the absence of communal schemas, they may be aware that the trust, intimacy, and social support they need from a nurturing environment (Vander Elst et al., 2019) takes time and effort to develop. They would more accurately assess each social relationship based on interaction history (Porter & Woo, 2015) and may realistically understand the social exchanges they are embedded in. They may be more cautious about building bridging ties, which are time-consuming to maintain, difficult to trust, and can easily wither over time (Stovel et al., 2011).

With communal schema, highly sensitive individuals' perceptions of the same setting can drastically differ as they assume social relations to be communal and non-transactional. Rather than carefully learning about each contact and cautiously developing relationships over repeated interactions, they may generalize people in the same cohort to be trustworthy and expect them to act cooperatively. This biased perception gives them an illusion of the safety they seek from a supportive environment and empowers them to befriend people who can expose them to novel and valuable information without assessing the actual benefits and costs of such relations. They may be open to offering help to strangers because of their empathetic nature (Greven et al., 2019; Bas et al., 2021), expecting that they would also receive support from others when needed. This non-transactional view of relations and concern for others may reduce the negative moral self-concept or 'dirtiness' often experienced in professional networking (Casciaro et al., 2014).

We thus predict communal schema as the cognitive map that drives low sensitive individuals away from brokerage positions but lures highly sensitive individuals to brokerage positions. We formulate the following hypothesis:

> *Hypothesis 2:* The higher an individual scores on sensory processing sensitivity, the more likely communal schemas will lead to the occupation of brokerage positions.

Brokers' Performance from the Social Cognition Perspective

Our paper suggests that the way people construct their social relationships and network structure is constrained by their relational heuristic

and innate trait. Communal schemas bias individuals' perception and interpretation of social relations by creating a positive illusion, while sensory processing sensitivity leads to the longing for novelty, rewards, and social support. Early research has explained social structure formation with the anticipated consequences, seeing individuals as rational actors who seek to maximize their gain by building beneficial social relationships (e.g., Klein et al., 2004). Our social cognition perspective does not disconfirm the rational choice model but rather shows that individuals' reasoning process can be built upon a fallible schematic perception and assumption of social reality and that the valence of outcomes is shaped by their innate inner needs. Importantly, this inference-processing approach clarifies how some people effectively filter unimportant information and collect and utilize important information to form an aligned network structure, whereas others build a misaligned one.

Seeing brokerage formation from the social cognition perspective sheds new light on the impact of brokerage on performance. It differentiates brokers that occupy brokerage positions based on a realistic estimation of relationships from those who become brokers because of their schematic perception of social environments and inner needs. Specifically, by seeing the social world through a communal lens, highly sensitive people may feel an illusionary safety and misperceive a fit with brokerage positions. However, this misperception could lead to confusion once they are embedded in such structural positions. Their unsatisfied needs and the daily emotional exhaustion from brokerage positions can hamper their performance at work.

Functional magnetic resonance imaging (fMRI) studies show that highly sensitive individuals are empathetic and easily relate to others (Acevedo et al., 2018; Acevedo et al., 2014). They tend to help others when perceiving support (Vander Elst et al., 2019) and find meaning in contributing to others' well-being, even at the cost of their own needs (Bas et al., 2021). Such high empathy and interest in others is highly esteemed in social interactions (Oishi et al., 2010) and can spur friendships to be accepted, reciprocated, and sustained (Kleinbaum, 2018; Kleinbaum et al., 2015). Highly sensitive individuals may thus appeal as sources of social support to befriend. They may easily bridge structural holes when assured by communal schemas. However, this benevolent, non-transactional, and 'docile' approach can tax them since altruistic actions may decrease the actor's fitness while enhancing the fitness of others (Simon, 1993), especially in competitive environments among actors who seek to enhance themselves. As sensitive individuals are more prone to compassion fatigue (Pérez-Chacón et al., 2022), they may be more easily emotionally drained when they act as the providers of support and care in relationships. Altogether, high sensitivity and communal schemas can help individuals to bridge structural holes but may be detrimental to their individual performance.

The long tradition of network research has shown advantageous brokerage positions as viable vehicles for individual gains in performance and career growth (Balkundi et al., 2011; Fang et al., 2015). Our research shows a different case: the bridging position can in itself be desirable and serve as an end for individuals who are intrinsically interested in knowing the person rather than

reaping calculated benefits. They may pursue social relationships with motives beyond personal gain and bounded rationality in foreseeing costs (Simon, 1993). With communal schemas, highly sensitive individuals selectively recognize the communal side of the social world that energizes them but not the 'linear-ordered' competitive side (Fiske, 1992). These schemas eventually lead to poor performance for them through the influence of brokerage, rendering their brokerage position a liability rather than an advantage.

We thus hypothesize that communal schemas can make highly sensitive individuals pursue brokerage positions that are eventually a liability to performance:

> *Hypothesis 3:* The occupation of brokerage positions mediates the relationship between communal schemas and performance for individuals who score high on sensitivity.

Altogether, we predict that highly sensitive brokers tend to be underperforming brokers. They occupy brokerage positions under the influence of communal schemas but eventually suffer damage in their task performance.

Overview of Studies, Transparency, and Openness

We conducted two empirical studies with two complete student cohorts – a Master's cohort and an MBA cohort, in the Netherlands to test our theory such that we could examine the network structure formed with less exogenous influence such as formal structure, work design, and prior interaction history. Study 1 tested the moderation effect of sensory processing sensitivity on brokerage advantage (H1). This Master's-student cohort comprised an environment where students strove to excel in individual performance in

courses. Study 2 first replicated the findings of Study 1. It further tested the moderation effect of sensory processing sensitivity on the relationship between communal schemas and the brokerage position (H2) and the mediation relationship between communal schemas and performance via brokerage (H3). This MBA cohort is widely recognized for its intensive course schedule and often took their social lives as a balanced diversion from their academic studies. The MBA students have more professional experiences (Mean = 7.45 years) than Master's students (Mean = 2.09 years).

Our studies focus on friendship ties among individuals rather than instrumental ties. This is first because friendships consist of important avenues where performance benefits from interpersonal relationships (e.g., Brands & Merha, 2019). Specifically, empathy, affection, and frequent interaction are central to sentiment relations like friendship (Oishi et al., 2010) and can ease advice-seeking and information exchange (Casciaro & Lobo, 2008). Moreover, the affection and caring in friendship ties are aligned with the relational expectations based on communal schemas (Blatt, 2009). As empathetic, frequent interaction also looms large in our explanation of how sensory processing sensitivity enables the occupation of brokerage positions and leads to "collaborative overload" (Cross et al., 2016) or compassion fatigue, we consider friendship ties better aligned with our entire theory. However, we collected additional data on advice networks and ran additional checks to test whether our theory can be extended to other kinds of ties.

Below we describe our sampling plan, data exclusions, and measures in the study. We adhered to the *Journal of Applied Psychology* methodological checklist. We received the approval for data collection from the Institutional Review Board at the university, where the first author was affiliated during the data collection period. Data are original and have not been used in any previous publications. The proprietary data will be stored in the authors' online institutional repository and is available upon request. Analysis was performed using SPSS, version 26.0. Network variables were created using UCINET VI (Borgatti et al., 2002). This study's design and its hypotheses and analysis were not preregistered.

Study 1

Data and Sample

Sample and procedure

Participants were 68 Master's students (34 men, 34 women) at a business school in the Netherlands. Participants were recruited from a Master's program and invited to respond to a paper questionnaire in a classroom at a response rate of 76.4%. Four did not participate in the performance task and were removed from our dataset. The final sample totaled 64 individuals with an average age of 23.02 years (SD =1.65).

Social networks

We used the roster method to collect network data (Wasserman & Faust, 1994). This prevented respondents from forgetting important contacts while responding (Marsden, 2011). We presented each respondent with a

complete alphabetical list of all students registered in the Master's program. We asked them to identify individuals they see as friends: "Among people from your Master's program, who would you consider 'friends' – that is, people with whom you frequently and regularly have friendly and pleasant relationships during or after classes."

Measures

Individual performance

We used the final grade (scale of 10) of the course ending the same period of data collection as the measure of individual performance. The course was graded by faculty members who were blind to the topic and design of our study. The grade for this strategy of innovation course was important for students as it determined whether they would be eligible for honor class and receive the *cum laude* distinction of academic achievement, which merits high value in the job market.

Brokerage

We enlisted the UNICET VI (Borgatti et al., 2002) software to calculate the brokerage within the friendship network. We assessed brokerage in the friendship network as *betweenness centrality*. This measure captures the extent to which an actor falls on the geodesic paths between other pairs of actors in the network (Freeman, 1979). This sample of 64 Master's students yielded 237 dyads with friendship ties.

Sensory processing sensitivity

We used the 27-item Highly Sensitive Person Scale, a validated self-report questionnaire developed to measure sensory processing sensitivity in adults (Aron & Aron, 1997; Aron et al., 2012). Respondents indicated the extent to which each statement correctly described their overall experiences in life on a scale from 1 to 7 (1 = *not at all*, 7 = *extremely*). Examples included: "Do you become unpleasantly aroused when a lot is going on around you?", "Do other people's moods affect you?" and "Are you deeply moved by the arts or music?" (α = .88; M = 4.07, SD = .76).

Control variables

We controlled for demographic variables including *gender* (0 = male, 1 = female), *age* at the time of data collection (as a continuous variable in years), *work experience* up to the time of data collection (as a continuous variable in years), and *nationality* – differentiated as Dutch versus non-Dutch since 96% of respondents were European (0 = local, 1 = foreigner). Following previous studies (Fang et al., 2015), we also controlled for respondents' *centrality* in the friendship network, considering popular individuals may more easily span across social boundaries and centrality may correlate with the brokerage.

Results

Table 1 presents means, standard deviations and correlations. Sensory processing sensitivity did not significantly correlate to self-monitoring (r = -.04, *ns*), centrality (r = .13, *ns*) or brokerage (r = -.00, *ns*). Consistent with the literature, centrality and brokerage were strongly correlated (r = .68, p = .000),

and both had a positive, moderate correlation with performance (r = .23, p = .07; r = .31, p = .01).

Hypothesis 1 predicted that sensory processing sensitivity negatively moderates the relationship between brokerage and performance. We ran linear regression models, controlling for demographic variables and centrality, and found support for Hypothesis 1 (see the results in Table 2). Model 4 in Table 2 shows that both brokerage and sensory processing sensitivity had a significant positive effect on performance, whereas the interaction effect was negative (b = -0.09, p =.03). This interaction significantly improved variance explained by seven percent (R^2 = .26, p =.03) over the direct-effects Model 3 (R^2 = .19, p = .10). To interpret these results, we plotted the predicted performance values, using ± one standard deviation to present higher and lower values of variables (see Figure 1). The simple slope test showed different patterns of how brokerage influenced performance for individuals of higher versus lower sensitivity. Individuals of lower sensitivity enjoyed performance advantages in brokerage positions (t = 2.24, p = .03), whereas people at a higher level of sensitivity were not able to benefit (t = .46, p = .65).

Additional Analysis

We symmetrized the friendship network and retained the minimum value to calculate the brokerage score in a reciprocal friendship network (Tasselli & Kilduff, 2018). We ran the same regression analysis with the same control variables. The result is consistent (R^2 = .25, p = .04).

We conducted the same analysis with data on advice networks to see whether our finding was restricted to the friendship network. We found the same

moderation effects of sensory processing sensitivity on the relationship between brokerage and performance for both advice-seeking brokerage (R^2 = .31, p = .00) and advice-giving brokerage (R^2 = .31, p = .01). To ensure that sensory processing sensitivity explains brokerage advantages above and beyond other relevant personality constructs, we regressed separate models controlling for self-monitoring (Snyder & Gangestad, 1986; R^2 = .26, p = .05) and the big five personality traits (Goldberg, 1992; R^2 = .29, p = .15) and found consistent results. The negative interaction term between sensitivity and brokerage remained (marginally) significant when controlling for self-monitoring (b = -0.09, p = .03) and for the big five personality traits (b = -0.08, p = .06).

Study 2

Data and Sample

Sample and procedure

Participants were 131 MBA students (73 men, 58 women) at a business school in the Netherlands. Participants were recruited from the MBA program and invited to respond to a web-based survey on their laptops in a classroom. The response rate was 87.3%. The sample totaled 131 individuals with an average age of 30.89 years (SD = 3.80) and an average work experience of 7.45 years (SD = 3.11). Participants were nationals of 38 countries. Among them, 36 were native English speakers, and 95 were non-native English speakers. We offer incentives (coupons of 10, 20, or 50 euros) to encourage participants to respond quickly while avoiding mistakes in the lexical decision task.

Social networks

We used the same roster method to collect network data (Wasserman & Faust, 1994). We posed the same network question asked in Study 1 and presented a complete alphabetical list of the full names of all the students registered at the MBA program on the same webpage directly below the network query. We asked respondents to mark the names of individuals they consider to be friends.

Measures

Individual performance

We used the grade of a final exam (scale of 10) administered one week after the data collection to measure individual performance. This exam was graded by faculty totally blind to the topic and design of our study. The exam was for a course on management science and mainly involved mathematical and technical analyses of business projects. It requires good preparation and high-quality focus.

Brokerage

We enlisted the UNICET VI (Borgatti et al., 2002) software to calculate *betweenness centrality* within the friendship network as a brokerage score. Our brokerage variable computed the extent to which actors fell on the geodesic paths between other pairs of actors in the network (Freeman, 1979). This sample of 131 MBA students yielded a total of 1997 dyads with friendship ties.

Sensory processing sensitivity

Under time constraints, Study 2 employed the 12-item short version of the highly sensitive person scale (Pluess, 2013), which has similar construct and

psychometric validity (Lionetti et al., 2018; Greven et al., 2019) as the full version of this scale (Aron & Aron, 1997). Participants indicated the extent to which each statement correctly described their overall experiences in life on a scale from 1 to 7 (1 = *not at all,* 7 = *extremely*), Sample items were: "Are you easily overwhelmed by things like bright lights, strong smells, coarse fabrics, or sirens?" and "Do you notice and enjoy delicate or fine scents, tastes, sounds, or works of art?" (α = .72; M = 4.77, SD = .88).

Communal schema

We adapted the Lexical Decision Task to measure the communal schema (Baldwin et al., 1993). This task tests for individual differences in schematic social perceptions and has been used to measure relational schemas underlying different attachment styles (e.g., Baldwin et al., 1993) and stereotypes activated in realistic scenarios (e.g., Kunda et al., 2002). It can gauge automaticity in processing information reflecting the logic of a specific schema, activated by words about a context or scenario. Such accessibility-based implicit measures can assess what people spontaneously come to mind in a given context and predict their actions in complex situations (Uhlmann et al., 2012). Our test primed participants with words about professional context to activate the relational schema they apply in the workplace. We then asked them to judge whether the next briefly appearing stimulus was a word or not. Since social expectations influence information processing (Baldwin et al., 1993), subjects were primed to more easily process schema-congruent information and quickly recognize words corresponding with their relational schema. In other

words, individuals who hold a communal schema will likely recognize words that characterize communal relations faster.

In the design phase of the test, we built a wordlist to detect communal and ranking schemas. Following prior studies (Lepore & Brown, 2002; Baldwin et al., 1993), we drafted 84 *prime-target / nonword* pairs of words. We first chose 84 nouns describing a daily activity, facility, or role at work (e.g., meeting, office, tradesman) as *prime words* to activate the schemas respondents associate with professional scenarios. We then selected 42 valid English words as *target words*: 14 *communal words* (words characterizing communal sharing relations, Fiske, 1992), another 14 *ranking words* (words characterizing linear-ordering relations), and the remaining 14 as concrete *neutral words* comparable in length (word length, M=8.36) with both types of schema words (word lengths: $M_{Ranking\ Word}$ =7.57, $M_{Communal\ Word}$ =7.43). We followed Walker (1976) and selected specific *communal* versus *ranking words.* Walker (1976*)* used four words (cooperate, socialize, share, and exchange) to prime the *communal* schema (labeled by Walker as horizontal schema) and four other words (order, dominate, lead, and direct) to prime the *ranking* schema (labeled as vertical schema). This practice is aligned with the method of DeSoto and Keuthe (1959) that used subjective probability to infer symmetry and transitivity in interpersonal relationships as criteria for detecting words characterizing horizontal versus vertical schemas (e.g., like vs. dominate).

We extended each of the two Walker (1976) lists to select 14 words from the literature on fundamental psychological models of social relations

(Fiske, 1992; Fiske et al., 2007). We thus added words characterizing features of the communal schema (e.g., solidarity, bond, communal) or ranking schema (e.g., superior, power, authority) to our wordlists. We also created another 42 "*nonwords*" following Baldwin et al. (1993). We took common words (e.g., bonus, social, shrink) and changed, added, or deleted one syllable (e.g., bonas, sociacle, shink). The *nonwords* were pronounceable and matched valid English *target words* in the number of characters (word length, M=6.9).

During the lexical decision test, we asked participants to stare at the center of the screen. The *prime word* appeared first on the center screen for 90 milliseconds (ms), followed by a masking string of letters that remained for 10 ms (XRLMOZQAESB, see Bargh et al., 1995: 772). Then following an asterisk at the center of the screen, the *target word* or *nonword* was displayed for 750 ms (see Baldwin et al., 1993). We asked the participant to focus on the center screen and only report whether the last word of each set of strings of letters – *target word* or *nonword* – formed a valid English word (Bargh et al., 1995) by clicking the corresponding key (E = word, I = nonword). Participants were instructed to respond as quickly as possible while avoiding mistakes.

We then asked participants to identify four types of words: communal, ranking, neutral, and nonwords. We used the ratio of the mean response speed of communal words to that of neutral words as a score of *communal schema*, and the ratio of mean response speed of *ranking* words to that of neutral words as a score for *ranking schema*. We use the ratios to control for language capability and individual cognitive speed. We excluded three outliers who

scored five standard deviations beyond the mean for communal and ranking schema. We excluded three more individuals who failed to recognize half of the real words – a probability below the guess rate indicating invalid participation in this task. We finalized a dataset of 125 participants.

Control variables

We controlled for demographic variables including *gender* (1 = male, 0 = female), *age* at the time of data collection (as a continuous variable in years), *work experience* up to the time of data collection (as a continuous variable in years), *nationality* using a different code for every single country varying from 1 to 38 (as a nominal variable), and *native language* to differentiate non-native and native speakers of English (0 = non-native speaker, 1 = native speaker). We again controlled for respondents' *centrality* in a friendship network. We also controlled for the *ranking schema* to account for schematicity in people's cognition and minimize the influence of their information processing capability and language proficiency.

Results

Table 3 presents means, standard deviations and correlations. Performance negatively correlated with both sensory processing sensitivity (r = -.26, p = .00) and brokerage (r = -.17, p = .06). Sensory processing sensitivity was not significantly correlated with brokerage (r = -.01, *ns*) or communal schema (r = .02, *ns*).

Hypothesis 1 predicted that sensory processing sensitivity would negatively moderate the relationship between brokerage and performance. To

test Hypothesis 1, we ran the linear regression analysis using our sample of 125 MBA students, controlling for demographic variables and centrality. Table 4 shows the results of the regression models. Supporting Hypothesis 1, Model 4 shows a significant *sensory processing sensitivity* × *brokerage* interaction (b = -0.23, p = .04). This interaction improved the variance explained by three percent (R^2 = .21, p = .002) over Model 3 (R^2 = .18, p = .005). We plotted the predicted performance values using ± one standard deviation to present higher and lower values of variables (see Figure 2). In line with our predictions, highly sensitive individuals' performance is significantly hampered in brokerage positions (t = -3.40, p = .001) while low sensitive brokers did not underperform (t = -0.72, p = .47).

Hypothesis 2 predicted that sensory processing sensitivity would positively moderate the relationship between communal schema and brokerage. To test Hypothesis 2, we ran linear regression models (see the results in Table 5). This hypothesis is supported by a significant *communal schemas* × *sensory processing sensitivity* interaction in Model 4 (b = 1.47, p = .02). This interaction increased the variance explained by four percent (R^2 = .22, p = .000) over Model 3 (R^2 = .18, p = .001). We plotted the predicted values of brokerage using ± one standard deviation to present higher and lower values of variables (see Figure 3). Simple slope analysis shows that high communal schemas drive lower sensitive people away from brokerage positions (t = -1.88, p = .06) but lead highly sensitive individuals into such positions (t = 1.84, p = .07).

Hypothesis 3 predicted that brokerage would mediate the relationship between communal schema and performance for highly sensitive but not for low sensitive individuals. To make the results more interpretable, we standardized the data and tested this moderated mediation model with Hayes's (2013) PROCESS macro version 3.5 (Model 58). Table 6 and Figure 4 present the results. The results provide further support for Hypotheses 1 and 2. Especially, the conditional effects of communal schema on brokerage (b = 0.27, p = .04) and brokerage on performance (b = -0.48, p = .002) are significant only at the higher but not lower value of sensitivity (± one standard deviation). We next tested the conditional indirect effect of communal schema on performance via brokerage for highly sensitive versus low sensitive individuals. Based on a bootstrap sample of 5000, zero fell outside the 95% confidence interval [-0.30, -0.02] for individuals of higher sensitivity. The conditional indirect effect of communal schema on performance via brokerage for highly sensitive individuals was b = -0.13 (SE = .07). This indicates that brokerage mediates the relationship between communal schema and performance for highly sensitive individuals. In contrast, for individuals of lower sensitivity, zero fell inside the 95% confidence interval [-0.02, 0.07] based on a bootstrap sample of 5,000, indicating that brokerage does not mediate the relationship between communal schema and performance for low sensitive individuals.

Additional Analysis

We symmetrized the friendship network and calculated the brokerage of the reciprocal friendship network. Regarding Hypothesis 1, we ran the same

regression analysis as in Table 3 subject to the same control variables. This did not change the results of the model (R^2 = .24, p = .000) nor the interaction between sensory processing sensitivity and brokerage (b = -0.22, p = .002). We ran the same analysis for data on the advice network and found the same moderation effect of sensory processing sensitivity (b = -0.15, p = .009) on the relationship between brokerage and performance for advice-giving brokerage (R^2 = .25, p = .00). Hence, in line with our suggestion, highly sensitive individuals suffer in performance when they are pursued by disconnected alters for advice. The results of H1 remained intact when controlling for both ranking and communal schema. Regarding Hypothesis 2, we ran the same regression analysis of symmetrized friendship matrices with the models in Table 5. Results were unchanged for the model (R^2 = .14, p = .02) and the interaction between sensory processing sensitivity and communal schema (b = 1.99, p = .05).

Discussion

Consistent with the findings from Study 1, Study 2 also shows that the higher one scores on sensory processing sensitivity, the less likely one's performance would be positively influenced by brokerage. Compared with the course grade in Study 1, Study 2 involves grades of an exam. As high exam performance requires good preparation and high-quality focus, it may be more susceptible to the affective costs in brokerage positions. This might explain why brokerage has a negative main effect on performance in Study 2. Moreover, Study 2 also provides support for the positive moderation effect of sensitivity on the relationship between communal schemas and brokerage (Hypothesis 2) and

the moderated mediation effect (Hypothesis 3). The results support our proposition that communal schema only drives highly sensitive individuals to become brokers but causes damage to their performance via the occupation of a brokerage position. Taken together, Studies 1 and 2 show that highly sensitive individuals cannot enjoy the performance advantages usually provided by brokerage positions, and they only tend to occupy such misaligned positions when they hold communal schemas.

General Discussion

This research examines why people occupy misaligned brokerage positions. We first identified the individuals who are less suited to benefit from brokerage positions. We conducted two empirical studies and found a constant negative interaction between brokerage and *sensory processing sensitivity* on task performance: highly sensitive brokers reap no value and may even suffer by occupying a brokerage position. We further unraveled why highly sensitive brokers are attracted to this misaligned costly position. We adopted a social cognition view of brokerage formation and proposed *communal schema* as the key relational heuristic that attracts highly sensitive individuals to brokerage positions. Highly sensitive individuals who hold a communal schema more easily become brokers but suffer undesired or unintended damage to their performance in such positions. These results have important implications for theory and practice.

Theoretical Implications

We introduce a new expression of individuality to network research that embodies an intrapsychic lens amplifying the affective and cognitive costs of brokerage positions – sensory processing sensitivity. This neurobiology-based experiential lens (Greven et al., 2019) constrains the benefits people can effectively draw from their social relations and network structure. Hence, complementing research that has largely examined individuals' fit with network positions (e.g., Fang et al., 2015), we contribute to brokerage research by identifying an innate trait (i.e., sensory processing sensitivity) misaligned with brokerage advantage, entailing a risk of occupying self-detrimental positions. This trait differentiates brokers who suffer from those who benefit in the same network cohort. It shows what performance advantages (e.g., Burt et al., 2013) and downsides of brokerage (e.g., Burt et al., 2019) are contingent on.

We also extend the examination of cognitive schema in network research (Brands, 2013; De Soto, 1960), especially of the less-discussed outcome of cognitive social networks (Kilduff & Lee, 2020). Prior research has examined linear-ordering schema that improves social structure learning (Janicick & Larrick, 2005; Walker, 1976) and leadership attribution (Carnabuci et al., 2018). These schemas are measured with a memory test where people are asked to remember relations of different structures among provided names. Our research adopts an implicit lexical approach by testing how fast individuals process words that semantically characterize communal schema. Such implicit measure tests people's interpretation of organizational environments and predicts their actions in complex situations (Uhlmann et al., 2012). The

schematic communal perception of the social environment boosts the perception of kindness and care and empowers highly sensitive individuals to pursue bridging positions. We show that automaticity in processing specific social information can delude individuals to network positions that are misaligned with their innate traits and too costly for them to occupy.

Sensory processing sensitivity and communal schemas consist of information processing lenses beyond people's control and conscious awareness. Subject to innateness and heuristics, people are prewired in how they consciously taste reality and process social situations. We thus bring together trait and cognition and present a social cognition perspective to clarify how communal schemas and sensory processing sensitivity lead individuals to subjectively experience and make sense of the same relational structure in qualitatively different ways. This exemplifies how people form idiosyncratic preferences in response to "differently experienced reality" with "bounded rationality" (Simon, 1993, p. 156, 160).

Moreover, we draw attention to the role of people's neurobiological nature in the formation and consequences of network structure. Sensory processing sensitivity has been largely studied in neuroscience and fMRI research (see Greven et al., 2019 for a review). Researchers have identified specific neural activations and mechanisms associated with a "sensitive brain" (Acevedo et al., 2014). Recent network research has also increasingly examined the neural basis for social network relationships and structures (S.A. Burt, 2008, 2009; Han et al., 2021; Parkinson et al., 2018; Schmälzle et al., 2017; Smith et

al., 2020). Our paper contributes to this line of work by showing how a fundamental neural difference in being responsive to environmental stimuli influences the way people form and are affected by their network.

Finally, by identifying individuals who tend to occupy brokerage positions that endanger performance, we show that people do not only pursue network positions that bring instrumental gain. Although network research describes brokerage as a means to personal benefit and career advancement (Ahuja et al., 2012; Burt, 1992), it may also be pursued as its sole end. Concretely, because of their innate trait, brokers may take a sincere interest in even strangers and invest in such relationships out of a communal view of social relations without an agenda of arbitraging. Despite the lack of performance gain, highly sensitive, communal brokers may enjoy other forms of gratification such as compassion satisfaction (Pérez-Chacón et al., 2022), or positive self-concept and moral purity (Casciaro et al., 2014). Our research thus complements the dominant narrative of rational 'instrumental' network agents with a 'communal' actor narrative that potentially explains the source of individuals' collaborative strategic orientation (Soda et al., 2019). Understanding the origin and costs of such altruism for individuals (Cross et al., 2016) is critical for developing organizations that can be inclusive and communal in long term.

Practical Implications

Our research has substantial implications for professional training and career management. First, we question an individual's ability to self-select a suitable and beneficial network position. Our research implies that people are

not necessarily aware of the detrimental effect of their relational orientation. This indicates opportunities for education or training toward networking (e.g., Burt & Ronchi, 2007). Clearer self-awareness of one's innate information processing orientation and relational (mis)perception in networking may lead to social action entailing more intentional and desirable consequences. This warns individuals to revise if they build social relations too costly to maintain or miss opportunities to seize the beneficial ones.

Moreover, we identify the profile of individuals who tend to trap themselves in a detrimental network position. Studies have depicted highly sensitive individuals as talented workers vulnerable to mental ailments at work, including stress (Evers et al., 2008), burnout (Pérez-Chacón et al., 2022), and emotional exhaustion (Vander Elst et al., 2019), which may easily lead to turnover (Andresen et al., 2017). These individuals also demonstrate high interpersonal sensitivity including empathy and social anxiety (Tabak et al., 2022). To our knowledge, our research is the first to examine the social network of highly sensitive individuals and its impact on performance. The tendency to occupy a misaligned brokerage position shown in our research can be especially problematic for highly sensitive individuals as it may cause more frustration and dissatisfaction at work. Awareness of this self-diminishing tendency and tailored intervention may guide highly sensitive individuals to occupy more aligned network positions or reduce the number of costly ties. For teams and organizations that want to create more inclusive environments, continuous social support and guidance may help highly sensitive individuals develop a real

sense of security, accommodate their social needs, and manage the stress in brokerage positions. This could be critical since communal, highly sensitive individuals may indeed be the sources of solidarity, care, and voluntary help in social cohorts.

Limitations and Future Direction

There are a few limitations to our study. First, we examined the innate and implicit social cognition orientations that people may not be aware of about themselves. These concepts and measures are necessary to unravel the blindness in how people occupy misaligned brokerage positions. Yet, these orientations in building social relations and being influenced by brokerage positions may diverge from people's self-report of how they view and handle relationships (Uhlmann et al., 2012). Further exploration of how people rationalize their relational choice in networking, envision the consequence of their acts, and interpret the real influence of their networks may yield interesting contrasts and valuable insights into our findings.

Second, we collected data from a Master's and MBA program to observe the spontaneous formation and outcome of networks while restraining the influence of formal structures. The two cohorts varied in professional experiences and career stages but still comprised relatively homogeneous individuals compared with other organizational contexts. Our findings should thus be interpreted with caution and may not generalize to all types of networks and contexts. Further research can investigate the boundary conditions of the tested effects, such as how formal structure, hierarchy, interaction history, and

organizational culture may interact with a person's innate trait and relational schema in shaping social action towards the network.

Third, even though we argued for causal relations and examined stable individual differences regarding sensory processing sensitivity and relational schemas, our data are cross-sectional and cannot explain long-term effects. Specifically, we wonder what follows when brokerage incurs damage to performance – will individuals adjust their social network in response? Even if the brokerage is ephemeral (Burt, 2002), it would be interesting to examine whether poorly performing brokers will move to a more aligned network position or instead connect with new alters but still bridge structural holes. Moreover, future research could further examine whether the brokerage that harms its occupant can benefit others that the broker is connected to and whether the brokerage positions that damage individual performance can be beneficial for creativity or reputation.

Conclusion

This paper draws on social cognition theory to explain the origin of underperforming brokers. This paper shows that highly sensitive individuals are less suited to benefit from brokerage positions in their task performance. Yet they occupy such misaligned brokerage positions only when they adopt a communal schema to interpret their social environment. This heuristic way of interpreting social relations empowers highly sensitive individuals to occupy brokerage positions but eventually endangers their performance in daily tasks.

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Table 1

Means, Standard Deviations and Correlations among Variables, Study 1

Variable	Mean	SD	1	2	3	4	5	6	7	8
1.Gender	*0.48*	*0.50*								
2.Age	*23.02*	*1.65*	-.07							
3.Nationality	*0.58*	*0.50*	.13	-.05						
4.Work Experience	*2.06*	*1.83*	.07	.12	.24					
5.Sensory Processing Sensitivity	*4.07*	*0.76*	.15	.11	-.11	-.11				
6.Self-Monitoring	*9.91*	*3.24*	-.15	.03	-.01	-.13	-.04			
7.Centrality	*0.08*	*0.05*	-.21	.22	-.20	-.22	.13	.18		
8.Brokerage	*2.87*	*3.93*	-.35**	.38**	-.17	-.05	-.00	.09	.68**	
9.Performance	*7.69*	*0.79*	-.01	-.01	-.19	-.17	.20	.02	.23	.31*

n=64; All coefficients below -.25 and above .25 are significant at the .05 level

Table 2

Regression Models Predicting Performance, Study 1

	Model 1		Model 2		Model 3		Model 4	
(Intercept)	8.20	1.43	9.20	1.46	8.72	1.53	8.66	1.43
Nationality	-.19	.21	-.18	.20	-.15	.20	-.15	.20
Age	-.03	.06	-.07	.06	-.08	.07	-.11†	.06
Gender	.06	.21	.20	.21	.16	.21	.20	.20
Work Experience	-.04	.06	-.05	.06	-.05	.06	-.04	.05
Centrality	3.28	2.16	-.58	2.74	-1.25	4.11	-2.32	2.70
Brokerage			.08*	.04	.09*	.04	.47**	.18
Sensory Processing Sensitivity					.19	.13	.39*	.15
Brokerage × Sensory Processing Sensitivity							-.09*	.04
Model F	1.04		1.72		1.82		2.32*	
R^2	.08		.16		.19		.26	
Adjusted R^2	.00		.07		.08		.15	

n=64; † p < .10, *p < .05, **p < .01

Table 3

Means, Standard Deviations and Correlations among Variables, Study 2

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10
1.Gender	*0.57*	*0.50*										
2.Age	*30.89*	*3.80*	.04									
3.Nationality	*16.18*	*10.85*	-.03	-.12								
4.Work Experience	*7.45*	*3.11*	.02	.83**	-.11							
5.Language	*0.28*	*0.45*	.00	-.08	-.34**	-.12						
6.Sensory Processing Sensitivity	*4.77*	*0.88*	-.34**	.18*	-.07	.15	-.10					
7.Centrality	*0.15*	*0.07*	.15	-.27*	-.13	-.27**	.27**	-.10				
8.Brokerage	*0.84*	*1.00*	.11	-.11	-.15	-.26**	.27**	-.01	.53**			
9. Performance	*7.66*	*1.01*	.09	-.15	.01	-.16	-.09	-.26**	-.19*	-.17		
10. Communal Schema	*1.04*	*0.19*	-.05	.09	-.11	.02	.05	.02	.06	.03	.06	
11. Ranking Schema	*1.04*	*0.18*	.11	.24**	-.03	.16	.06	.04	-.10	-.21*	-.06	.32**

n=125; All coefficients below -.18 and above .18 are significant at the .05 level

Table 4
Regression Models Predicting Performance, Study 2

	Model 1		Model 2		Model 3		Model 4	
(Intercept)	8.82	1.20	8.57	1.21	9.57	1.25	8.58	1.32
Age	-.03	.04	-.02	.04	-.01	.04	-.01	.04
Gender	.30	.18	.30†	.18	.13	.19	.19	.19
Work Experience	-.05	.05	-.07	.05	-.07	.05	-.08	.05
Language	-.15	.22	-.13	.22	-.20	.21	-.22	.21
Nationality	-.01	.01	-.01	.01	-.01	.01	-.01	.01
Communal Schema	.53	.47	.50	.47	.48	.46	.66	.46
Centrality	-4.17**	1.39	-3.21*	1.58	-3.35*	1.55	-3.60*	1.53
Brokerage			-.14	.11	-.11	.11	.94†	.51
Sensory Processing Sensitivity					-.27*	.11	-.07	.14
Brokerage × Sensory Processing Sensitivity							-.23*	.11
Model F	2.34		2.27		2.83		3.07	
R^2	.12*		.14*		.18**		.21**	
Adjusted R^2	.07		.08		.12		.14	

n=125; † p < .10, *p < .05, **p < .01

Table 5

Regression Models Predicting Brokerage, Study 2

	Model 1		Model 2		Model 3		Model 4	
(Intercept)	.31	1.00	.33	1.07	-.04	1.13	7.22	3.27
Age	.08*	.04	.08*	.04	.08†	.04	.07†	.04
Gender	.21	.17	.21	.17	.27	.18	.26	.18
Work Experience	-.16**	.05	-.16**	.05	-.16**	.05	-.16**	.05
Language	.43*	.20	.43*	.20	.45*	.20	.48*	.20
Nationality	-.01	.01	-.01	.01	-.01	.01	-.01	.01
Communal Schema			-.03	.45	-.02	.45	-7.03*	3.00
Sensory Processing Sensitivity					.10	.10	-1.39*	.64
Communal Schema × Sensory Processing Sensitivity							1.47*	.62
Model F	5.12		4.23		3.77		4.13	
R^2	.18**		.18**		.18**		.22**	
Adjusted R^2	.14		.14		.14		.17	

n=125; † p < .10, *p < .05, **p < .01

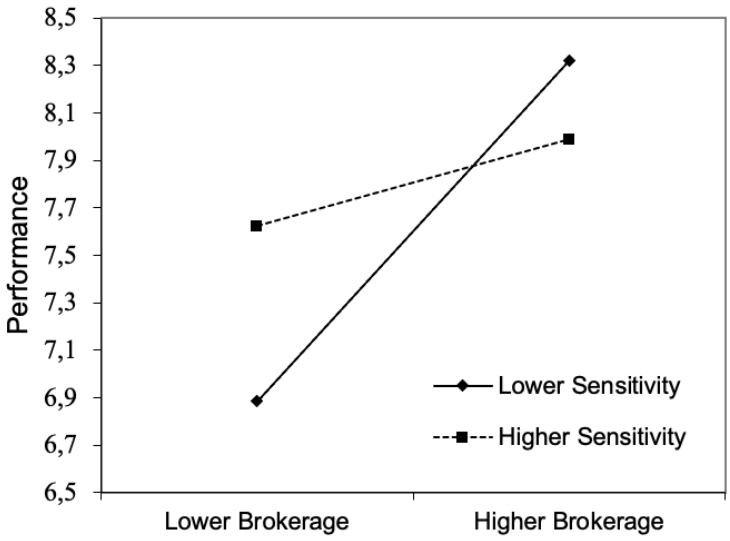
Table 6

Results from Moderated Mediation Analyses (Standardized data), Study 2

	Model 1 Brokerage	**Model 2 Performance**
Control variables		
Age	.34* (.15)	.08 (.16)
Gender	.16† (.09)	.09† (.09)
Nationality	-.06 (.09)	-.10 (.09)
Work Experience	-.51** (.14)	-.29 (.16)
Language	-.23** (.09)	.11† (.09)
Ranking Schema	-.25** (.09)	-.13 (.10)
Direct effects		
Communal Schema	.07 (.09)	.14 (.09)
Brokerage		-.30** (.10)
Sensory processing sensitivity	.13 (.09)	-.21* (.09)
Conditional direct effects		
Communal Schema × Higher Sensitivity (+1 SD)	.27* (.13)	
Communal Schema × Lower Sensitivity (-1SD)	-.13 (.14)	
Brokerage × Higher Sensitivity (+1 SD)		-.48** (.15)
Brokerage × Lower Sensitivity (-1SD)		-.11 (.12)
Conditional indirect effects	Independent variable: Communal Schema Mediator: Brokerage; Dependent variable: Performance	
Moderator variable: Sensory processing sensitivity	**Boot b (SE)**	**Boot CI**
Higher Sensitivity (+1SD)	-.13 (.07)	[-.30, -.02]
Lower Sensitivity (-1SD)	.01 (.02)	[-.02, .07]

n=125; † p < .10, *p < .05, **p < .01

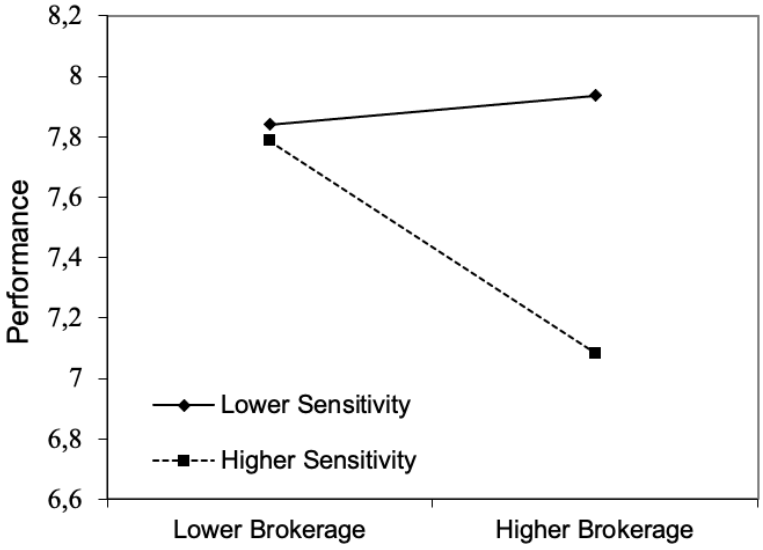
Figure 1
The Effect of Brokerage and Sensory Processing Sensitivity on Performance, Study 1



Note. Performance scores of individuals of higher and lower sensitivity (+/- 1 SD) are shown for lower and higher brokerage (+/- 1 SD).

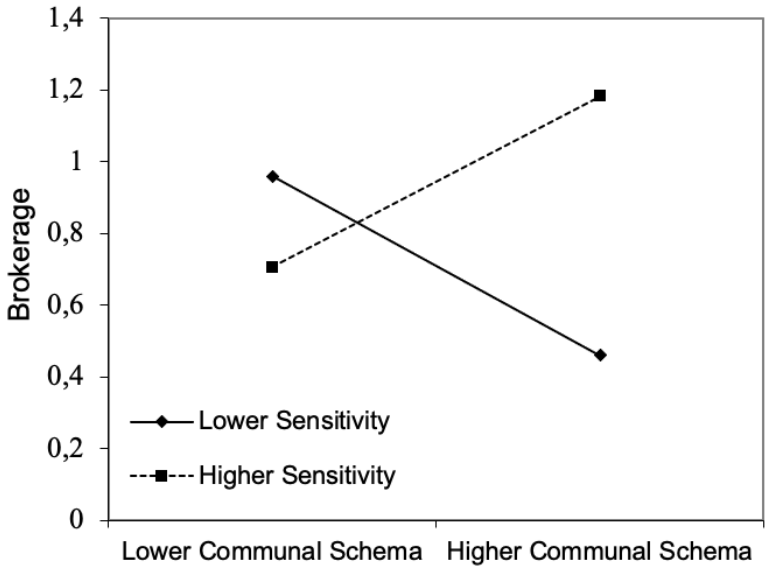
Figure 2

The Effect of Brokerage and Sensory Processing Sensitivity on Performance, Study 2



Note. Performance scores of individuals of higher and lower sensitivity (+/- 1 SD) are shown for lower and higher brokerage (+/- 1 SD).

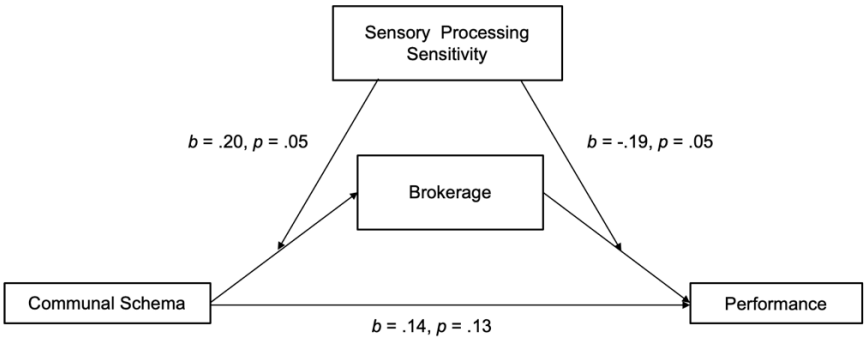
Figure 3
The Effect of Communal Schema and Sensory Processing Sensitivity on Brokerage, Study 2



Note. Brokerage scores of individuals of higher and lower sensitivity (+/- 1 SD) are shown for lower and higher communal schema (+/- 1 SD).

Figure 4

Theorized and Estimated Moderated Mediation Model (Standardized data), Study 2



CHAPTER 4

DISCUSSION

Summary of Main Findings

In this dissertation, I take an information processing perspective of a relatively new neurobiological trait, sensory processing sensitivity, and examine how it influences individual decision and behavior at work. Importantly, as the way people process information plays a critical role in how they evaluate creative ideas and manage social networks, sensory processing sensitivity may shape people's complex decisions regarding creative ideas and formation and utilization of social networks. In two separate papers, I examined the impact of sensory processing sensitivity on creative forecasting and the formation and utilization of brokerage respectively, theorizing on how contextual information are perceived and interpreted differently by people at different levels of sensitivity.

First of all, we found in this dissertation that sensory processing sensitivity is relevant to a few key work outputs. It influences how people make complex decisions at work and how they build and utilize social relationships at work. Critically, complementing previous research that has either focused on the positive or negative effects of sensory processing sensitivity, we found that the impact of this trait on key work outcomes are contingent on the situational factors, such as the cognitive tools (e.g., decision making methods) that people adopt in their work processes. Sensitivity can be a talent when the person adopts a suited method, especially when one can make good use of the characteristic

associated with sensitivity. However, it can also become a liability when one adopts a misaligned method or puts oneself in an overwhelming network position, failing to protect oneself from overstimulation. The papers in chapter 2 and 3 each yield important findings on the contingent effects of sensory processing sensitivity.

In *Chapter 2*, we propose a person-method interaction model in creative forecasting, arguing that the adopted decision-making method- either an intuitive or analytical method-needs to be aligned with the innate sensitivity of the person to yield accurate creative forecast. We further draw on socially situated cognitive theory to propose that the excessive perception and utilization of emotional and social cue in the decision process explains this interaction effect. We used advertisement campaigns as the creative context and conducted a lab experiment, a field experiment, and a pre-registered online experiment. Testing how people predict winners of a creative award and market reaction to different commercials, we found support for a person-method fit between sensory processing sensitivity and decision-making method. The more sensitive a person is, the more likely the person is more suited to use intuitive method in creative forecasting. In particular, highly sensitive individuals are less suited to use analytical method as this method would prompt them to engage in more perspective taking and experience stronger emotional activation, which disrupts and hinders their creative forecasting.

In *Chapter 3*, we explore the question of who are more inclined to occupy brokerage positions detrimental to their performance. We first propose

the misalignment between sensory processing sensitivity and brokerage benefits, such that the higher one scores on sensitivity, the less likely one would be able to extract value from brokerage for their individual task performance. This proposition brings us to revise social networks literature that generally sees network actors as rational and purposeful, seeking to build network positions beneficial for themselves. According to this literature and social cognition theory, people who are rendered automatically more attentive to communal cues by a communal schema should be more inclined to build networks of fewer structural holes. However, we argue that, sensory processing sensitivity moderates this relationship such that the higher one scores on sensitivity, the more likely a communal schema would lead to the occupation of a brokerage position. Overall, for individuals of higher sensitivity, communal schema is more likely to lead them to occupy brokerage positions that eventually detriment their individual performance. We found support for our theory in two empirical papers using data collected from a Master student cohort and an MBA student cohort. This research complements extant social networks narrative on how individuals are motivated to build a network from which they could arbitrage. We offer a case of how people of a specific innate predisposition are more susceptible to be driven to a misaligned network position via the biasing effect of a communal type of relational schema.

Altogether, the two papers demonstrate how sensory processing sensitivity influences decisions regarding creative ideas and the formation and utilization of social networks. Especially, I explore in these papers the

underlying mechanism of how sensory processing sensitivity, as an innate neurobiological trait, shapes the effectiveness of different decision processing methods, the impact of a specific relational schema, and the consequence of being in certain network position. Importantly, this research shows that sensory processing sensitivity shapes social cognition by changing how contextual cues are processed in the decision process and the responsiveness to specific types of social cues. It also contributes to research on creativity and social networks respectively. In the following section, I will discuss the relevance of this research to theory and practices.

Theoretical Implications

This research first adds to the still nascent work on sensory processing sensitivity in management. Past research has intensively studied this concept in the fields of neuroscience, clinical psychology and developmental psychology. Recent management scholars have started examining this trait for its negative consequences at workplaces, such as emotional exhaustion, and its positive influences, including helping behavior (Vander Elst et al., 2019) and entrepreneurial intention (Harms et al., 2019). My research first takes an information processing view of this trait to examine its impact on specific decisions and behaviors at work. This approach allows us to compare the different cognitive processes enacted by people at different sensitivity levels who are predisposed to favorably perceive different cues from a given scenario and process them differently. This innate individual difference in perceiving and processing contextual information is found relevant to how well people predict

the success of creative ideas and manage their networks in the two papers included in this dissertation. These papers demonstrate that innate sensitivity interacts with the cognitive tools (e.g., decision making method, cognitive schema) that people use to process information to shape the decision quality or behavior outcome. In paper 1, sensitivity interacts with the decision making method that people use to make the prediction regarding creative ideas whereas in paper 2, sensitivity interacts with the relational schema that people use to process social cues of the professional environments. Altogether, these papers show that the cognitive tools have differential effects on people of higher versus lower sensitivity. It is therefore necessary to understand how people could choose or develop cognitive tools that are better aligned with their goal or purpose and can yield better work results.

In addition, this research also speaks to research on sensory processing sensitivity in general by demonstrating that sensory processing sensitivity does not merely amplify the impact of a positive or negative environment. In particular, it is also a contingent factor that decides whether a work method or cognitive heuristic can lead to desirable outcomes. This research thus moves from looking at the general or aggregated impact of environment as positive or negative, but rather focuses on how everyday experiences or living conditions could have differential effects on people of higher versus lower sensitivity. Identifying the everyday tasks or experiences that challenge or consume highly sensitive individuals might be helpful for understanding their development long-term ailments such as stress or burnouts. This also sets an agenda for

recognizing coping strategies that help them accommodate to everyday tasks and life challenges.

My research also contributes to creativity literature, especially the evaluation of creative ideas. In my first paper, we examine a critical creativity evaluation that bridges the generation and implementation phases of creative ideas – creative forecasting (Berg, 2016). Extant research has looked into the impact of organizational roles and past experiences and found that cognitive states (e.g., construal level, divergent vs. convergent thinking) alters the types of cues that people attend to and eventually influences forecasting accuracy (Berg, 2016, 2019). We further take an information processing view of this understudied complex and uncertain decision of creative forecasting and examine how one could choose a suitable decision-making method aligned with their innate neurobiological ability such that they can make the most out of perceived information. In this way, we advance the discussion of the receiving side of creativity (Zhou et al., 2019) by demonstrating the interaction between the idea perceiver's dispositional factor and situational factor in predicting the success of creative ideas. Previous research has found individuals of higher creativity better evaluators of creative ideas (e.g., Caroff & Besançon, 2008) whereas sensory processing sensitivity is also found associated with higher creativity (Bridges & Schendan, 2019). We thus add to this line of literature by examining the effect of innate sensitivity on forecasting accuracy regarding creative ideas and its interaction with an induced decision process. Moreover, we identify emotional activation and perspective taking as the explanatory

processes that explains this interaction effect. In particular, these two cognitive processes activated for highly sensitive individuals demonstrated negative effect on creative forecasting. The excessive use of emotional and social cues might be distractive and biasing for prediction. However, the exact process of the impact of these two mediators can be further explored in future studies. Altogether, this research responds to the call of unraveling who can more accurately predict the success of creative ideas and the underlying cognitive process (Zhou et al., 2019).

My research advances social networks research by joining recent discussion on negative effects of brokerage positions (e.g., Burt et al., 2019), social networks and cognition (Smith et al., 2020), as well as people's occupation of detrimental brokerage positions (Carnabuci & Quintane, 2022). Our research first identified the innate neurobiological trait misaligned with network position. In two empirical papers, we repeatedly found that the higher one scores on sensitivity, the less likely one would benefit from brokerage positions in their individual task performance. We thus first contribute to research on the potential cost of occupying brokerage position by identifying the innate trait that makes individuals susceptible to the negative impact of exposure to structural holes. Moreover, we take a social cognitive perspective and explore how innate trait and relational schema jointly influence network formation. As innate sensitivity induces needs for both social closeness and novel information, people at different sensitivity levels might be influenced differently by communal schema in how they manage social relationships and making new

unembedded contacts. Our research thus depicts the influence of a communal motive of certain brokers, which complements the traditional narrative of benefit-seeking brokers. Importantly, taken together, this research demonstrates that, people might be driven by innate neurobiological orientation and cognitive heuristic to form a network structure that is eventually negative for themselves. This adds to the recent discussion on when people occupy brokerage positions that leads to poor performance (Carnabuci & Quintane, 2022). We advance this discussion by identifying the cognitive foundation, largely implicit and innate, that make some people more inclined to occupy brokerage position detrimental to their individual task performance. Importantly, we propose and provide evidence for a misalignment between communal schema and brokerage position, and between sensory processing sensitivity and brokerage benefits that explains the occupation of detrimental network position.

Practical Implications

Based on the findings from the aforementioned papers, we can make a few recommendations to management and professionals.

My research first provides important insights on how to cope with sensitivity in the workplace. Sensory processing sensitivity has been seen and experienced as a challenge that makes people susceptible to overstimulation and a number of mental ailments. In my research, I examine its impact on key work outputs and explore its interaction with different cognitive tools (decision making methods, relational heuristic). My research identifies the decision making methods that can help individuals at different sensitivity levels better

predict the success of ideas. I also identified the relational heuristics that lead people to misaligned network positions. These findings allow us to help professionals adopt cognitive tools better aligned with their goals. For instance, we see from paper 1 that the more sensitive the individual is, the more likely an intuitive decision making method, rather than an analytical method, will facilitate their creative forecasts. This is a critical message for highly sensitive professionals, as they display a natural tendency to analyze information consciously and thoroughly, despite the high cognitive load and overstimulation (Bas et al., 2021). Adopting a suited decision making method may improve their work performance and allow them to use this innate sensitivity as a gift rather than a liability at work.

Second, my research invites managers and professionals in creative industry, especially from advertisement industry, to reconsider how analytical and intuitive decision making methods are used in their professional practices. In particular, decision-maker roles and responsibility drive people to draw on explicit cues (e.g., social approval cues, Mueller et al., 2018) and evidence when they evaluate creative ideas and make forecasts about them. This makes analytical approach a usually favored method in creative evaluation. Only domain experts have been considered the ones credible for using their intuition (Dane, Rockmann, & Pratt, 2012). However, our research shows that the domain expertise of the professional shall not be the only justifiable case to use intuitive method at work. The professionals' innate sensitivity is also an important criterion for using intuition in creative forecasting.

Third, my research also informs professionals and management about how to better manage their social networks. We demonstrate that some people may be more inclined to occupy brokerage positions even if these positions eventually influence their individual task performance negatively. It is thus important to make these professionals aware of the consequence of their current approach of forming and utilizing social networks. This gives them an opportunity to reconsider whether their current automated cognitive orientation leads to outcomes aligned with their value and goals. Moreover, our research also shows that the people who hold a communal view of organizations and are innately more empathetic and benevolent in a social cohort tend to be the ones that are more hampered in their individual performance through occupying brokerage positions. This may call for the intervention and protection of organizations, because these individuals who can help build an inclusive and communal work environment are also the vulnerable ones that may easily get worn out.

Limitations and Future Directions

However, there are many interesting directions where this research can be extended.

First, most of the studies included in this dissertation are not conducted in organizational settings. We made this choice due to our study design, as we explore in paper 1 different decision processes and in paper 2 the relational schema using a lexical decision task as the measure. The design of both papers requires participants to focus on the task without distraction during the data

collection, as we need to use response time to compute variables. We thus needed a controlled environment where we could observe and track how well participants stayed focused during data collection. We thus have run most studies in the lab or in classrooms with student cohorts. However, the data collected in such settings are loyal to the theoretical construct defined in our papers but falls short on the (experimental) realism (Morales, Amir, & Lee, 2017). This means that our research design favors offering explanation of the mechanisms but may depart from real organizational practices. In other words, we need to be cautious to extend the findings to organizational settings. Future studies need to replicate and further examine the mechanisms found in these two papers in different organizational contexts with designs of higher realism and ecological validity.

Second, we have adopted the survey-based measure of sensory processing sensitivity in all the studies included in this dissertation. This is aligned with the research and professional practices on sensory processing sensitivity. However, considering the nature of this neurobiological trait, it would have been more convincing if we had also included neurobiological or physiological measures, such as heart rate, skin conductance, or EEG in our studies. In addition, as sensory processing sensitivity influences thoughts and action via shaping subjective experiences, it would have offered richer insights if we had collected the self-reported lived experiences from individuals on how people actually make decisions and handle their social relationships and social networks. Future research should go beyond the survey-measure of this trait and

include more types of data to illustrate the lived experiences, impact, and underlying mechanism of this trait.

Third, in paper 1, we take advertisement campaigns as the targets for creative forecasts. We choose advertising field as the context because advertisement campaigns communicates both objective cues and subjective cues and are thus suitable materials for testing our theory. However, other types of creative products may favor one type of cues over the other. For instance, innovation projects or research proposals may communicate complex information and reasoning that requires conscious thinking to fully understand the idea. It is thus unclear to what extent our findings can be extended to other types of creative targets. It is also unclear whether the same findings apply to ideas at different development stages. Future studies are needed for testing the findings with materials from a range of creative fields and different types of innovation (e.g., radical vs. incremental) and idea stages (early stage vs. finished ideas).

Fourth, in paper 2, we have examined the network formation and utilization together, exploring the cognitive foundation that leads people to a misaligned network position. However, our explanation of the mechanism underlying these effects are still tentative. For instance, we offered a few explanations for why highly sensitive individuals are less likely to benefit from brokerage positions, arguing that the emotional, informational, and relational load associated with brokerage positions would be more challenging for highly sensitive individuals to handle. Nonetheless, we did not measure these costs

directly and cannot validate the exact mechanism of how the performance of highly sensitive individuals is hampered in brokerage position. Future research is needed to unravel the mechanisms underlying this interaction effect between sensitivity and brokerage on individual task performance. Moreover, we also showed that communal schema and innate sensitivity constitute altogether the cognitive foundation that leads individuals to detrimental brokerage position. However, these cognitive orientations may work in an automatic, implicit, and unconscious way. It is important to understand how people consciously interpret and make sense of concrete relational scenarios and actually network with others. Further research needs to contrast these implicit cognitive processes and conscious reasoning regarding social relationships at work, which may bring important insights to literature on social networks and cognition.

Conclusion

In this dissertation, I explored the impact of a neurobiological trait, sensory processing sensitivity, at the workplace. Taking an information processing view of this trait, I focused on how it functions as an innate and intrapersonal factor that changes the effectiveness of different cognitive tools that people use to make decisions or manage social relationships. Critically, this dissertation makes important contribution to the field of creativity and social networks respectively by identifying sensory processing sensitivity as a contingent factor that people need to align their cognition with or adapt their cognitive approach to. People need to choose a decision method aligned with their innate sensitivity to accurately forecast the success of creative ideas. They

may also occupy brokerage position because of the joint effect of sensitivity and communal schema, despite the eventual detriment to their individual task performance. This work opens up interesting discussion on exploring the impact of people's subjective experiences of tasks, social relationships and methods. It also invites the use of richer types of data, including neurobiological data and qualitative narratives in future studies.

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RESEARCH SUMMARY

In this dissertation, I investigate how a neurobiological trait, sensory processing sensitivity, influences people's ability to perceive and process contextual information and their responses to complex work demands in modern knowledge-intense organizations. In particular, I propose that this trait can help explain how a person makes decisions about creative ideas and manages social networks, as this prewired orientation shapes how people process novel and social information in these processes. In this way, I take an information processing approach of sensory processing sensitivity and explore how the understanding of this trait can shed light on theories and practices in the fields of innovation and social networks. Specifically, I have examined in two empirical papers respectively how individuals forecast the potential of creative ideas and how individuals develop and utilize their social networks under the constrains of their innate sensitivity.

In Chapter 2, we propose a person-method fit model in explaining how individuals may better forecast the target audience's endorsement of creative ideas. Though a structured, evidence-based, analytical decision-making method has been widely adopted and accepted in organizational practices, an intuitive method may hold its promise for individuals at a higher level of sensory processing sensitivity. Relative to an analytical method, an intuitive method may allow these individuals to make use of the excessive perceived emotional and social cues in a less overwhelming manner and increase creative forecasting accuracy. We ran a lab experiment, a field experiment, and an online experiment

to test our theory in the context of advertisements and found support for our hypotheses.

In Chapter 3, we explore who are more prone to occupy brokerage positions despite its negative impact on their performance. We extend the research on relational schema and social network formation by demonstrating how communal schema may have differential effect on the occupation of brokerage position depending on the person's level of sensory processing sensitivity. Individuals at a higher level of innate sensitivity can be driven by their inner need of novelty and closeness to be biased by communal schema and lured to become brokers, which is eventually too costly for them to maintain. We collected data from different social cohorts and found evidence supporting our theory.

Altogether, this dissertation offers some early-stage exploration of the impact of sensory processing sensitivity on critical work outputs via its influence on task- or social- focused processes. These findings bear importance for both researchers and practitioners. In particular, this line of research informs organizations about how to improve organizational decision making in innovation and create a more inclusive social environment where everyone can flourish.

ONDERZOEKSSAMENVATTING

In dit proefschrift onderzoek ik hoe een neurobiologische eigenschap van mensen, namelijk sensorische verwerkingsgevoeligheid, van invloed is op hun vermogen om contextuele informatie op te pikken en te verwerken, en op hun respons op complexe werktaken in moderne kennisintensieve organisaties. Meer in het bijzonder stel ik dat dat deze eigenschap een rol kan spelen in de verklaring van hoe iemand beslissingen neemt over creatieve ideeën en sociale netwerken navigeert, aangezien deze inherente oriëntatie bepaalt hoe mensen in deze contexten nieuwe en sociale informatie verwerken. Ik benader sensorische verwerkingsgevoeligheid dus vanuit een informatieverwerkingsperspectief, en ik onderzoek hoe een begrip van deze eigenschap kan helpen bij de interpretatie van de theorieën en praktijken op het gebied van innovatie en sociale netwerken. Concreet heb ik in een tweetal empirische papers achtereenvolgens gekeken naar de manier waarop mensen voorspellingen doen over de potentie van creatieve ideeën en naar de manier waarop mensen hun sociale netwerken uitbreiden en inzetten onder invloed van hun aangeboren gevoeligheid.

In hoofdstuk 2 gebruiken we een zogeheten ‘person-method fit’-model om uiteen te zetten hoe mensen betere voorspellingen kunnen doen over de steun die creatieve ideeën zullen ontvangen van de doelgroep. Hoewel gestructureerde, evidence-based en analytische besluitvormingsmethoden breed zijn geadopteerd en geaccepteerd in organisatiepraktijken, zou een intuïtieve methode wellicht veelbelovend kunnen zijn voor mensen met een hogere sensorische verwerkingsgevoeligheid. Vergeleken met een analytische aanpak zou een intuïtieve methode deze mensen meer kans geven om gebruik te maken van hun overdaad aan opgemerkte emotionele en sociale signalen, op een manier die minder overweldigend is en die leidt tot meer nauwkeurige creatieve voorspellingen. We hebben een laboratoriumexperiment, een veldexperiment en een online experiment uitgevoerd om onze theorie te testen in de context van reclame, en daarin bewijs gevonden voor onze stellingen.

In hoofdstuk 3 onderzoeken we welke mensen meer geneigd zijn om een bemiddelende rol aan te nemen, ook wanneer dit een negatieve uitwerking heeft op hun functioneren. We breiden het onderzoek naar relationele schema's en sociale netwerkopbouw uit door te laten zien hoe schema's van gemeenschappen differentieel effect kunnen hebben op de inname van een bemiddelingsrol afhankelijk van de sensorische verwerkingsgevoeligheid van een persoon. Mensen van onderscheidende aangeboren gevoeligheid kunnen door hun innerlijke behoefte aan nieuwigheid en nabijheid worden beïnvloed door schema's van gemeenschappen, en ertoe verleid worden om een bemiddelingsrol in te nemen die op den duur te veeleisend is om vol te houden. We hebben data verzameld uit verschillende sociale cohorten en hebben bewijs gevonden voor onze theorie.

Al met al biedt dit proefschrift een vroege verkenning van de impact van sensorische verwerkingsgevoeligheid op kritieke professionele output door de invloed ervan op taak- of sociaal-georiënteerde processen. Deze bevindingen zijn van belang voor zowel onderzoekers als professionals in het werkveld. In het bijzonder biedt dit onderzoeksgebied een handleiding voor organisaties voor de verbetering van hun organisatorische besluitvorming rondom innovatie, en voor het creëren van een inclusieve sociale omgeving waarin alle medewerkers tot hun recht komen.

About the Author

Qi Zhang was born in Gaomi, mainland China, in 1989. She received her Bachelor's degree in Applied Psychology from the Southwest University in Chongqing, China. She then obtained her Master's degree in Applied Social Psychology (Mention très bien, Accompagement de l'Innovation et du Changement des Organizations) from the Université Paris Nanterre and Université Lumière Lyon 2, France. She has acquired the legally protected and recognized title of 'psychologist' ("psychologue" in French) in France and worked there as a consultant in innovation management. She started her trajectory as a PhD candidate at Rotterdam School of Management, Erasmus University, the Netherlands from 2017. She also made research visits to ESMT Berlin in 2022.

Qi's research investigates how individuals cope with complex information at the work place. She examines the impact of individual factors on information processing and related key work outcomes (e.g., creative forecasting, social networks, and tacit knowledge acquisition). She takes an interdisciplinary approach to addressing important issues in the fields of organizational theory and behavior. She specializes in experimental and survey methods but also draw on new techniques, including implicit measures and neuroscientific tools. Her work has been published in the Academy of Management Best Paper Proceedings 2021 and invited for revision & resubmission at the Academy of Management Journal. She is also a finalist for the award of best paper of practical implications for organizations in the Managerial and Organizational Cognition Division at the Academy of Management 2023. In addition to her research, she also taught Creative Processes, and Experimental Methods to Bachelors', Master's, and Part-time PhD students. She has also mentored students in the completion of their Bachelor's and Master's thesis.

Currently, Qi holds a position as Assistant Professor in the Department of Management and Organization at Rennes School of Business, France.

PORTFOLIO

PUBLICATIONS

Zhang, Q., & Tasselli, S. 2021. Occupying brokerage position that endangers performance? The perspective of interpretive agency. In Sonia Taneja (Ed.), Best Paper Proceedings of the 81st Annual Meeting of the Academy of Management (awarded to ~10% of papers). Online ISSN: 2151-6561.

Stam, D., van Knippenberg, D., Kearney, E., & Zhang, Q. In press. Visionary Leadership. In O. Epitropaki & R. Kark (Eds.), Oxford Handbook on Leadership and Identity.

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[1] Zhang, Q., Stam, D., & Deichmann., D. Too sensitive to analyze? The fit between decision making methods and sensory processing sensitivity in creative forecasting (went through 2 rounds of revision at Academy of Management Journal, now under review at Organizational Behavior and Human Decision Processes)

WORKING PAPERS

[2] Zhang, Q., & Tasselli, S. Moth to a flame: How communal schemas lead highly sensitive individuals to brokerage positions that hamper performance (Preparing the manuscript for submission to Organization Science)

[3] Zhang, Q., & Carnabuci, G. A social learning model of tacit knowledge acquisition in virtual collaboration: observation versus storytelling (Preparing the manuscript for submission to Administrative Science Quarterly)

[4] Koster, R., Stam, D., & Zhang, Q. The leader who brings better service: manager regulatory focus, store ownership and store performances. (Preparing the manuscript for submission to Journal of Management)

RESEARCH IN PROGRESS

[5] Zhang, Q., Stam, D., & Massaro, S. Sensory processing sensitivity and moral intuition: An organizational neuroscience approach (Stage: EEG Experiment – data analysis. Target journal: Journal of Applied Psychology)

ORGANIZED CONFERENCE SYMPOSIUM

Zhang, Q. 2020. Cognition and beyond: Reviving Individual Persons in Network Reality. The 80th Annual Meeting of the Academy of Management (Virtual), OMT/OB/MOC Divisions, Vancouver, Canada.

Organizer: Qi Zhang (Rotterdam School of Management)
Discussants:
Tiziana Casciaro (Rotman School of Management)
David Krackhardt (Carnegie Mellon University)
Presenters: Qi Zhang (Rotterdam School of Management)
Brian Reschke (Brigham Young University)
Catherine Shea (Carnegie Mellon University)
Gianluca Carnabuci (ESMT Berlin)

INVITED TALKS, PRESENTATIONS, CONSORTIA, AND SEMINARS

Zhang, Q., Carnabuci, G. D. 2023. A social learning model of tacit knowledge acquisition in virtual collaboration: observation versus storytelling. The 83rd Annual Meeting of Academy of Management, Boston.

Zhang, Q., 2023. Israel Organizational Behavior Conference, Doctoral Consortium, Tel Aviv.

Zhang, Q., Stam, D., & Deichmann., D. 2022. Evaluating novel technologies: art or science? The 82nd Annual Meeting of Academy of Management, Seattle.

Zhang, Q. 2022. Invited Presentation – Individuals' information processing and perception at work. University of Groningen, the Netherlands.

Zhang, Q. 2022. Invited Presentation – Individuals' information processing and perception at work. ESCP Paris, France.

Zhang, Q. 2021. When intuitive thinking works for creative forecasting: the roles of sensory processing sensitivity and domain expertise. SEI (Strategy, Entrepreneurship, & Innovation) Doctoral Consortium, Barcelona.

Zhang, Q., Stam, D., & Deichmann., D. 2021. When intuitive thinking works for creative forecasting: the roles of sensory processing sensitivity and domain expertise. Innovation Management Group – Seminar, RSM.

Zhang, Q. 2021. OMT Division Doctoral Consortium. The 81st Annual Meeting of Academy of Management, Virtual.

Zhang, Q., & Tasselli, S. 2021. Occupying brokerage position that endangers performance? The perspective of interpretive agency. The 81st Annual Meeting of Academy of Management, Virtual.

Zhang, Q., & Tasselli, S. 2021. Brokerage as a means or an end? The perspective of interpretive agency. The 37th European Group for Organizational Studies (EGOS), Virtual.

Zhang, Q., & Tasselli, S. 2020. Occupying brokerage position that endangers performance? The perspective of interpretive agency. Innovation Management Group – Seminar, RSM.

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Zhang, Q., & Tasselli, S. 2019. The neurocognitive foundations of brokerage advantage. Nano Conference: Social networks in organizations, RSM.

Zhang, Q., & Tasselli, S. 2019. Brokerage as advantage or liability: innate and construed constraints. ABRI mini-conference Social Network Analysis, Vrije Universiteit, Amsterdam.

Zhang, Q., & Tasselli, S. 2019. Information hoarder excels? Not always: sensitivity conditions the impact of advice-giving vs. advice-seeking brokerage on performance. OB Incubator at the 79th Annual Meeting of Academy of Management, Boston.

TEACHING AND SUPERVISION EXPERIENCE

Executives/Post-Graduate Level

Experimental Methods. Online & Offline 2020–2023

One-day workshop (9 a.m.–5 p.m.) for executives and part-time PhDs from the fields of strategy, economics, technology management, and organizational theory

Instructor: prepared materials and instruction, lectured and graded the assignment

Master Management of Innovation/Graduate Level

Research Fundamentals & Experimental Methods. Online & Offline 2018–2023

Lectures on research design and data analysis
Instructor: lectured, hosted group discussions and individual feedback

Master Thesis Supervision. Master in Innovation Management. 2017–2023
Supervised 28 master theses, co-supervised 12 master thesis

Bachelor (International) Business Administration/Undergraduate Level
Management of Innovation (Elective). Online & Offline 2019–2021
Taught about 1200 students per year
Instructor: lectured, created business cases, devised assignments, exams, and grading models, trained the TAs, and took responsibility for grading

Bachelor Thesis Supervision. International Business Administration. 2022
Supervised 10 bachelor thesis teams, 37 bachelor students
Taught research methods and accompanied students over 6-month

SERVICES

Local Liaison for the Academy of Management (AOM) Specialized Conference "Organizational Neuroscience: Bridging the Academic and Practitioner Divide." May, 2023

Executive Committee Member on "Blended Work" at Rotterdam School of Management 2022–2023

Seminar Organizer for Innovation Management Group 2019–2021
Coordinated 23 external seminars and 24 internal seminars

Ad Hoc Reviewer 2022
Personnel Psychology

Reviewer for Academy of Management Annual Meeting
MOC & OB Division 2022
TIM & OMT Division 2018

AOM AFFILIATION

Managerial and Organizational Cognition (MOC)

Organization and Management Theory (OMT)

Organizational Behavior (OB)

Organizational Neuroscience (NEU)

Technology and Innovation Management (TIM)

ACHIEVEMENTS, AWARDS & GRANTS

Finalist for the award MOC Division Best Paper with Practical Implications for Organizations at AOM Annual Meeting 2023

Talent Placement Award, Erasmus Research Institute of Management 2022

Selected for AOM Annual Meeting Best Paper Proceedings 2021

Acquired the legally protected professional title “psychologue” (psychologist) in France 2017

National Third Prize, National Extracurricular Technological Innovation Competition 2012

National Student Innovation Grant, National Education Minister 2009–2012

The ERIM PhD Series

The ERIM PhD Series contains PhD dissertations in the field of Research in Management defended at Erasmus University Rotterdam and supervised by senior researchers affiliated to the Erasmus Research Institute of Management (ERIM). Dissertations in the ERIM PhD Series are available in full text through: https://pure.eur.nl

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Erasmus School of Economics (ESE) at the Erasmus University Rotterdam (EUR).

Dissertations in the last four years

Abdelwahed, A., *Optimizing Sustainable Transit Bus Networks in Smart Cities*, Supervisors: Prof. W. Ketter, Dr P. van den Berg & Dr T. Brandt, EPS-2022-549-LIS

Ahmadi, S., *A motivational perspective to decision-making and behavior in organizations*, Supervisors: Prof. J.J.P. Jansen & Dr T.J.M. Mom, EPS-2019-477-S&E

Albuquerque de Sousa, J.A., *International stock markets: Essays on the determinants and consequences of financial market development*, Supervisors: Prof. M.A. van Dijk & Prof. P.A.G. van Bergeijk, EPS-2019-465-F&A

Alkema, J., *READY, SET, GO(AL)! New Directions in Goal-Setting Research*, Supervisors: Prof. H.G.H. van Dierendonck & Prof. S.R. Giessner, ESP-2022-555-ORG

Alves, R.A.T.R.M, *Information Transmission in Finance: Essays on Commodity Markets, Sustainable Investing, and Social Networks*, Supervisors: Prof. M.A. van Dijk & Dr M. Szymanowska, EPS-2021-532-LIS

Anantavrasilp, S., *Essays on Ownership Structures, Corporate Finance Policies and Financial Reporting Decisions*, Supervisors: Prof. A. de Jong & Prof. P.G.J. Roosenboom, EPS-2021- 516-F&E

Ansarin, M., *The Economic Consequences of Electricity Pricing in the Renewable Energy Era*, Supervisors: Prof. W. Ketter & Dr Y. Ghiassi-Farrokhfal, EPS-2021-528-LIS

Arslan, A.M., *Operational Strategies for On-demand Delivery Services*, Supervisors: Prof. R.A. Zuidwijk & Dr N.A. H. Agatz, EPS-2019-481-LIS

Aydin Gökgöz, Z. *Mobile Consumers and Applications: Essays on Mobile Marketing*, Supervisors: Prof. G.H. van Bruggen & Dr B. Ataman, EPS-2021-519-MKT

Azadeh, K., *Robotized Warehouses: Design and Performance Analysis*, Supervisors: Prof. M.B.M. de Koster & Prof. D. Roy, EPS-2021-515-LIS

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Sensory processing sensitivity influences how people innately perceive and process contextual cues (e.g., task, visual, social cues). In this dissertation, I take an information processing approach of this neurobiological trait and explore its role in how a person makes decisions about creative ideas and handles social networks. I have examined in two empirical papers how individuals forecast the potential of creative ideas and how individuals develop and utilize their social networks under the constrain of their innate sensitivity. The findings demonstrate that people at a higher level of sensitivity are better suited to use intuitive methods in forecasting how a target audience may accept a creative idea whereas analytical methods might be more effective for low sensitive ones. Highly sensitive individuals are also more easily to be lured to brokerage positions in a social network when they hold a communal schema, befriending people who are not friends with each other, despite the detrimental effect to their individual performance.

Altogether, this dissertation offers some initial yet meaningful insights on the impact of sensory processing sensitivity on critical work outputs via its influence on task- or social- focused processes. These findings bear importance for both researchers and practitioners, informing organizations how to improve organizational decision making in innovation and create a more inclusive social environment where everyone can flourish.

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