"I feel and think, therefore I am": An Affect-Cognitive Theory of management decisions

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"I feel and think, therefore I am": An Affect-Cognitive Theory of management decisions

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Abstract

I propose an Affect-Cognitive Theory to comprehensively understand how decisions occur in organizations. To this aim, I first review the assumptions of sensemaking and decision-making streams of research, especially the influence of bounded rationality, affective states and their relationships with cognition; then, I integrate them on the common basis of socially situated cognition. This new theory emphasizes the role of affective states in determining/being determined by cognition and its errors, pointing out decision makers' affect as the result of multi-level adaptations to the physical and social environment. Management decisions are path dependent but not immutable; they, indeed, bank on the predominant feeling resulting from the modifying interactions and regulations of decision makers with their physical and social environment. Here, decision makers are proposed as "emotional cognizers" overcoming the thinking-feeling dichotomy that has often featured in the study of management decisions. This theory is beneficial for behavioral strategy, offering the needed assumptions to intertwine human cognition, emotions, and social behavior.

Keywords: sensemaking; decision making; socially situated cognition; affect; cognition; rationality; behavioral strategy.

1 Introduction

In management and organizational domains, it has recently been recognized that research, at all levels of analysis, starts from theories that are devoted to explaining how management decisions – regarded as decision-making activities occurring at the low-, middle- and top-management levels – are made (Koontz, O'Donnell, & Weihrich, 1980). Within these theories, two major advancements that have been realized are the bounded rationality concept (Simon, 1947) and the prospect theory (Kahneman & Tversky, 1979), which strongly questioned the presumed perfection of the human mind and are considered as two pillars of the decision-making literature. Both these milestones are based on the selective perception of individuals, whose functioning has been deepened, however, by another literature stream within management and organizational domains, that is, sensemaking (Weick, 1979; 1988; 2005). These two avenues, belonging to different paradigms ("reductionist" for decision making and "contextualist" for sensemaking; Powell, Lovallo, & Fox, 2011), have importantly conditioned the history of management for the last 70 years (Cristofaro, 2017; Maitlis & Christianson, 2014) bringing also the birth of new research areas (e.g., negotiation, behavioral strategy, neurostrategy, etc.).

Despite the obvious link between the construction of experiences' meaning and the thinking activity behind a choice, few (although not conclusive) have been the attempts to link sensemaking and decision making to comprehensively understand the psychology of human choices – the core of organizations' activities and related performances (March, 1991). This incompleteness of the literature leaves academics and practitioners unaware of what the mechanisms are that connect the two and how to improve decisions by considering their entire progress. One of the best attempts to make this liaison is the action-oriented problem-solving model (Rudolph, Morrison, & Carrol, 2009). In particular, this model depicts the connections between the velocity in collecting and interpreting cues in sensemaking, and the

resulting choice behavior, finding that varying the pace of sensemaking causes the shift from a decision-making behavior to another. However, this theory neither considers the act of making a decision as socially situated (despite being a theoretical pillar for both sensemaking and decision-making literature; Simon, 1947; Weick, 1979), nor does it precisely identify the specific cognitive mechanisms, with reference to biases, of each choice of behavior while making a decision. What is also not considered, because of being developed in more recent years in both the streams of literature, is the influence of affective states (Coget, Haag, & Gibson, 2011; Cristofaro, 2018; Koskina & Keithley, 2010; Lerner, Li, Valdesolo, & Kassam, 2013; Liu & Maitlis, 2014; Maitlis Vogus, & Lawrence, 2013; Yang & Kelly, 2016) – intended as the "emotional or subjectively experienced feeling" (Colman, 2003, p. 14) – despite their inclusion being pivotal "in order to have anything like a complete theory of human rationality" (Simon, 1983, p. 29).

Stemming from the outlined gap, its importance, and the already made strong advancements, I offer an Affect-Cognitive Theory of management decisions for the integration of sensemaking and decision making based on the consolidation of reciprocal results made on cognitive mechanisms and affective states, indicating new theoretical linkages that "provide clear implications of theory for problem-solving in administrative and organizational situations" (Corley & Gioia, 2011; 14). The advanced propositions are built according to the recent psychological developments of the socially situated cognition (SSC) approach (Semin & Smith, 2013; Smith & Semin, 2004) – solidly rooted in social cognitive theory (Wood & Bandura, 1989) and the affect-as-information model (Lerner & Keltner, 2000; Niedenthal, Halberstadt, & Innes-Ker, 1999; Schwarz & Clore, 2003). In particular, SSC defines the knowing process as socially situated, thus occurring through the interaction of cognition and affective states of individuals with their physical and social environment (e.g., Walsh, 2018). This approach has already been implemented in management research for

proposing a process model of entrepreneurial sensemaking (Cornelissen & Clarke, 2010) and, because of this beneficial implementation, it is now considered a fruitful psychological ground for advancing cognitive research while taking into account sensemaking and the influences of the environment in which executives and entrepreneurs are embedded (Mitchell, Randolph-Seng, & Mitchell, 2011).

The proposed set of propositions emphasizes the influence of affective states in determining/being determined by cognition and its errors, pointing out decision makers' affect as the result of multi-level adaptations (in line with co-evolutionary studies; see Abatecola, 2014b) to the physical and social environment. In particular, I argue that the valence of decision makers' affective state, reinforced by similarly affective memories, defines the risk perception of the individual which, in turn, influences the cues' strategy collection and interpretation. The analysis of cues leaves, according to the affective state, a sense of legitimacy, inhibition, or uncertainty of the decision makers, which influences the construction of a plausible account for the situation faced. A decision, whose risk orientation varies depending on the framing of the plausible account, is accordingly made (Tversky & Kahneman, 1981). The sense of relief or frustration released reinforces the affective architecture of the social environment, unless a new interacting affective state changes the predominance of feelings.

The proposed Affect-Cognitive Theory allows for a serious development of the nascent stream of behavioral strategy (Powell et al., 2011) providing the necessary assumptions that are able to intertwine human cognition, emotions, and social behavior for improving the strategic management of organizations. This answers the call for a theoretical contribution that is able to investigate the interplay between perceptual accuracy, social constructionist processes, and decision outcomes (Healey, Hodgkinson, & Massaro, 2018; Maule & Hodgkinson, 2003). Moreover, thanks to the inclusion within the framework of affective

states and their adapting formation; here, the concept of decision makers as "cognizers" (Calori, Johnson, & Sarnin, 1994) is shifted to an updated one in which they are conceived as "emotional cognizers", going beyond the thinking-feeling dichotomy often featured in the study of management decisions.

2 Theoretical background

2.1 Sensemaking: Building mental representations

The social organizational theorist, Karl Weick, defined sensemaking as the mental activity that "involves the ongoing retrospective development of plausible images that rationalize what people are doing" (Weick, Sutcliffe, & Obstfeld, 2005; p. 409). Organizational actors, according to this social psychological approach, are involved in extracting cues (e.g., issues, events, and situations) from ongoing chaotic circumstances and make plausible sense of them, retrospectively (Maitlis & Christianson, 2014). Sensemaking, therefore, gives a meaning, through words expressed in oral and written forms, to confusing organizational life situations; the individual produces a satisfying account of the situation and takes rest from the ongoing and demanding sensemaking activity.

In particular, people initially try to make sense of things by decomposing the environment, i.e., "bracketing". People in organizations create many of their own bracketed environments that are representations of reality that are not true or false but versions that are more or less reasonable (Weick et al., 2005). To do this, organizational agents apply their mental models – i.e., thought processes about how things work in the outer world – that come from past experience and enable them to "label", i.e., categorize, the new experience (Abolafia, 2010). However, effects and outputs of the experience are what push searching backward and identifying plausible events that could have driven the experience itself; in other words, the organizational agent recurs to a historicizing approach for being aware of the new situation,

i.e., he/she adopts a "retrospective analysis of the courses of action". This step allows connecting the abstract mental model for interpreting the present with the concrete facts coming from the past, i.e., "presumption". These intertwined steps can be better understood by looking at the seminal work of Weick (1979) in which he states that attention comes as a reflection on past experiences; this is the moment when the conscious self takes place and can learn from the past action, otherwise the unconscious self has prominence (Lanir, 1989). Sensemaking not only has an effect on the present, in light of the past, but can be seen as a future-oriented activity by which people trace an expected future event and then put into practice some actions as if that event has already occurred (Gioia, Thomas, Clark, & Chittipeddi 1994); thus, implementing a retrospective interpretation of the envisioned event (Dervin, 1998).

However, these interpretations are also "socially constructed": the organizational agent's reality is constructed *prima facie* by him/herself and then it is bargained with other people within and outside the organization (Maitlis, 2005; Maitlis & Christianson, 2014; Weick, 2005). Therefore, in the sensemaking activity, a pivotal role is covered by the identity of the organizational agent; in particular, "who we think we are (identity), as organizational actors, shapes what we enact and how we interpret, which affects what outsiders think we are (image) and how they treat us, which stabilizes or destabilizes our identity" (Weick et al., 2005; p. 416). Identity affects sensemaking and vice versa because this activity is carried out in an environment in which it coevolves (Weick, 1979; 1988).

In sum, sensemaking is a pivotal activity of managers at all levels because it means scanning the environment and interpreting issues, and significantly influencing decision-making activities (Smircich & Stubbart, 1985). Looking at its connections with decision making, sensemaking is defined as occurring before identifying questions and answers, and feeding decision making (Gioia & Chittipeddi, 1991). From that, it clearly emerges that an

erroneous construction of the meaning of what surrounds decision makers can have an important effect on decision-making processes, raising the interest in lucidly defining the linkages between the two.

2.2 Decision making and the psychology of choice

In 1947, Herbert Simon specified that the human being, whom he called the "administrative man", is limited in the attempt to act rationally by his: a) computational capacity, b) impossibility of access to all information, and c) biological limits. In other words, Simon's economic agent has limitations in the perception, memorization, and representation of alternatives, as well as a cognitive architecture that does not allow formulating and comparing all the possible alternatives; this is also due to the significant scarcity of information. Therefore, those who work in companies can no longer make decisions in a perfectly rational way: individuals – regardless of their hierarchical level – can at any time be fallacious; they are victims of *bounded rationality*.

From that, management decision making and psychological functioning are highly connected, mainly because "judgment refers to the cognitive aspects of the decision-making process" (Bazerman & Moore, 2013; p. 1). More specifically, stemming from the fact that the individual's representation of the objects, goals, and actions in the problem situation have at their base a cognitive representation of the overall problem (Newell & Simon, 1972), the distortions that may occur in management decision making are certainly linked with the cognitive functioning of the involved decision makers.

Human cognitive functioning, according to Kahneman's (2003) studies, occurs in two different "Systems" of the human mind. System 1 is where the intuitive and unconscious thinking lays; System 2 is where the thought is far more reflective and where individuals recognize mistakes that occurred during reasoning. The operations of System 1 are conceived

as fast and automatic because they are driven by prior experience and emotions; thus, they are difficult to control or modify; in contrast, the cognitive operations of System 2 are "more likely to be consciously monitored and deliberately controlled" (Kahneman, 2003; p. 698). Kahneman (2003) also underlines how the output of System 1 is unmonitored by System 2; indeed, although one of the duties of System 2 is to monitor the quality, both of mental operations and overt behavior, the self-monitoring by System 2 allows many intuitive (almost all of the time flawed) judgments to be explicated (Stanovich & West, 2000). The errors resulting from the biased decision-making process prevent us from making sound decisions; as Kahneman (2011) explains, the irrational manner in which the human mind often works influences people's decisions in ways that they and others around them fail to anticipate. Moreover, even when we have gathered abundant work experience and knowledge, we are still subject to those biases, mainly because people have biases that impede them from using the information provided by experience (Brehmer, 1980). From that, two important questions arise: What are the main decision makers' biases? How do they occur?

2.3 Decision making and its deceptions

Cognition has been defined as all processes by which sensory input is transformed, reduced, elaborated, stored, recovered, and used (Neisser, 1967); thus, including the two activities of information collection and information processing. Among the milestones that have been produced in the cognitive domain, the ones made by the "heuristic and bias research program" (Kahneman & Tversky, 1972; 1979) are the ones that have mostly affected management research concerned with decision making. Through a series of laboratory experiments, the existence of a set of heuristics – cognitive shortcuts that our mind tends to use when its decision-making process is limited, in terms of time and data availability (Newell & Simon, 1972) –has been formalized in humans. In other words, decision makers use "rules of thumb"

to help them to make complex judgments, which are conceived as driven by subjective probability (rooted in Simon, 1947). However, although heuristics can be helpful, their use can also negatively affect the decision-making process (Tversky & Kahneman, 1973). Added to such heuristics are a series of decision traps (Hammond, Keeney, & Raiffa, 1998), namely cognitive deviations from rationality that always harmfully influence decisions. Heuristics and traps, which can be comprised under the umbrella term "cognitive errors" (or biases), alter *in melius* or *in peius* the decision-making process (Abatecola, Caputo, & Cristofaro, 2018). Some of the most studied cognitive biases are briefly mentioned here to support the understanding of the proposed theory.

The availability heuristic exists when people assess the probability of a future event on the basis of what past occurrences of that event are readily available in memory, which is not always correct (Tversky & Kahneman, 1973). Availability also applies to recent events. Indeed, this time effect appears because we tend to recall recent events more easily and, therefore, assume that they are more likely to happen. Relatedly, the representativeness heuristic exists when, in making a judgment about an individual, object, or event, people tend to look for traits corresponding to previously formed stereotypes (Kahneman & Tversky, 1972). Thus, we judge a few elements and automatically classify them into that category and, although this heuristic can be helpful in saving energy and time, stereotypes are just round the corner. Judgments are usually evoked by an affective evaluation happening even before any higher-level reasoning occurs (Zajonc, 1980). This conceptualization has been developed later, stating that emotions substitute logical reasoning when decision makers have to rapidly assess the risks and benefits of a chosen situation to improve judgmental efficiency (Finucane, Alhakami, Slovic, & Johnson, 2000). The confirmation bias appears when people tend to selectively search for supportive information, discarding the opposite (Hammond et al., 1998); they try to confirm their preconceptions, searching for data that test hypotheses,

such as instances in which the variable of interest is present. This one is obviously linked with the bounded awareness bias by which people, to avoid information overload, often unconsciously and automatically filter information (Artinger et al., 2015). This could lead to ignoring or neglecting useful, observable, and relevant data outside the range of people focus. Lastly, risk aversion bias means that risk averse people tend to search for options with moderate probabilities of gains and small probabilities of losses; while risk-seeking decision makers look for the reverse (Kahneman & Tversky, 1979). Moreover, decision makers' risk preferences are driven by the formulation of the decision problem, that is, how it is framed (Diacon & Hasseldine, 2007).

From that, despite the introduced seminal concepts explaining how decision-making processes happen and how they are biased, they do not explain how or where observable physical phenomena interact with the psychic world of inner (individual/collective) experience or why they occur. Indeed, the introduced cognitive studies only highlight that the root causes of human errors are in decision makers' attention/perception, which "select aspects of the situation to the exclusion of competing aspects that might turn choice in another direction" (Simon, 1947, p. 92; Kahneman, 2003; 2011). A recent psychological argumentation that tries to fill this gap is the Socially Situated Cognition, which is the object of the following treatise.

2.4 The integrating field: Socially Situated Cognition

The Socially Situated Cognition (SSC) approach (Smith & Semin, 2004) – rooted in the situated cognition studies – overcomes the apparent contrast between cognition, action, and social influences, reconnecting cognitive psychology with social psychology. In particular, the SSC approach is based on four pillars that are common for cognitive science and social psychology: a) cognition is for the adaptive regulation, and mental representations are action-

oriented, b) cognition is embodied (i.e., individuals use bodily capabilities to support and enable cognition), c) cognition is situated (i.e., it does not occur in a *vacuum* but in a social and physical context; also in line with ecological rationality assumptions), and d) cognition is distributed across social agents and environment. From these, cognition is intended in an active way: the individual interacts with the world through adapting (to the social contexts) actions from which it is possible to derive mental impressions which, in the meanwhile, form the judgment. In sum, according to this approach, behavior and cognition are intrinsically connected with the sensemaking activity, now interpreted as a dynamic, adapting, and active interrelation between language and thought, among decision makers and their environment. This intertwined view of behavior, cognition, and sensemaking through action orientation was indirectly considered in the action-oriented problem-solving model (Rudolph et al., 2009), in which decision makers make sense of a situation by collecting cues through actions, subsequently evaluate their plausibility with a certain grade of accuracy, and consequently result in different problem-solving behaviors (i.e., adaptive, fixated, stalled and vagabonding). However, formal aspects of cognition (i.e., cognitive errors) are not considered in this framework as well as the role of affective states.

In the SSC approach, cognition, affect, and motivation are pivotal because they are "all equally functionally indispensable and inseparable parts of a self-regulatory system, subserving adaptive action" (Smith & Semin, 2004; p. 59), basically assuming that brain and body work as a unique entity (originally postulated by Damasio, 1994). This last strong assumption adheres to the last advancements made on the role of affective states in management decisions, from which it resulted that "affect and rational thought interact – also with the context – and are the complementary halves for explaining the entirety of management decisions" (Cristofaro, 2018; p. 22). This coevolving interpretation of situated cognition is also initially considered in the SSC update (Semin & Smith, 2013), in which it is

strongly stated that cognitive processes generate behavior not only individually, but also in combination with dyads and groups, being subject and object of influences (in line with evolutionary and ecological psychology studies; see Gigerenzer & Selten, 2002). From that, and from the recent developments made in the study of the brain-emotion-cognition relationship (Healey et al., 2018), individuals and their bodies act in a physical-social environment eliciting mental representations, determining the knowing and learning processes, which return to the environment – through behavior – when a judgment is made. Therefore, the environment is ultimately "a recipient of action as well as a supplier of inputs" (Smith & Semin, 2004; p. 77), among which there are memories (past information), which shed light on situational cues; this is in line with sensemaking studies in which information is not something that exists independently of and external to human beings, but rather is a product of human observation and interaction (Dervin, 1998). The inputs supplied by the context once a decision is made, however, affect not only the decision makers, but also other people and social groups, meaning that understanding decision makers' behavior cannot be based only on the individual's internal representations, but should be looked at from the interaction of the individual with the social and physical space (Semin & Smith, 2013).

As said before, in this approach a pivotal role is covered by motivation and emotions. Starting from the latter, the SSC approach (Smith & Semin, 2004) states that affective states organize the perception and categorization of objects such as stereotyping and also underline the directive functions of affective states, such that positive affective feelings may be experienced when collecting and confirming cues. In other words, affective states, according to this approach, not only influence the amount of cognitive processing, but also regulate it in very fundamental ways. The solidity of this assumption derives from the considerable evidence that over the years has been produced to support the affect-as-information model (Schwarz & Clore, 2003), consistent also with the intuitions of appraisal/emotion theory

(Lerner & Keltner, 2000; Niedenthal et al., 1999), in which people experiencing a given emotion make judgments in line with the appraisals linked to that emotion. This interpretation, included in the SSC approach (Smith & Semin, 2004), is aligned with a recent review on the concept of affect and motivation in psychology, in which it is concluded that the latter "occurs in people most notably as subjective feelings" (Berridge, 2018; p. 47). In sum, the motivation for starting or ending a process, collecting more or less cues, and superficially or deeply analyzing evidence, is ultimately included in the affective state experienced by the decision maker. This view also includes, despite not having been specifically considered in the SSC approach, that emotions are also the outcome of personality traits – with a great impact on management decisions – "as climate is to weather. That is, what one expects is personality, what one observes at any particular moment is emotion" (Revelle & Scherer, 2009; p. 304). This view has its roots in the famous reinforcement sensitivity theory (Gray, 1970), which highlights that personality traits can be conceived as individual differences, which means significantly experiencing certain types of emotions over others.

Outside the psychological domain, the SSC approach has gained recent relevance in management research, especially with reference to cognitive and behavioral questions in entrepreneurship. Indeed, a process model of entrepreneurial sensemaking has been proposed, in which the latter was meant as a socially situated process by which entrepreneurs construct the image of their venture, while acting in their physical and social environment (Cornelissen & Clarke, 2010). It has then been argued that future research approaching the highlighted entrepreneurship issues should increasingly be concerned with a vision of cognition as socially situated (Mitchell et al., 2011). However, no management studies adopted this approach to explain the intrinsic links between sensemaking and decision making; that is the

aim of this work and of the proposed Affect-Cognitive Theory reported and explained in the next section.

3 An Affect-Cognitive Theory of management decisions

3.1 Overview

The proposed Affect-Cognitive Theory is based on the intertwined relationship of decision making and sensemaking through affective states and cognitive errors, approached through the SSC assumptions.

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The set of propositions explaining the Affect-Cognitive Theory emphasizes the influence of affective states in determining/being determined by cognition and its errors, pointing out decision makers' affect as the result of multi-level adaptations to the physical and social environment.

3.2 From bounded rationality to sensemaking

As exposed in the theoretical background, management decisions are taken in relation to the problem space perceived by the decision maker (Newell & Simon, 1972), which is a portion of the entire problem space – in which a management decision also has an effect. Those decisions are notoriously driven by bounded rationality (Simon, 1947), thus people's inner computational and biological limits reduce the attention given to the problem. However, despite the bounded rationality limits having been widely accepted by the scientific community as limitations of decision makers' attention, sensemaking scholars (Dervin, 1998; Maitlis & Christianson, 2014; Weick, 1988; 2005) did not cite these limits for identifying how decision makers bracket the problem space. This flaw is overcome through the first

proposition, which has a *primary* role within the proposed theory because of its opening position and on the spectrum of space to be interpreted in sensemaking.

Proposition 1. Computational capacity, impossibility of access to all information, and biological limits regulate sensemaking: the greater these limits, the closer the bracketed problem space for sensemaking.

According to the latest advancements made concerning the role of affective states in management decisions (Cristofaro, 2019), featured by the application of the coevolutionary lens, it is derived that individual affective states (that can result from self-regulation), affective states emerging from dyadic relationships (i.e., interpersonal decision making), and group situations (i.e., emotional contagion) (Fink & Yolles, 2015) interact with each other according to the mechanisms of evolutionary "replicators" – elements that pass, like genes, to others through successive replications – and "interactors" – entities that interact with their environment causing differential replications (Hull, 1988). In other words, affective states positioned at different interacting levels – i.e., individual, dyads, groups – affect each other through their contagion (Ashkanasy, 2015) and form a final set of affective states that enter the decision-making activity (Cristofaro, 2019). These coevolving interactions are aligned with sensemaking, conceived as a socially constructed activity (Weick, 2005), and with the verbal and non-verbal exchanges among individuals and their physical and social environments that are at the center of the SSC approach – i.e., situated and distributed features.

Once decision makers have bracketed the problem space and affective states are defined, they collect and interpret a series of cues to arrive at a plausible account of the situation (Weick, 2005). Therefore, cues' collection and interpretation occur through affective states elicited by them (Rafaeli & Vilnai-Yavetz, 2004), in line with the affect-as-information model (Schwarz & Clore, 2003) and the appraisal/emotion theory (Lerner & Keltner, 2000;

Niedenthal et al., 1999) that postulate the driving function of feelings in interpreting information and that underline the intrinsic attachment of affective states to the lived experience. In this view, the quality of an object within the bracketed problem space is determined by the feeling of the decision maker – that can be mainly positive, negative, or mixed – who, in sum, builds a "subjective emotional meaning" of the cue (Daft & Weick, 1984; Wood & Conway, 2006). Therefore, I theorize the following second proposition, which has a *primary* role within the proposed theory due to the huge influence assigned to affect on driving sensemaking.

> *Proposition 2. The affective states that drive sensemaking are the product of the different replications occurring through different interacting levels so that the resulting predominantly positive, mixed, or negative affective state is the one that drives the collection and interpretation of cues.*

Data collection and interpretation of cues occur, according to sensemaking studies, referring to past experience, allowing decision makers to categorize the new experience (Abolafia, 2010); this is in line with the retrospective analysis of the courses of action and with the role of memories in shedding light on situation cues with respect to the SSC approach. Recalling this past experience gives, according to the cognitive literature (Kahneman, 2011), some hints that bias the search for meaning. The retrieval mainly occurs through the elicited positive and negative affective states, which bring decision makers to recall reciprocal memories (Buchanan, 2007) that form a layer on which the occurring sensemaking experiences are placed on as new interpretations are made (Barrett et al., 2007). The explained view was also originally assumed by Epstein (1994), who argued that when a person usually responds to an experienced event (i.e., a stimulus) "the experiential system automatically searches its memory banks for related events, including their emotional accompaniments" (p. 716). This reinforcing process explains the twofold cognitive role of intuition (System 1 of the dual

process model of Kahneman, 2003) as driven by affect or by past experience (Akinci & Sadler-Smith, 2012). However, in contrast to positive or negative ones, mixed affective states have been found to raise feelings of conflict that let individuals recall confusing memories (Larsen & McGraw, 2014), mainly because of the "memory decay effect", which is stronger compared to polarized affective states (Aaker, Drolet, & Griffin, 2008). Therefore, I argue the following.

> *Proposition 3. Positive, negative, and mixed affective states experienced by decision makers during sensemaking elicit, respectively, positive, negative, and mixed memories, that reinforce the cues' collection and interpretation path.*

3.3 The occurrence of coevolving cognitive errors while making sense

The reinforced affective states drive the sensemaking activity of the decision maker in the physical and social environment through actions and interaction with it (Smith & Semin, 2004; Rudolph et al., 2009); this socially situated process, as reported by the SSC approach, occurs through implementing cognitive functions, which are not straight and smooth, but underpinned by cognitive errors that happen in decision makers' minds (Kahneman, 2011).

However, all the biases depicted in the decision making literature, despite being perceived as acting *per se*, are highly connected and can bring dramatic or exceptional effects in decision making; this is clearly depicted in the recent "co-evolving diamond of heuristics and biases" (Abatecola et al., 2018), according to which, cognitive errors are "internally generated", i.e., the manifestation of one of them is caused by the occurrence of another/others, which reinforce each other. Within this coevolutionary interpretation of biases, a pivotal role is played by affect (Townsend, Spence, & Knowles, 2014). This view has been early postulated by Zajonc (1980) who was the first to assume that affect is the first reaction to stimuli and that it drives human judgment (and, as a consequence, its following

errors); he clearly argued, in particular, that human perception is always pervaded by affective evaluations: "We do not just see 'a house': We see a *handsome* house, an *ugly* house, or a *pretentious* house" (p. 154). Stemming from this primary role of affective states in judgment, other scholars have focused their attention on their determination of the weight of outputs in risky decisions (i.e., affect heuristic; Finucane et al., 2000). For example, it has been demonstrated that managers who have a negative temperament activate less risky firm strategies, while managers with a positive temperament initiate more risk-oriented strategies (Delgado–Garcia, De Quevedo Puente, & Blanco Mazagatos, 2015). Yet, while studying the effect of immediate and anticipated emotions in risky decisions, it was found that if positive affective states are experienced, the decision makers feel in control of the situation and are risk-oriented, otherwise they stay averse to risky choices (Finucane et al. 2000; Schlösser, Dunning, & Fetchenhauer 2013).

In contrast, mixed emotions are supposed to elicit opposing feelings in decision makers, such as the thrill of potential achievement and the potential failure in not concluding the task (Atkinson, 1957). In this case, mixed emotion decision makers are more capable to arrive at unusual associations and consider larger sets of variables – including either positive/success stories or negative/failure ones; as a consequence, if no affective state is predominant, the resulting risk orientation is ambivalent (Fong, 2006). However, Podoynitsyna, Van der Bij, & Song (2012) found, through an empirical study of the emotional-risk relationship of 253 U.S. entrepreneurs that when decision makers in an ambivalent affective state become more sensitive to unusual associations – through experiencing more and more the treatment of mixed affective states – they increase the number of variables taken into account, because of perceiving a greater risk. The mature experience in dealing with ambivalent states changes the framing of the situation leading toward a greater focus on losses and a risk averse orientation (Gu Seo, Goldfare, & Barrett, 2010). In sum, the experienced (in treating ambivalent affective

states) decision maker is not driven by the excitement of having produced a large number of unusual associations, but is worried by the evaluation of the increased number of cues and their unknown potential outcomes.

Accordingly, I posit the following fourth proposition, which has a *primary* role within the proposed theory due to the assigned main relevance of affect in determining consequent cognitive biases.

> *Proposition 4. Different affective states lead to different risk perceptions, so that: decision makers who feel positive affective states tend be risk tolerant while making sense of cues; decision makers who feel negative affective states tend be risk averse while making sense of cues; decision makers who feel mixed affective states do not have a predominant risk orientation or, if they have experience in managing them, they have a risk averse orientation while making sense of cues.*

According to the cited coevolving diamond, if the perceived risk is low, decision makers look for data that support prior assumptions (i.e., confirming trap), consequently restricting the perceived amount of available information (i.e., bounded awareness and availability heuristic) and driving toward the stereotypical categorization of them (i.e., representativeness heuristic); these, in turn, reinforce the prior affective state. This is also confirmed by the law of small numbers, for which collecting fewer and fewer cues leads to finding confirming information (Simon, Houghton, & Aquino, 2000). When the decision maker collects confirming evidence, contentment arises because the situation is considered to be safe and having a high degree of certainty (Ellsworth & Smith, 1988); from that, positive affective states are accordingly reinforced and a path-dependency logic in collecting confirming cues is the only alternative.

What has been depicted in the decision making literature found confirmation in the sensemaking literature. Indeed, according to Weick (1988; p. 307), "people act within the context of these bracketed elements, under the guidance of preconceptions, and often shape

these elements in the direction of preconceptions"; thus, according to this viewpoint, actions that are vital for collecting cues tend to confirm preconceptions. An important work that has recently shed light on the influence of affective states in sensemaking was by Maitlis et al. (2013). In particular, according to these scholars, the activation of sensemaking depends on the valence of emotions elicited by the trigger event that stimulates the sensemaking: if negative emotions are elicited, decision makers put all their effort into collecting and interpreting cues, i.e., the search for meaning (as postulated by Tversky & Kahneman, 1973), so as to avoid being in the same state in the future; thus, they will be willing to collect either confirming or not confirming cues to find the most plausible account for the situations and avoid negative affective states. This was also proposed by Epstein (1994) who stated that stimuli of a judgment process activate feelings that "are pleasant, they motivate actions, and thoughts anticipated to reproduce the feelings. If the feelings are unpleasant, they motivate actions and thoughts anticipated to avoid the feelings" (p. 716).

However, the sensemaking process can also proceed without arriving at a valid assessment of cues; this is not due to the cue's objectivity, but mainly to the too high rapidity/slowness of decision makers in their assessment (Rudolph et al., 2009). These two conditions drive to a "vagabonding" or "stalled" behavior, meaning respectively, to collect an increasing number of cues or no cues at all. It seems, in these two situations, that decision makers are in two minds and not able to take a position. This dynamic has already been found when mixed emotions elicited by achievement situations occur (Atkinson, 1957); in particular, people feeling mixed emotions tend to collect an increasing amount of information, leading to a superficial investigation of complex situations (Podoynitsyna et al., 2012). Therefore, the following proposition emerges.

Proposition 5. Different risk perceptions lead to different cue collecting strategies, so that: decision makers who tend to be risk tolerant while making sense of cues collect

confirming cues; decision makers who tend to be risk averse while making sense of cues collect confirming and not confirming cues; decision makers who do not have a predominant risk orientation are victims of cue overload or are not able to collect any cues.

3.4 From collecting cues to the construction of the plausible account

The coevolving interpretation of cognitive errors supports the belief that heuristics implemented in organizational decision making processes are reinforced from searched data that can confirm the heuristic, creating a virtuous or vicious cycle (depending on the valence of the choice's effect on the problem space) (Abatecola, 2014a; Palminteri et al., 2017); in sum, looking for confirming cues leads to a "self-reinforcing process". The activation of this process is intertwined with the risk perception of the individual: decision makers who experience positive affective states perceive a low risk, bringing to confirming cues that can "legitimate" the sensemaking path; in contrast, decision makers who experience negative affective states perceive a high risk, bringing to confirming and not confirming cues creating a sense of "uncertainty" (Slovic & Peters, 2006). An example of this last process can be found in Luce, Bettman, & Payne (1997), who found that difficult situations that require effort in building a sense elicit a negative feeling for decision makers.

The resulting two senses of being, i.e., legitimacy and uncertainty, have also been identified as mediators for defining the entrepreneurial sensemaking process (Cornelissen & Clarke, 2010); in particular, the basic image of a venture is alternatively conveyed by one of the two mechanisms to the reinforcing/adaptation/replacement of the basic image of the venture, in line with the collection-replacement of cues' depicted by the action-oriented problem-solving as well as to the adaptive regulation of action of the SSC approach (Smith & Semin, 2004). Regarding mixed emotions, if the decision maker has been rapid in collecting

cues (Rudolph et al., 2009), the experienced ambivalence brings, as demonstrated by Fong (2006), exploring many alternatives: unusual connections are more likely to be found when experiencing positive and negative emotions simultaneously (Rothman & Melwani, 2017). However, ambivalence brings dissonance and indecisiveness (Carrera & Oceja, 2007), thus perceiving a sense of "inhibition" in arriving at a plausible conclusive account of the situation (Priester & Petty, 2001). This assumption has also been confirmed in the study by Zampetakis et al. (2015), who found – when investigating the moderating role of mixed affective states between perceived behavioral control and entrepreneurial intention – that people in an ambivalent affective states condition have great awareness of the difficulties in performing a behavior.

Living a 'whatever' sense of being, according to the coevolving mechanism of affective states (Cristofaro, 2019), reinforces the original affect basis, with the consequence of locking the course of action. In sum, the experienced sense of being, within the sensemaking mental effort, forms an affective state attached to an experience that reinforce the initial affect basis, which drives the following thoughts and actions.

Proposition 6. Different collecting cues' strategies bring a different sense of being, so that: decision makers in positive affective state tend to collect confirming cues, experiencing a sense of legitimacy about their interpretation; decision makers in negative affective state tend to collect confirming and not confirming cues, experiencing a sense of uncertainty about their interpretation; decision makers in mixed affective states tend to collect too many cues or no cue at all, experiencing a sense of inhibition about their interpretation.

Proposition 7. Different senses of being differently reinforce the original affective base, so that: decision makers who experience a sense of legitimacy reinforce the original affective base with positive affective states; decision makers who experience a sense of

uncertainty reinforce the original affective base with negative affective states; decision makers who experience a sense of inhibition reinforce the original affective base with mixed affective states.

According to the sensemaking literature, affective states that are object and subject of the state of being are at the basis of the construction of the plausible account (Drazin, Glynn, & Kazaniian, 1999; Maitlis et al., 2013). In particular, when decision makers are engaged in a positive state they construct a more novel, creative account of an event or issue; however, when decision makers are engaged in a negative state, they are more accurate in the construction of meaning based on their critical analysis of cues. These assumptions are also confirmed by the decision-making literature; creative ideas are found to be fostered by a positive mood, while a negative mood helps decision makers to be accurate in problem-solving tasks (Amabile et al., 2005; Davis, 2009). Yet, positive and negative affective states also have a direct effect on the framing of the plausible account of the situation; indeed, individuals in positive affective states frame strategic issues as an opportunity – those in negative affective states as a threat (De Martino, Kumaran, Seymour, & Dolan, 2006; Mittal & Ross Jr., 1998). The latter is also true in cases when decision makers have no possibility of collecting new cues and perceive a high risk; in these situations, they frame the plausible account so as to avoid losses (Kahneman & Tversky, 1979).

About the mixed emotions case, the information overload even more, with respect to the positive and negative affective states, limits attention to too (Watson & Stanton, 2017) or very few variables (Simon & Houghton, 2002). This is because decision makers are too rapid or too slow in assessing cues, bringing them to define too many inconclusive senses of the situation or no sense at all (Rudolph et al., 2009). Thus, I argue the following.

Proposition 8a. A different sense of being defines different plausible accounts of the situation, so that: decision makers who experience a sense of legitimacy construct a

novel and favorable plausible account of the situation; decision makers who experience a sense of uncertainty construct an accurate and unfavorable plausible account of the situation; decision makers who experience a sense of inhibition construct too many or no plausible account of the situation.

Proposition 8b. Decision makers who experience a high risk while sensemaking and have no availability of data, confirm initial preconceptions, and construct an unfavorable plausible account of the situation.

3.5 Decision making (stricto sensu) and its co-evolving effects on sensemaking

The sensemaking activity concludes not when the situation is completely understood, but when a plausible story that can keep the situation going emerges (Weick, 2005). This is empirically proved by the action-oriented problem-solving model, for which a plausible account emerges when the collection of new cues can no longer undermine the plausibility of the leading alternative (Rudolph et al., 2009). Recent sensemaking studies found that the plausible story must contain a set of affective states that are aligned with the one felt by the decision maker (Maitlis et al., 2013). However, as reported by decision-making contributions (Abatecola et al., 2018; Tversky & Kahneman, 1981), the framing of a situation, i.e., the plausible account, has effects on the risk perception of decision makers when approaching management decisions. It has been found, when studying students' and senior bank executives' decision making processes on resource allocation, that decision makers allocate greater money to the safe alternative when exposed to a positively framed version of the problem, compared to the negatively framed version (Hodgkinson et al., 1999). The rationale of this result has been corroborated by Weber & Mayer (2011), who stated that while writing contracts among parties those that are designed according to a favorable frame elicit a creative behavior accompanied by an overall positive emotional reaction, with the individual aiming at

a goal that can maximize expectations. In contrast, contracts written according to an unfavorable frame elicit a vigilant behavior accompanied by an overall negative emotional reaction, with the individual aiming at a goal that can minimize risks. Accordingly, I theorize the following ninth proposition, which has a *primary* role within the proposed theory because of the link formed between the sensemaking and decision making activities.

> *Proposition 9. Sensemaking ends when a plausible account of the situation matches the affective states of decision makers leading to different management decisions, so that: decision makers who have built a novel and favorable plausible account tend to make a risk tolerant decision; decision makers who have built an accurate and unfavorable plausible account tend to make a risk averse decision.*

When the decision is made, it impacts both the bracketed and whole problem space because of influencing what has not been considered in the narrow scope of the decision maker (Cyert & March, 1963). Choices, however, elicit some affective states ranging from relief to frustration and stress (Lerner et al., 2013), impacting the affective base at all the involved levels (Hatak & Snellman, 2016). Because a decision based on confirming cues leads to a sense of confidence and legitimacy, the corresponding decision-making activity gives a sense of relief (Roseman, Spindel, & Jose, 1990), which positively impacts the self, the bracketed and the whole problem space (Cristofaro, 2019); this sense of relief comes because the management decision has been appraised as safe and as having a high degree of certainty, reached with a low degree of effort (Ellsworth & Smith, 1988). On the bracketed and entire problem space, a sense of frustration and stress has an impact when the decision is based on an alternation of confirming and not confirming cues that have already elicited a sense of uncertainty (Carleton, Norton, & Asmundson, 2007). In this last case, decision makers are relieved at the end of the process, but this sense of being is more related to the decision-making process

completion rather than a sense of accomplishment; they, instead, feel frustrated by the intense exploring activity (Hyldegard, 2006; Wong, 1979). From that, I argue the following:

> *Proposition 10a. Different management decisions elicit different affective states in decision makers who impact the bracketed and entire problem space, so that: decision makers who make a risk tolerant decision perceive a sense of relief that positively impacts, in terms of affective states, the self, the bracketed, and the whole problem space; decision makers who make a risk averse decision perceive a sense of frustration and stress that negatively impacts, in terms of affective states, the self, the bracketed, and the whole problem space.*

Affective states attached to the realized management decisions form the emotional base that reinforces, when consistent with the initial one, the affective base of the decision maker, creating an "emotional lock-in effect". In particular, the occurrence of a series of risk tolerant/averse management decisions lead to positive/negative affective states that impact their replication, according to a self-reinforcing virtuous/vicious course, until a new interactor – i.e. a different affective state of existing or new individual/group within the organization – is capable of strongly changing the replication of affective states (Cristofaro, 2019; Lazarus, 1991). In other words, the decision maker expressing affective states elicited by a management decision emotionally influences other organizational members and stakeholders (Fink & Yolles, 2015) and, according to a coevolutionary mechanism, the affective states are reinforced/adapted becoming inputs of new sensemaking activities. Therefore, affective states are not immutable; indeed, they are subject and object of the ever modifying, physical and social environment (aligned with the SSC approach), which comprises different levels, among them emotionally interconnected (Ashkanasy, 2015; Casciaro & Lobo, 2008). Affective states that enter the new sensemaking activity are, in sum, the product of a coevolving emotional mechanism, which also adheres to the "thinking in circles" principle (Weick, 1979). This is

also postulated in the SSC approach (Semin & Smith, 2013) which, as already reported, recently recognized that individuals' cognitive processes and behaviors are generated in combination with dyads and groups, according to a multi-level logic that is appropriate to coevolutionary studies. Thus, I posit the following proposition, which has a *primary* role within the proposed theory because of the fact that it depicts how management decisions occur in the same way as prior ones, or diverge from the past.

> *Proposition 10b. The affective states elicited by a management decision reinforce, through emotional replications, the original affective states leading to similar management decisions till a strong opposite affective state enters the process and changes the predominant affective base.*

4 Discussion and implications

I propose an Affect-Cognitive Theory of management decisions to comprehensively understand how decisions occur in organizations. I theorize that cognition and related deceptions – i.e., the main objects of decision making study contributions – and the mental representations that rationalize what people are doing – i.e., the main objects of studying sensemaking contributions – interact on the basis of the adaptive affective states of decision makers, which are both object and subject of cognitive errors.

The proposed Affect-Cognitive Theory answers the call for a solid integration of sensemaking and decision making, which has mainly interested both these literature streams; as a consequence, this theorization has several implications for both. With regard to sensemaking, it sheds light on studies that have been interested over time on the formation of individuals' perceptions and mental representations, adhering and reinforcing the identified mediators of the entrepreneurial sensemaking process, i.e., legitimacy and uncertainty (Cornelissen & Clarke, 2010). In particular, on the one hand, this theory accounts for affective

states as drivers of the process that elicits the sense of legitimacy and uncertainty, respectively, positive and negative; on the other hand, this theory identifies a third state of being, i.e., inhibition, driven by mixed affective states that block the sensemaking process, preventing the arrival at a plausible account of the situation. Yet, the proposed Affect-Cognitive Theory introduces cognitive errors as elements that shape the sensemaking activity, explaining what remained unveiled about the so-called "labeling" sensemaking activity (Abolafia, 2010; Weick, 2005). In this case, the integration of decision making studies, concerned with cognitive errors (Abatecola et al. 2018), through the consideration of the affective states' linking pin (Maitlis et al., 2013) has been useful for detailing how mental representations are progressively formed. Indeed, I theorize that the application of a mental model that comes from past experience and puts experienced objects into categories, happens through the activation of a specific feeling that then activates a series of cognitive biases; the application of one model rather than another depends on the valence of the elicited affective state. This work also has the merit of being the first in considering the role of mixed emotions in sensemaking, giving a first answer to the call of Rafaeli and Vilnai-Yavetz (2004) to understand what the implications of multiple emotions in sensemaking activity are.

Moreover, the proposed Affect-Cognitive Theory sheds light on decision making studies that have been concerned over time with the elements that drive the selected perception of decision makers' minds (Kahneman, 2011). From that, affect – very often evaluated "as one" of the biases influencing decision makers (Abatecola et al., 2018; Slovic, Finucane, Peters, & MacGregor, 2004) – is here proposed as "the" variable that, on the one hand, expresses the influence of other inner features such as personality traits (Revelle & Scherer, 2009) and behavioral elements such as motivation (Berridge, 2018) and, on the other concurrently explains – with cognitive errors – the formation of judgment. Going deeper, from a cognitive viewpoint, affective states are therefore identified as *primus inter pares* among the influences

occurring in our mind, from which the others are a direct consequence (Cristofaro, 2019; Lerner et al., 2013).

Last but not the least, Affect-Cognitive Theory gives a first contribution to the recent call for new cognitive models able to conceive Systems 1 and 2 as parallel (not alternative) interacting functions in human decision making (Cristofaro, 2017; Hodgkinson & Sadler-Smith, 2018), avoiding restricting the intuitive and emotional judgment formation only to System 1; indeed, as theorized, cognitive–emotional interactions also occur in accurate interpretations of cues. From that, René Descartes' (Discourse on the Method, 1637) famous statement, "cogito ergo sum" – highlighting that because humans are able to think about something, it is necessary that they (who thought things) are something – is now revisited in a new conception of individuals as "emotional cognizers"; thus, individuals "are" the emotional and cognitive forces that interact with their environment and that give the awareness to their existence: they *feel* and think; as a consequence, they *are*. This strong statement follows and reinforces the important discoveries in the study of the human brain and its effects on the mind (gained through new neuroscience technologies) pointing out the concurrent role of affective states and cognition in shaping sensemaking and decision making (Okon-Singer, Hendler, Pessoa, & Shackman, 2015).

4.1 Future research directions and practical considerations

The Affect-Cognitive Theory results from a combination of the sensemaking and decision making perspectives on the common ground of SSC. Each proposition should be further tested in a comprehensive empirical analysis to validate the overall theory, which now is the result – as is usual for multiparadigms' theories – of a recombination of prior detached studies that received a stand-alone validity and that, maybe, have not yet depicted all functioning that occurs in sensemaking and decision making, real life events. The resulting tested Affect-

Cognitive Theory will be highly beneficial to the nascent synthesis field of behavioral strategy through finally providing the "realistic assumptions about human cognition, emotions, and social behavior to the strategic management of organizations" (Powell et al., 2011; p. 1371).

Future sensemaking works interested in advancing knowledge on opportunity recognition and business idea formation should take into strict consideration the interaction between cognition and affective states; this can be particularly valuable for studies aimed at explaining the sensemaking processes of the "bricolage" activity (Duymedjian & Rüling, 2010). In this regard, the proposed Affect-Cognitive Theory, approached through the SSC approach, can be used for investigating whether the recombination and use of existing resources and practical knowledge results in better performance when executives or entrepreneurs approach the situation recalling positive (i.e., leading to novel senses) or negative (i.e., leading to accurate and heterogeneous senses) organizational memories/personal repertoire (fundamental for the bricolage activity).

Future cognitive research should give more prominence to affective states as in the case of upper echelons theory that despite recently recognizing the formation of decisions as a coevolving output between top management teams and their physical and social environment (Abatecola & Cristofaro, 2018), still does not include the influence of affective states either as an inner feature of decision makers or as a variable to study for the behavioral integration of teams – in contrast with the recent assumption of strategizing as an emotional process (Liu & Maitlis, 2014). Yet, within the proposed Affect-Cognitive Theory, affective states have been treated for their valence – i.e. positive, mixed, or negative – without identifying the specific emotions, mood, or temperament that drive the identified cognitive activities. Other cognitive studies might be interested in determining the specific affective state that overcomes the others in directing judgment, contributing to pushing forward the dual process theory

(Kahneman, 2003; Stanovich & West, 2000), and according to the recent advancements that consider Systems 1 and 2 as acting concurrently in human decision making (Hodgkinson & Sadler-Smith, 2018).

Executives and entrepreneurs should take into consideration that their decisions are the *concurring product of multi-level affective influences and cognitive errors*. Of course, this insight has a considerable impact on the reconsideration of decisions made by executives and entrepreneurs, currently oriented toward the adoption of a data-driven approach (e.g., Mandinach, 2012) because of being considered to approximate *optimal* decisions (e.g., Bennett & Hauser, 2013). Indeed, the current hype on the use of computer aids – oriented to the rapid collection and elaboration of great and varied data – is bringing with it the excessive optimism that artificial intelligence can substitute executives and entrepreneurs in a number of decisions (e.g., Edwards, Duan, & Robins, 2000). However, scandals in the misuse of technology, such as in the case misinterpretations of Excel spreadsheets in strategic decisions (e.g., Barclays in its unwanted acquisition of Lehman Brothers' assets in 2008; Gandel, 2013), are continuously highlighting – as suggested by the proposed Affect-Cognitive Theory – that behind algorithms there are always limited human beings and that the produced (un) *objective* data are always interpreted by emotional cognizers. In other words, as assumed by the Affect-Cognitive Theory, also in the most automated business processes, who analyzes data and makes decisions is always someone pervaded by bounded rationality and affective states which, *by definition*, cannot ever reach perfect choices, even if helped by the most advanced information systems.

Despite that, both affective states and cognitive errors of humans can be partly regulated. Thanks to the Affect-Cognitive Theory, decisions can be directed by the understanding of their own "affective architecture" and that of their organizations (Powell et al., 2011). Shifting from one sensemaking/decision making path to another is, firstly, a matter of experienced

affective states of the decision makers. Therefore, decision makers' course of action can be regulated acting on the perceived feeling or mood; e.g., decision makers interested in enhancing accurate analyses for a choice should consider planning them after recognizing the dramatic impact that a wrong decision may have – this can be done by referring to the "pre-mortem" technique of Klein (2007) aimed at discovering why a project may fail – so as to insert a negative mood. If the decision has already been made, the adoption of the Kahneman and colleagues' checklist (2011) – a set of 12 questions each one aimed at discovering whether a heuristic/trap occurred while making a decision – would be useful to avoid the same errors in the future. However, this should be modified by adding a question on the affective state felt during the sensemaking/decision making path to be more effective in biases' recognition, i.e., "Which were the affective states perceived during the entire decision making path?". From what has been said, the proposed theory suggests shareholders, human resource managers and/or whoever has the power to hire within an organization, to also investigate the emotional side (by using, for example, the Positive and Negative Affect Schedule questionnaire) of potential collaborators – at all levels – for a complete evaluation of their decision-making processes. This is because, as postulated by the Affect-Cognitive Theory, the affective architecture of the individual/groups and, in turn, the organization, determines the kind of occurring cognitive errors and, as a consequence, the risk grade of the decisions that will be made. Finally, other techniques that can be useful for augmenting or diminishing the impact of cognitive errors and build the organizational choices' architecture are "nudges" (Thaler & Sunstein, 2008) – i.e., indirect suggestions that are able to influence decision making – which should be designed according to the affective state that concurs with the cognitive error, which is in scope, to be modified.

References

Aaker, J., Drolet, A., & Griffin, D. (2008). Recalling mixed emotions. *Journal of Consumer Research*, *35*(2), 268–278.

Abatecola, G. (2014a). Untangling self-reinforcing processes in managerial decision making co-evolving heuristics? *Management Decision*, *52*(5), 934–949.

Abatecola, G. (2014b). Research in organizational evolution. What comes next? *European Management Journal*, *32*(3), 434–443.

Abatecola, G., Caputo, A., & Cristofaro, M. (2018). Reviewing cognitive distortions in managerial decision making. Toward an integrative co-evolutionary framework. *Journal of Management Development*, *37*(5), 409–424.

Abatecola, G., & Cristofaro, M. (2018). Hambrick and Mason's upper echelons theory Evolution and open avenues. *Journal of Management History*, DOI /10.1108/JMH-02-(2018),-0016.

Abolafia, M. (2010). Narrative construction as sensemaking. *Organization Studies*, *31*(3), 349–367.

Amabile, T. M., Barsade, S. G., Mueller, J. S., & Staw, B. M. (2005). Affect and creativity at work. *Administrative Science Quarterly*, *50*(3), 367–403.

Akinci, C., & Sadler-Smith, E. (2012). Intuition in management research: A historical review, *International Journal of Management Reviews*, *14*(1), 104–122.

Artinger, F., Petersen, M., Gigerenzer, G., & Weibler, J. (2015). Heuristics as adaptive decision strategies in management. *Journal of Organizational Behavior*, *36*(S1), S33–S52.

Ashkanasy, N. M. (2015). Emotions in organizations A multi–level perspective. *Multi–Level Issues in Organizational Behavior and Strategy*, *2*, 9–54.

Atkinson, J. W. (1957). Motivational determinants of risk-taking behavior. *Psychological Review*, *64*(6), 359–372.

Barrett, L. F., Mesquita, B., Ochsner, K. N., & Gross, J. J. (2007). The experience of emotion, *Annual Review of Psychology*, *58*, 373–407.

Bazerman, M. H., & Moore, D. (2013). *Judgment in managerial decision making*. New York, NY, John Wiley & Sons.

Bennett, C. C., & Hauser, K. (2013). Artificial intelligence framework for simulating clinical decision-making: A Markov decision process approach. *Artificial Intelligence in Medicine*, *57*(1), 9–19.

Berridge, K. C. (2018). Evolving concepts of emotion and motivation. *Frontiers in Psychology*, *9*, 16–47.

Bingham, C. B., & Eisenhardt, K. M. (2011). Rational heuristics: the simple rules that strategists learn from process experience. *Strategic Management Journal*, *32*(13), 1437–1464.

Brehmer, B. (1980). In one word: Not from experience. *Acta Psychologica*, *45*(1-3), 223–241.

Buchanan, T. W. (2007). Retrieval of emotional memories. *Psychological Bulletin*, *133*(5), 761–779.

Calori, R., Johnson, G., & Sarnin, P. (1994). CEOs' cognitive maps and the scope of the organization. *Strategic Management Journal*, *15*(6), 437–457.

Carleton, R. N., Norton, M. A. P. J., & Asmundson, G. J. G. (2007). Fearing the unknown. A short version of the intolerance of uncertainty scale. *Journal of Anxiety Disorders*, *21*(1), 105–117.

Carrera, P., & Oceja, L. (2007). Drawing mixed emotions: Sequential or simultaneous experiences? *Cognition and Emotion*, *21*(2), 422–441.

Casciaro, T., & Lobo, M. S. (2008). When competence is irrelevant: The role of interpersonal affect in task–related ties. *Administrative Science Quarterly*, *53*(4), 655–684.

Coget, J.–F., Haag, C., & Gibson, D. E. (2011). Anger and fear in decision–making: The case of film directors on set. *European Management Journal*, *29*(6), 476–490.

Colman, A. M. (2003). *A dictionary of psychology*. Oxford, UK Oxford University Press.

Corley, K. G., & Gioia, D. A. (2011). Building theory about theory building what constitutes a theoretical contribution? *Academy of Management Review, 36*(1), 12–32.

Cornelissen, J. P., & Clarke, J. S. (2010). Imagining and rationalizing opportunities Inductive reasoning and the creation and justification of new ventures. *Academy of Management Review, 35*(4), 539–557.

Cristofaro, M. (2017). Herbert Simon's bounded rationality its evolution in management and cross-fertilizing contribution. *Journal of Management History*, *23*(2), 170–190.

Cristofaro, M. (2019). The role of affect in management decisions: A systematic review. *European Management Journal*, *37*(1), 6–17.

Cyert, R. M., & March, J. G. (1963). *A behavioral theory of the firm*. Englewood Cliffs, NJ Prentice-Hall.

Daft, R., & Weick, K. E. (1984). Toward a model of organizations as interpretive systems. *Academy of Management Review*, *32*(1), 33–54.

Damasio, A. 1994. *Descartes' error*. New York, NY Grosset Putnam.

Davis, M. A. (2009). Understanding the relationship between mood and creativity A meta-analysis, *Organizational Behavior and Human Decision Processes*, *108*(1), 25–38.

De Martino, B., Kumaran, D., Seymour, B., & Dolan, R. J. (2006). Frames, biases, and rational decision-making in the human brain. *Science*, *313*(5787), 684–687.

Delgado–Garcia, J.B., De Quevedo Puente, E., & Blanco Mazagatos, V. (2015). How affect relates to entrepreneurship A systematic review of the literature and research agenda. *International Journal of Management Reviews*, *17*(2), 191–211.

Dervin, B. (1998). Sensemaking theory and practice: An overview of user interests in knowledge seeking and use. *Journal of Knowledge Management*, *2*(2), 36–46.

Diacon, S., & Hasseldine, J. (2007). Framing effects and risk perception: The effect of prior performance presentation format on investment fund choice. *Journal of Economic Psychology*, *28*(1), 31–52.

Drazin, R., Glynn, M. A., & Kazaniian, R. K. (1999). Multilevel theorizing about creativity in organizations A sensemaking perspective. *Academy of Management Review*, *24*(2), 286–307.

Duymedjian, R., & Rüling, C.-C. (2010). Towards a foundation of bricolage in organization and management theory. *Organization Studies*, *31*(2), 133–151.

Edwards, J. S., Duan, Y., & Robins, P. (2000). An analysis of expert systems for business decision making at different levels and in different roles. *European Journal of Information Systems*, *9*(1), 36–46.

Ellsworth P.C., & Smith C.A. (1988). Shades of joy patterns of appraisal differentiating pleasant emotions. *Cognition and Emotion*, *2*(4), 301–331.

Epstein, S. (1994). Integration of the cognitive and psychodynamic unconscious. *American Psychologist*, *49*(8), 709–724.

Fink, G., & Yolles, M. (2015). Collective emotion regulation in an organisatioon – A plural agency with cognition and affect. *Journal of Organizational Change Management*, *28*(5), 832–871.

Finucane, M. L., Alhakami, A., Slovic, P., & Johnson, S. M., (2000). The affect heuristic in judgments of risks and benefits. *Journal of Behavioral Decision Making*, *13*(S1), 1–17.

Fong, C. T. (2006). The effects of emotional ambivalence on creativity. *Academy of Management Journal*, *49*(5), 1016–1030.

Gandel, S. (2013). *Damn Excel! How the 'most important software application of all time' is ruining the world*. Available at: http://fortune.com/2013/04/17/damn-excel-how-the-most-important-software-application-of-all-time-is-ruining-the-world/, accessed on 7th May 2019.

Gigerenzer, G., & Selten, R. (2002). *Bounded rationality the adaptive toolbox*. Cambridge, MA MIT Press.

Gioia, D. A., & Chittipeddi, K. (1991). Sensemaking and sensegiving in strategic change initiation. *Strategic Management Journal*, *12*(6), 433–448.

Gioia, D. A., Thomas, J. B., Clark, S. M., & Chittipeddi, K. (1994). Symbolism and strategic change in academia The dynamics of sensemaking and influence. *Organization Science*, *5*(3), 363–383.

Gray J. A. (1970). The psychophysiological basis of introversion–extraversion. *Behaviour Research and Therapy*, *8*(3). 249–266.

Gu Seo, M., Goldfare, B., & Barrett, F. L. (2010). Affect and the framing effect within individuals over time: Risk taking in a dynamic investment simulation. *Academy of Management Journal*, *53*(2), 411–431.

Hammond, S. H., Keeney, R. L., & Raiffa, H. (1998). The hidden traps in decision making. *Harvard Business Review*, *76*(5), 47–58.

Hatak, I., & Snellman, K. (2016). The influence of anticipated regret on business start–up behaviour A research note. *International Small Business Journal*, *35*(3), 1–12.

Healey, M. P., Hodgkinson, G. P., & Massaro, S. (2018). Can brains manage? The brain, emotion, and cognition in organizations. In *Individual, Relational, and Contextual Dynamics of Emotions* 27–58, Volume 14, Bingley, UK Emerald Publishing Limited.

Hyldegard, J. (2006). Collaborative information behavior-exploring Kuhlthau's information search process model in a group-based educational setting. *Information Processing and Management*, *42*(1), 276–298.

Hodgkinson, G. P., Bown, N. J., Maule, A. J., Glaister, K. W., & Pearman, A. D. (1999). Breaking the frame an analysis of strategic cognition and decision making under uncertainty. *Strategic Management Journal*, *20*(10), 977–985.

Hodgkinson, G. P., Sadler-Smith, E. (2018). The dynamics of intuition and analysis in managerial and organizational decision making. *Academy of Management Perspectives*, *32*(4), 473–492.

Hull, D. L. (1988). *Science as a Process: An Evolutionary Account of the Social and Conceptual Development of Science*. University of Chicago Press, Chicago.

Kahneman, D. (2003). A perspective on judgment and choice Mapping bounded rationality. *American Psychologist*, *58*(9), 697–720.

Kahneman, D. (2011). *Thinking, fast and slow*. New York, NY Farrar, Straus and Giroux.

Kahneman, D., & Tversky, A. (1972). Subjective probability A judgment of representativeness. *Cognitive Psychology*, *3*(3), 430–454.

Kahneman, D., Lovallo, D., & Sibony, O. (2011). The big idea. Before you make that big decision. *Harvard Business Review*, *89*(6), 50–60.

Kahneman, D., & Tversky, A. (1979). Prospect theory an analysis of decision under risk. *Econometrica*, *47*(2), 263–291.

Klein, G., (2007). Performing a project premortem. *Harvard Business Review*, *85*(9), 18–19.

Koontz, H., O'Donnell, C. E, & Weihrich, H. 1980. *Management*, New York, NY McGraw-Hill.

Koskina, A. & Keithley, D. (2010). Emotion in a call centre SME: A case study of positive emotion management. *European Management Journal*, *28*(3), 208–219.

Lanir, Z. (1989). The reasonable choice of disaster – The shooting down of the Libyan airliner on 21 February 1973. *Journal of Strategic Studies*, *12*(4): 479–493.

Larsen, J. T., & McGraw, A. P. (2014). The case for mixed emotions. *Social and Personality Psychology Compass*, *8*(6), 263–274.

Lazarus R. S. (1991). *Emotion and adaptation*. New York, NY, Oxford University Press.

Lerner, J. S., & Keltner, D. (2000). Beyond valence Toward a model of emotion-specific influences on judgement and choice. *Cognition and Emotion*, *14*(4), 473–493.

Lerner, J. S., Li, Y., Valdesolo, P., & Kassam, K. (2013). Emotions and decision making. *Annual Review of Psychology*, *53*(9), 1689–1699.

Liu, F., & Maitlis, S. (2014). Emotional dynamics and strategizing processes A study of strategic conversations in top team meetings. *Journal of Management Studies*, *51*(2), 202–231.

Luce, M. F., Bettman, J. R., & Payne, J. W. (1997). Choice processing in emotionally difficult decisions. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *23*(2), 384–405.

Mandinach, E. B. (2012). A perfect time for data use: using data-driven decision making to inform practice. *Educational Psychologist*, *47*(2), 71–85.

Maitlis, S. (2005). The social processes of organizational sense making. *Academy of Management Journal*, *48*(1), 21–49.

Maitlis, S., & Christianson, M. (2014). Sensemaking in organizations taking stock and moving forward. *Academy of Management Annals*, *8*(1), 57–125.

Maitlis, S., Vogus, T. J., & Lawrence, T. B. (2013). Sensemaking and emotion in organizations. *Organizational Psychology Review*, *3*(3), 222–247.

March, J. G. (1991). *Decisions and Organizations*, Hoboken, NJ Wiley-Blackwell.

Maule, A. J., & Hodgkinson, G. P. (2003). Re-apprasing manager's perceptual errors A behavioral decision-making perspective. *British Journal of Management*, *14*(1), 33–37.

Mitchell, R. K., Randolph-Seng, B., & Mitchell, J. R., (2011). Socially situated cognition Imagining new opportunities for entrepreneurship research. *Academy of Management Review*, *36*(4), 774–776.

Mittal, V., & Ross Jr., T. V. (1998). The impact of positive and negative affect and issue framing on issue interpretation and risk taking. *Organizational Behavior and Human Decision Processes*, *76*(3), 298–324.

Neisser, U. (1967). *Cognitive psychology*. New York, NY Appleton-Century-Crofts.

Newell, A. & Simon, H. A. (1972). *Human problem solving*. Englewood Cliffs, NY Prentice-Hall.

Niedenthal, P. M., Halberstadt, J. B., & Innes-Ker, A. H. (1999). Emotional response categorization. *Psychological Review*, *106*(2), 337–361.

Okon-Singer, H., Hendler, T., Pessoa, L., & Shackman, A. J. (2015). The neurobiology of emotion–cognition interactions fundamental questions and strategies for future research, *Frontiers in Human Neuroscience*, *9*(58).

Palminteri, S., Lefebvre, G., Kilford, E. J., & Blakemore, S-J. (2017). Confirmation bias in human reinforcement learning: Evidence from counterfactual feedback processing. *PLoS Computational Biology*, *13*(8), e1005684.

Podoynitsyna, K., Van der Bij, H., & Song, M. (2012). The role of mixed emotions in the risk perception of novice and serial entrepreneurs. *Entrepreneurship Theory & Practice*, *36*(1), 115–140.

Powell, T. C., Lovallo, D., & Fox, C. R. (2011). Behavioral strategy. *Strategic Management Journal*, *32*(13), 1369–1386.

Priester, J. R. & Petty, R. E. (2001). Extending the bases of subjective attitudinal ambivalence Interpersonal and intrapersonal antecedents of evaluative tension. *Journal of Personality and Social Psychology*, *80*(1), 19–34.

Rafaeli, A., & Vilnai-Yavetz, I. (2004). Emotion as a connection of physical artifacts and organizations. *Organization Science*, *15*(6), 671–686.

Revelle, W., & Scherer, K. R. (2009). Personality and emotion. In: Sander, D. & Scherer, K.R. (Eds.), *The Oxford companion to emotion and the affective sciences*, 304-306, Oxford, UK Oxford University Press.

Roseman, I. J., Spindel, M. S., & Jose. P. E. (1990). Appraisal of emotioneliciting events: Testing a theory of discrete emotions. *Journal of Personality and Social Psychology*, *59*(5), 899–915.

Rothman, N. B., & Melwani, S. (2017). Feeling mixed, ambivalent, and in flux: the social functions of emotional complexity for leaders. *Academy of Management Review*, *42*(2), 259–282.

Rudolph, J. W., Morrison, J. B., & Carroll, J. S. (2009). The dynamics of action-oriented problem solving linking interpretation and choice. *Academy of Management Review*, *34*(4), 733–756.

Schlösser, T., Dunning, D., & Fetchenhauer, D. (2013). What a feeling the role of immediate and anticipated emotions in risky decisions. *Journal of Behavioral Decision Making*, *26*(1), 13–30.

Schwarz, N., & Clore, G. L. (2003). Mood as information 20 years later. *Psychological Inquiry*, *14*(3-4), 296–303.

Semin, G. R., & Smith, E. R. (2013). Socially Situated Cognition in Perspective. *Social Cognition*, *31*, 125–146.

Simon, H. A. (1947). *Administrative behavior*. New York, NY The Free Press.

Simon, H. A. (1983). *Reason in Human Affairs*, Stanford University Press, Stanford, CA.

Simon, H. A. (1987). Making management decisions the role of intuition and emotion. *Academy of Management Executive*, *1*(1), 57–64.

Simon, M. & Houghton, S. M. (2002). The relationship among biases, misperceptions, and the introduction of pioneering products Examining differences in venture decision contexts. *Entrepreneurship Theory and Practice*, *27*(2), 105–124.

Simon, M., Houghton, S. M., & Aquino, K. (2000). Cognitive biases, risk perception, and venture formation How individuals decide to start companies. *Journal of Business Venturing*, *15*(2), 113–134.

Slovic, P., Finucane, M. L., Peters, E., & MacGregor, D. G. (2004). Risk as analysis and risk as feelings some thoughts about affect, reason, risk, and rationality. *Risk Analysis*, *24*(2), 311–322.

Slovic, P., & Peters, E. (2006). Risk perception and affect. *Current Directions in Psychological Science*, 15(6), 322-325.

Smircich, L., & Stubbart, C. (1985). Strategic management in an enacted world. *Academy of Management Review*, *10*(4), 724–736.

Smith, E. R., & Semin, G. R. (2004). Socially situated cognition Cognition in its social context. In Zanna, M. P. (Eds.), *Advances in experimental social psychology* 53–117, Volume 36, San Diego, CA Academic Press.

Stanovich, K. E. & West, R. F. (2000). Individual differences in reasoning: implications for the rationality debate. *Behavioral and Brain Sciences*, 23(5), 645–726.

Thaler, R. H., & Sunstein, C. R. (2008). *Nudge Improving decisions about health, wealth and happiness*. New Haven, CT Yale University Press.

Tiwana, A., Wang, J., Keil, M., & Ahluwalia, P. (2007). The bounded rationality bias in managerial valuation of real options: theory and evidence from IT projects. *Decision Sciences*, *38*(1), 157-181.

Townsend, E., Spence, A., & Knowles, S. (2014). Investigating the operation of the affect heuristic is it an associative construct? *Journal of Risk Research*, *17*(3), 299–315.

Tversky, A., & Kahneman, D. (1973). Availability a heuristic for judging frequency and probability. *Cognitive Psychology*, *5*(2), 207–232.

Tversky, A., & Kahneman, D. (1981). The framing of decisions and the psychology of choice, *Science*, *211*(4481), 453–458.

Walsh, G. (2018). Service employees' naturally felt emotions: Do they matter? *European Management Journal*, DOI: 10.1016/j.emj.2018.06.008.

Watson, D., & Stanton, K. (2017). Emotion blends and mixed emotions in the hierarchical structure of affect. *Emotion Review*, *9*(2), 99–104.

Weber, L., & Mayer, K. J. (2011). Designing effective contracts exploring the influence of framing and expectations. *Academy of Management Review*, *36*(1), 53–75.

Weick, K. (1979). *The social psychology of organizing* (2nd ed.). Reading, UK Addison-Wesley.

Weick, K. (1988). Enacted sensemaking in crisis situations. *Journal of Management Studies*, *25*(4), 305–317.

Weick, K. E. (2005). The experience of theorizing sensemaking as topic and resource. In Smith, K. G., & Hitt, M. A. (Eds.). *Great minds in management the process of theory development* 394-413, Oxford, UK Oxford University Press.

Weick, K. E., Sutcliffe, K., & Obstfeld, D. (2005). Organizing and the process of sensemaking. *Organization Science*, *16*(4), 409–421.

Wong, P. T. (1979). Frustration, exploration, and learning. *Canadian Psychological Review/Psychologie canadienne*, *20*(3), 133–144.

Wood, R., & Bandura, A. (1989). Social cognitive theory of organizational management. *Academy of Management Review*, *14*(2), 361–384.

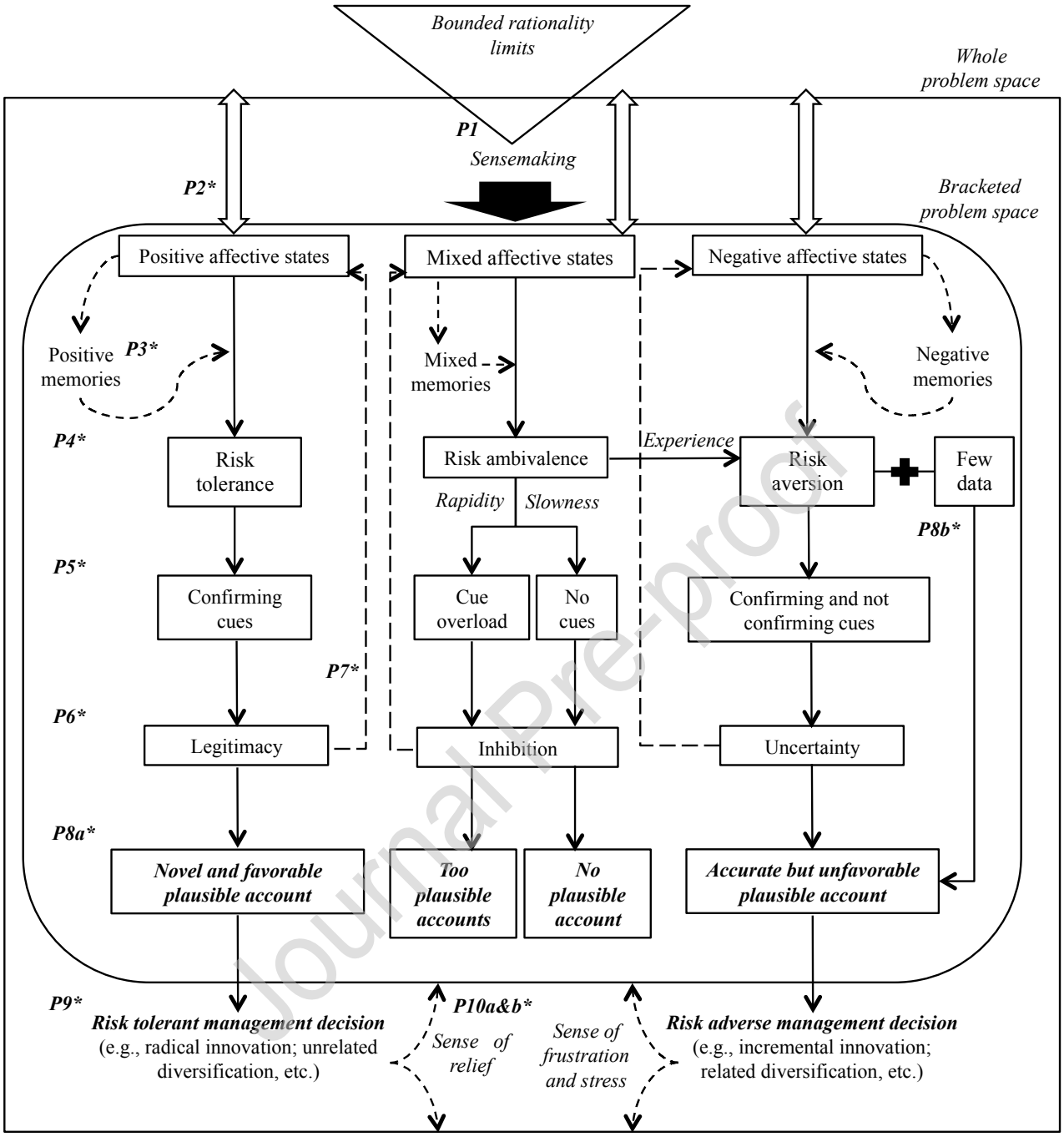
Wood, W., & Conway, M. (2006). Subjective impact, meaning making, and current and recalled emotions for self-defining memories. *Journal of Personality*, *74*(3), 811–845.

Yang, I., & Kelly, A. (2016). The positive outcomes of 'Socially Sharing Negative Emotions' in workteams: A conceptual exploration. *European Management Journal*, *34*(2), 172–181.

Zajonc, R. (1980). Feeling and Thinking. *American Psychologist*, *35*(2), 151–175.

Zampetakis, L. A., Lerakis, M., Kafetsios, K., Moustakis, V. S. (2015). The moderating role of anticipated affective ambivalence in the formation of entrepreneurial intentions. *International Entrepreneurship and Management Journal*, *12*(3), 815–838.

Figure 1. Conceptual framework of the Affect-Cognitive Theory of management decisions



Note: Propositions with asterisk (e.g., ***P2****) are also valid for parallel functionings.

Highlights

- This work proposes an Affect-Cognitive Theory of management decisions
- Sensemaking and decision making streams of research were integrated
- Affective states determine/are determined by cognition and its errors
- Management decisions bank on the predominant affective state
- Behavioral strategy's assumptions needed to intertwine human cognition, emotions, and social behavior are offered.