Navigating Uncharted Waters: How Executives Originate High-Quality Ideas for Strategic Responses to Unprecedented Shocks

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ABSTRACT

How and why do executives originate high-quality ideas for their firms' responses to major, unprecedented, exogenous shocks? I develop a novel, emergence-based theory of idea origination (TIO) by executives in the context of such shocks. By considering the top management team as a complex system, I suggest that executives may arrive at high-quality shock response ideas due to the (mitigating or reinforcing) workings of dynamic, situation-specific, interrelated constructs located at the individual, dyadic, and team levels of analysis. These constructs are formed and evolve according to an emergence process triggered by the focal shock. In my theorizing, I link dual-process models to idea origination (i.e., the interconnected execution of problem definition and idea generation), identify different modalities of controlled processing and categorizations of dyadic dynamics, and examine the complementary role of autonomous versus dynamics-driven new schema processing. Extant literature on executives' roles in strategic situations, in general, has tended to consider TMTs as monolithic decision-making bodies of individuals carrying enduring, situation-independent, ex ante known characteristics and/or engaged in stable, uniform interactions. Instead, I conclude that individual executives navigating uncharted waters, such as unprecedented shocks, may actually originate shock response ideas in much more fickle, multifarious, and shock-specific ways.

How and why do executives originate high-quality ideas for their firms' responses to major, unprecedented, exogenous shocks? Executives are the members of a "relatively small group" of individuals, the top management team (Finkelstein, Hambrick, & Cannella, 2009: 10). They are especially important because, among their "extremely complex" tasks, they "must monitor and interpret external events and trends" and are "responsible for formulating adaptive responses to the environment" (Hambrick, 1994: 175). Such responses are "strategic" as they tend to be highly consequential for the future of executives' firms (Hambrick & Mason, 1984).

Executives' roles are particularly challenging when their firms face major, unprecedented, exogenous shocks, the context on which this paper is focused. *Exogenous* shocks refer to discontinuous changes in one or more elements of the focal firm's external (i.e., general, industry, and competitor) environment (Meyer, Brooks, & Goes, 1990; Tushman & Anderson, 1986), such as customer preference shifts, technological changes, deregulation, rivals' moves, or health crises. *Major* shocks are the "discontinuous changes that dramatically alter the competitive and operating conditions of an environment" (Romanelli & Tushman, 1994: 1145). *Unprecedented* (as opposed to *regular*) shocks are those not experienced beforehand by the focal actors (Hallgren, Rouleau, & de Rond, 2018; Meyer et al., 1990).

I focus on major, unprecedented, exogenous shocks (hereafter unprecedented shocks) as they seem to be the most demanding (i.e., hard to respond effectively). In fact, even once flourishing firms, such as Research in Motion, Blockbuster, Sears, Toys "R" Us, GE, or Dean Foods blatantly failed in the presence of such shocks. Also intriguing is the remarkable variance in the quality of shock responses provided in recent years by world leading firms when facing unprecedent situations. For example, when households started changing their shopping preferences (from in-store to online) following the creation of the internet, Amazon developed a

stellar shock response while Sears offered a very poor reaction. The same disparate shock-response quality happened when, facing the outburst of the COVID-19 pandemic, some pharmaceuticals were able to succeed while dozens of their competitors failed.

Accordingly, in those situations, some firms but not (many) others displayed *high-quality shock responses,* which refers to specific courses of action chosen by firms to cope with a given shock that are highly novel but also highly useful. In the context of unprecedented shocks, I view "idea quality as a function of novelty and usefulness" (Kier and McMullen, 2018: 2274-2275), i.e., I equate high-quality ideas with creative ideas (Amabile, 1988). Amazon's online marketplace and Tesla's electric cars were notorious examples of response to shocks (technological, customer-related, and societal-based) that were highly novel and highly useful.

As the conceptualization of (creative) ideas "happens within the individual's mind" (Mannucci & Perry-Smith, 2022: 1194), we need to understand how individual executives arrive at those ideas to understand the (wide) variation in the quality of their firms' shock responses. With this purpose in mind, I first acknowledge that reaching high-quality ideas under unprecedented shocks is typically much more challenging than under regular shocks due to the nature of the involved problem. Regular shocks, such as fiscal shocks or the ups and downs of the economic cycle, correspond to so-called *well-structured problems*, i.e., those which meaning is clear and familiar to the decision-maker and have a single, "right" solution (e.g., Jonassen, 1997; Levinthal, 2011; Lyles & Mitroff, 1980). In contrast, unprecedented shocks, such as the advent of the Internet, the societal demands for sustainable transportation, the creation of the streaming technology, or the outbreak of the COVID-19 tend to be more demanding: they correspond to *ill-structured problems*, for which there are multiple possible ways to define the problem, multiple solutions paths, and multiple acceptable solutions (e.g., Jonassen, 1997; Levinthal, 2011; Lyles

& Mitroff, 1980). These latter shocks refer to new situations that may even tend to raise doubts about whether there is a problem at all, let it alone what it really means and how it could be solved (Mintzberg, Raisinghani, & Théorêt, 1976).

So, to arrive at high-quality ideas for these shocks, executives should try to effectively define the problem at hand and try to effectively generate ideas to solve that problem. Problem definition and idea generation are intrinsically linked: the particular way the problem is defined may influence the direction of the ideas that will be generated afterwards, and vice-versa. For example, when facing the COVID-19 pandemic, major technology companies showed poor idea generation (and, thus, poor responses) following their inadequate problem definition (Weinberger, 2022). Mark Zuckerberg explained it in a message to Meta employees: "At the start of Covid, the world rapidly moved online and the surge of e-commerce led to outsized revenue growth. Many people predicted this would be *a permanent acceleration* that would continue even after the pandemic ended. I did too, so I made the decision to significantly *increase our investments*. Unfortunately, this did not play out the way I expected. (…) I got this wrong, and I take responsibility for that" (Zuckerberg, 2022, emphasis added). In another example, in 2013, Microsoft decided to buy Nokia in response to Apple's remarkable success with its iPhone. Their choice was the result of a poor definition of the problem: We need to succeed in the smartphone business. Later, with Satya Nadella as the new CEO, Microsoft redefined the problem: We need to reignite the firm's growth and value creation. As a result, their idea generation involved a quite distinct search and ended up betting (and succeeding) on the cloud and other businesses and discontinuing the smartphone business (Weinberger, 2017).

Such an interconnected execution of problem definition and idea generation, here termed *idea origination,* constitutes the phenomenon I intend to examine. Therefore, "How and why do

executives originate high-quality ideas for their firms' responses to major, unprecedented, exogenous shocks?", is my research question. To address this question, I offer a novel, *emergence-based theory of idea origination* (TIO) by executives in the context of their firms' strategic responses to unprecedented shocks. My effort relies on the key premise of the upper echelons theory (UET) that executives' ideas and choices result from their interpretations of the strategic situations they face (Hambrick, 2007), and is informed by research on creativity (Amabile, 1988; Harvey & Berry, in press), dual-process models (Epstein, 1994; Kahneman & Frederick, 2002; Smith & DeCoster, 2000; Strack & Deutsch, 2004), complex systems (Holland, 1998; Miller & Page, 2007; Simon, 1996), emergence (Cronin, Weingart, & Todorova, 2011; Kozlowski & Klein, 2000; Ployhart & Moliterno, 2011), and dyadic interactions (Gibson, 2018; Knight & Humphrey, 2019; Humphrey & Aime, 2014). By considering executives as elements of a complex system (here, the TMT), I show that executives may arrive at high-quality shock response ideas as a result of the (mitigating or reinforcing) workings of dynamic, situation-specific, interconnected constructs located at the individual, dyadic, and team levels of analysis, which are formed and evolve according to an emergence process triggered by the shock. *Emergence* refers to the process of formation and evolution of key properties of the system over time based on the ongoing properties and interactions of its successive layers of lower-level components, where both bottom-up and top-down influences might be involved (Cronin et al., 2011; Holland, 1998; Kozlowski & Klein, 2000; McGrath, Arrow, & Berdahl, 2000; Ployhart & Hendricks, 2019; Simon, 1996).

This paper—to the best of my knowledge—constitutes the first systematic, theoretical attempt to explain how individual executives can originate high-quality ideas for their firm's responses to major, unprecedented, exogenous shocks, and makes three main contributions. First, given the

fact that there is no systematic theoretical view of how and why top executives can originate high-quality ideas for their firms' responses to unprecedented shocks, the paper contributes with the creation of a new stream of research on top executives by developing an emergence process through which some interconnected, three-level, emergent constructs are formed, evolve, and shape the quality of executives' shock response ideas. Second, it contributes to research on the role of executives' interactions in their decision-making processes. Past studies tended to focus on compositional accounts of interactions (i.e., with an emphasis on past-based, situation-independent, homogeneous, all-in interactions inside the TMT). Instead, I propose a more compilational perspective of interactions (i.e., with an emphasis on actual, shock-specific, heterogenous interactions and on the disproportionate impact of the different types of interactions on outcomes of interest). Third, it also contributes to the creativity and innovation literatures by specifying the information processing subtypes and emergent constructs that can explain the transition from local search to distant search in idea generation endeavors, and by highlighting the benefits of analyzing problem definition and idea generation in tandem.

HOW EXECUTIVES PROCESS SHOCK INFORMATION

Executives are the members of a given top management team (TMT), "the relatively small group of influential executives at the apex of an organization, usually the CEO (or general manager) and those who report directly to him or her" (Finkelstein, Hambrick, & Cannella, 2009: 10). Executive work is especially challenging and "qualitatively different from work at other organizational levels" (Hambrick, Finkelstein, & Mooney, 2005: 474). Executives engage in "ongoing, day-in/day-out administrative actions" and are "responsible for formulating adaptive responses to the environment" (Hambrick, 1994: 175). The latter responsibility (i.e., the formulation of shock responses) relates to strategic situations that are especially complex and

ambiguous (Hambrick, 1994). As a result, executives need to formulate shock responses based on their personalized interpretations of the focal strategic situation (Hambrick, 2007). That is, they need to engage in *problem definition*, i.e., the set of efforts by which individuals assess the meaning and the generic implications of a given situation, and then in *idea generation*, i.e., the set of efforts by which individuals identify specific courses of action to solve a given problem (e.g., Amabile, 1988; Ford & Baucus, 1987; Litchfield, 2008). So, the quality of shock response ideas should be influenced by how effectively executives define the problem and generate ideas, that is, by how effectively they *originate* ideas. But what makes such an idea origination more (or less) effective? I suggest that distinct types and subtypes of information processing have different effects on how well executives originate ideas, depending on the nature of the focal exogenous shock. One particular subtype of information processing, I will argue, is essential to allow executives to devise high-quality ideas for their firms' response to unprecedented shocks.

The Crucial Role of Schemas

When individuals are exposed to a given stimulus, they tend to immediately build a cognitive representation of the stimulus (Fiske & Taylor, 2013). The same phenomenon happens to executives in strategic situations (Hambrick & Mason, 1984) and, I suggest, when major, exogenous shocks occur. Such representations are the result of an automatic processing of the information associated with a given exogenous shock, i.e., a low-effort, spontaneous activation of executives' existing, long standing schemas (Epstein, 1994; Smith & DeCoster, 2000; Strack & Deutsch, 2004). *Schemas* are people's memory-stored, abstract structures of knowledge about concepts, including each concept's attributes and the relations among them (Fiske & Taylor 2013; Ghosh & Gilboa, 2014; Rumelhart & Ortony, 1977). Such knowledge structures are abstracted from people's multiple past experiences or learning points about a given concept

(Bodenhausen & Morales, 2013; Gilboa & Marlatte, 2017; Smith & DeCoster, 2000). For example, after experiencing and learning about several deregulation events over time, a person can build a "deregulation schema" based on the common or salient elements he or she observed across those events. Schemas are essential in our lives as they help to answer questions such as "What are the implications; what does it mean?" and "How should I respond?" (Harris, 1994: 309).

Accordingly, in the presence of major, exogenous shocks, executives are likely to immediately build a *shock representation*, which I define as an individual's ongoing understanding of the current specific situation—i.e., a *shock interpretation*—and the particular actions (if any) that should be taken—i.e., *shock-response ideas*. For example, people may conclude that "It is a lion", "We need to be safer", "We should go away", respectively. So, in my context, the activation of the schema (the cognitive *process*) and the resulting formation of a shock representation (the *output*) fulfill executives' need for problem definition and idea generation. For example, when new developments emerge in firms' external environments, an automatic interpretation of the situation might be formed (e.g., "I think this is an industry downturn", "We need to rebalance our firm's financial position"), and the associated shock-response ideas might follow swiftly (e.g., "Perhaps we should cut costs, reduce prices, postpone investments," Quelch & Jocz, 2009). Shock representations are individuals' ongoing assessments of a given situation and might evolve even over short periods of time. That is, initial shock representations may or may not subsequently change.

Which schema is activated? Individuals automatically activate (i.e., will bring to mind) the particular schema that better matches the attended features of the environment (Anderson & Pearson, 2013; Higgins, 1996; Norman & Shallice, 1986), especially when some of these

features match the core components of the schema (i.e., those that are more relevant in our minds to identify the concept). In the case of the industry downturn schema, for example, a sudden drop in the focal firm's sales can constitute one of its core components. Figure 1 (Panels I and II) illustrates this activation process.

[Insert Figure 1 about here]

Such an automatic activation of schemas is likely to play a fundamental role in executives' problem definition and idea generation when exogenous shocks pop up. Specifically, I expect that, in terms of idea quality, the effects of this type of information processing will vary depending on the nature (regular versus unprecedented) of the focal shock. This spontaneous procedure can be highly efficient and effective in *regular* shocks (i.e., those already experienced by focal executives)—such as fiscal shocks or the ups and downs of the economic cycle. In those strategic situations, executives 'only' need to find the right, existing schema.

In contrast, I argue, mere reliance on automatic processing can be highly problematic in the presence of *unprecedented* shocks, as it may originate low-quality shock response ideas. As noted, idea quality is a function of novelty and usefulness. Following the creativity literature (e.g., Harvey & Berry, in press), I view *novelty* as the extent to which a suggested course of action departs from usual solutions, and *usefulness* as the extent to which a suggested course of action addresses the particular characteristics of the focal situation. As schemas are the accumulated result of past situations experienced by the focal executives, shock-response ideas associated with automatic processing are likely to be those already used in the past, i.e., ideas that are not novel. Moreover, such a nature of schemas is also likely to lead to the origination of ideas showing low usefulness. In fact, when shocks are unprecedented (a) important situation features might not have been experienced before by the focal executives and, thus, might not

have been included in those schemas (elements D and E in schema 1 of Figure 1, Panel II), and (b) some elements of the activated schemas might not apply to the current situation (element B). Given these *situation-schema mismatches*, the usual automatic generation of ideas (based on existing schemas) may fail to suit the specificity of the focal shock, leading to shock response ideas with low novelty and low usefulness. So, we should expect low-quality shock response ideas from automatic processing in unprecedented shocks. (It is noteworthy that people might activate a given schema even when it fails to suit the shock because any novel situation always share some features included in some, existing schemas—e.g., COVID and flu share at least eleven symptoms).

Therefore, in unprecedented shocks, in order to originate shock response ideas of high quality based on more effective problem definition and idea generation, executives need a specific modality of another type of information processing.

From Automatic Processing to Controlled Processing

According to the literature on dual-process models in cognitive psychology, social psychology, and neuroscience (Epstein, 1994; Kahneman & Frederick, 2002; Lieberman, 2007; Smith & DeCoster, 2000; Strack & Deutsch, 2004), the spontaneous activation of top executives' long-standing schemas, above described, corresponds to a specific type of information processing—*automatic processing*—which is not only schema-based and spontaneous, but also effortless, nonconscious, associative, and more affect-laden. But, according to this literature, there is another type that, I argue, is the one that top executives also need to engage in when facing unprecedented shocks: *controlled processing*. This type of information processing tends to be situation-focused, deliberate, effortful, conscious, rule-based, and less affectively charged. When engaged in controlled processing, individuals undertake more analytic and comprehensive

thinking about the situation, searching for further evidence, arguments and conceptualizations. In my shock context, more controlled processing is required to enable executives to gradually revise their initial shock representations and create new schemas, truly informed by the actual situation features.

Drawing on the empirical research on how schemas might evolve (Hargadon & Bechky, 2006; Labianca, Gray, & Brass, 2000), I argue for the need for a specific, distinct controlled processing modality (with two successive steps). In early periods of the process (the first step), executives must gradually acknowledge that some components of existing schemas are not relevant in the current situation (element B in schema 1 of Figure 1, Panel I) and that some important situation features are not included in these schemas (elements D and E)—a process here termed *de-schematization*. In this first step, executives need to depart from the existing cognitive whole (e.g., "It's an industry downturn;" "We should cut costs, reduce prices, postpone investments") and refocus on the parts, i.e., on the individual situation features (e.g., sudden drop in sales, decreasing customer satisfaction in some segments, and so on)—the transition from Panel II to Panel III in Figure 1. Later (the second step), executives must gradually integrate the detected situation features into new schemas, which will lead to new shock representations—a process here termed *re-schematization*. In this second step, executives need to consider all relevant parts (elements A, C, D, and E) and build a new whole (e.g., "It's a new trend;" "We should create completely new products"), as illustrated in Panel IV.

By engaging in this *new schema processing* (i.e., the information processing characterized by de-schematization followed by re-schematization), executives are more likely to originate ideas with high usefulness and high novelty, that is, high-quality ideas. First, de-schematization followed by re-schematization involves a more attentive analysis of the full set of situation

features and their overall meaning, i.e., a more effective definition of the problem. Therefore, the resulting response ideas are much more likely (than those associated with automatic processing) to address the idiosyncrasies of the focal shock, that is, to show high usefulness. Second, in contrast to what would have happened with a mere (effortless) automatic processing, a de-schematization followed by re-schematization corresponds to a strong, lengthy cognitive effort—first, to resist to existing schemas and the resulting response implications, and then to elaborate on the true meaning of the shock and the associated response ideas. Such an effort corresponds to a distant (rather than local) search (Katila & Ahuja, 2002). The distant search typically associated with new schema processing is likely to induce executives to consider missed features and their overall meaning, and gradually originate ideas that may depart from those old responses, i.e., more novel ideas. In sum, high-quality ideas are much more likely under such new schema processing conditions. Accordingly,

> *Proposition 1 [individual level]: When dealing with unprecedented shocks, executives who engage in new schema processing (i.e., de-schematization followed by re-schematization) are more likely to originate shock response ideas of high quality than executives engaged in automatic processing only.*

How can executives, then, engage in new schema processing (i.e., de-schematization followed by re-schematization)? I propose a three-level emergence process as an answer, given my conceptualization of TMTs as complex systems, which I explain next.

EXECUTIVES AS ELEMENTS OF A COMPLEX SYSTEM

Executives, as members of a given TMT, are required to originate ideas for their firms' shock responses. Those individuals do not engage in such a process in isolation but in the context of their TMTs. As "interactions of the entire TMT enter into strategic behaviors" (Hambrick, 2007: 334), we need to examine such idea origination process by considering not only the relevant constructs and mechanisms located at the individual-level, but also the constructs and

mechanisms that enable uncovering the potentially important role performed in that process by interactions inside the TMT. That is, I suggest, we need to conceptualize the TMT as a complex system and, therefore, executives as elements of a complex system.

A TMT is a "small group" of people (Finkelstein et al., 2009: 10). Small groups are typically complex systems (Kozlowski & Klein, 2000; McGrath et al., 2000): they "exist in a context, develop as members interact over time, and evolve and adapt as situational demands unfold" (Kozlowski & Ilgen, 2006: 78). In addition, TMTs correspond to the Cyert and March's portrayal of the decision-making entity as a rich "collection of diverse individuals" rather than a monolithic block (1963: 27). Such richness and diversity of TMTs make them at least as suitable as the common small groups to be characterized as complex systems.

Complex systems—systems composed of successive subsystems interacting in nontrivial ways over time (Simon, 1996)—are the central concept of complexity science (Anderson, 1972; Arthur, 1999; Goldstein, 1999; Holland, 1998; Miller & Page, 2007; Simon, 1996). Complex systems have two defining features. First, they have a *multilevel* structure: a complex system (here, the TMT) is composed of subsystems (the dyads constituted by pairs of executives), which, in turn, comprise their basic elements (the individual members of each dyad), which constitute the lowest level of the structure (Simon, 1996). Second, complex systems are intrinsically *dynamic*. They "constantly evolve and unfold over time" (Arthur, 1999: 107). Therefore, *longitudinal* accounts are required. Here, consistent with past work on group dynamics and organizational decision making (Gersick, 1988, 1989), and based on the normative reasoning detailed below, I will consider a two-step process, by discriminating the effects of my constructs in early versus subsequent stages of the process.

The multilevel and longitudinal features of complex systems are captured by the concept of emergence. Following the literature on complexity science (Goldstein, 1999; Holland, 1998; Miller & Page, 2007) and small group dynamics (Kozlowski & Klein, 2000; Cronin et al., 2011), I define *emergence* as the process of formation and evolution of key properties of the system based on the ongoing properties and interactions of its subsystems, which might involve both bottom-up and top-down influences. Higher-level constructs emerge from their lower-level components (Holland, 1998; Humphrey et al., 2017; Miller & Page, 2007). For example, human capital (a team-level construct) emerges from individuals' knowledge, skills, abilities, and other characteristics, i.e., KSAOs (a lower-level construct), either based on the homogeneity of KSAOs (compositional emergence) or on the heterogeneity of KSAOs (compilational emergence), as discussed by Ployhart & Moliterno (2011: 145). In compilational forms of emergence (Kozlowski & Klein, 2000), there can be a differential contribution of some lower-level entities (e.g., dyads) over others to the outcomes of interest (Hitt, Beamish, Jackson, & Mathieu, 2007; Humphrey, Morgeson, & Mannor, 2009).

So, studying emergence implies studying the involved emergent constructs. In the following pages, I will consider emergent constructs at the individual level (representational confidence and representational emotion), at the dyadic level (confidence symmetry and emotional symmetry), and at the team level (dyad-type prevalence). I have included these constructs based on the following considerations. First, they are emergent states rather than traits, that is, they are consistent with the purpose of designing an emergence process. *Emergent states* (Marks, Mathieu, & Zaccaro, 2001) correspond to properties of an entity (an individual, a dyad or a team) that are intrinsically dynamic and vary (even in short periods of time) as a function of the context, inputs, processes and outcomes considered in the model, as opposed to traits which are

enduring, relatively stable properties of an entity (e.g., an executive's age or firm tenure). Second, my emergent constructs refer to (meta)cognitions and emotions automatically associated with the fundamental element of the process (the shock representation). Third, as they are key components of an emergence process and given their contents, these emergent states are distinct (as they refer to different levels) but interconnected (as changes in a construct at lower levels automatically propagate to higher levels—i.e., 'emerge').

Next, I will examine the three-level emergence process underlying executives' origination of ideas for their firms' responses to unprecedented shocks (Figure 2). I will successively consider the role of relevant emergent constructs at the individual, dyadic, and team levels in determining whether (or not) executives are likely to engage in new schema processing (i.e., de-schematization followed by re-schematization) and, by doing so, originating high-quality ideas.

[Insert Figure 2 about here]

THE EMERGENCE PROCESS: INDIVIDUAL-LEVEL FACTORS

So, executives need to engage in new schema processing in order to bring forth high-quality ideas. New schema processing might be at work in two modes: *autonomous new schema processing* (i.e., when individual executives engage in de-schematization followed by re-schematization attempts regardless the contributions of their peers within the TMT) and *dynamics-driven new schema processing* (i.e., when individual executives' de-schematization followed by re-schematization attempts are induced by the interactions that occur inside the TMT either with the direct and active involvement of the focal executive or not). I have earlier proposed that, when facing an unprecedented shock, executives automatically build a shock representation. I now add that, attached to this cognitive representation, they also immediately

form their associated representational confidence and representational emotion (Figure 2). Each of these emergent constructs is essential to understand the autonomous new schema processing.

Representational Confidence, Representational Emotion, and New Schema Processing

Representational confidence refers to an executive's strength of belief that their current shock representation is highly appropriate to the situation at hand (Shea & Frith, 2019; Sniezek & Van Swol, 2001). Confidence is a form of metacognition, which refers to the psychological states and processes used by individuals to monitor and control their thoughts or thought processes (Grimaldi, Lau, & Basso, 2015; Nelson & Narens, 1990), that is, it is cognition about cognition (Flavell, 1979). As shown in recent neuroscience studies, when individuals build a shock representation in their minds, they automatically attach a given level of confidence to it (Lebreton, Abitbol, Daunizeau, & Pessiglione, 2015; Shea & Frith, 2019). So, executives will automatically affix a certain level of confidence to their shock representations. Confidence levels can vary depending on how well the activated schema matches the attended situation features: the higher the match, the more easily will such representations be retrieved from the executives' long-term memory (Xue, 2018); in turn, the easier the representations' retrieval, the more confident the executives will be about those representations (Kelley & Lindsay, 1993). Thus, the higher the match between the activated schema and the attended situation features, the stronger will be the executives' confidence in their shock representations. In Figure 1, Panel II, the executive would hold a moderate confidence level, as one component of their schema (element B) was not recognized in the focal situation and one attended situation feature (feature D) is not part of their schema. The confidence level would be high if the attended situation features were A, B, and C—that is, the same as the components of the schema. The confidence level would be low if, for example, the executive had only noticed features C, D, and E.

Confidence helps to explain whether people translate their shock representations into subsequent decision-making and behavior (Gill, Swann, & Silvera, 1998; Shea & Frith, 2019). Specifically, I expect that representational confidence will influence executives' willingness to adopt a more controlled processing. Automatic processing is effortless (Smith & DeCoster, 2000); hence, it constitutes the usual information processing (Epstein, 1994; Kahneman, 2003). Given the effortful reflection demanded by controlled processing, some motivational force is necessary to induce individuals to embrace such a way of thinking (Fazio, 1990; Strack & Deutsch, 2004). The existence (versus the absence) of significant doubts about their views can provide executives with the motivation to engage in a more controlled, effortful process of information acquisition and thinking (Chaiken & Ledgerwood, 2011; Eagly & Chaiken, 1993). In the presence of unprecedented shocks, an absence of significant doubts corresponds to a high confidence level (i.e., a strong situation-schema match): no motivation to depart from the automatic processing should be expected. In contrast, the existence of significant doubts about the initial views (i.e., low or moderate levels of confidence) should impel executives to adopt a more controlled processing.

Proposition 2 [individual level]: When dealing with unprecedented shocks, executives with low or moderate representational confidence are more likely to engage in controlled processing than executives with high representational confidence.

Once they embrace a more controlled processing, executives may engage in different modalities of that information processing, depending on their representational emotion. *Emotions* are short-lived forms of affect (i.e., feelings) that result from an individual's assessment of the personal meaning of some antecedent event (Forgas, 1995; Fredrickson, 2001)—here, the activation of a given schema leading to a specific shock representation. So *representational emotion* refers to whether executives' emotions evoked by their current shock representations are positive or negative. Positive emotions correspond to feelings of pleasurable engagement, such

as enthusiasm or interest, whereas negative emotions represent feelings of unpleasurable engagement, such as fear or distress (Watson, Clark, & Tellegen, 1988).

When shock representations are formed as a result of the activation of a particular schema, a given emotion attached to that schema is evoked because schemas "consist primarily of generalizations derived from emotionally significant past experience" (Epstein, 1994: 715). For example, the "executive with experience in a firm that tried unsuccessfully to diversify" referred by Hambrick and Mason (1984: 200) was likely to had attached to his or her diversification schema a negative emotion. In turn, executives may vary in their construal level as a function of the positive versus negative emotions elicited by their shock representations. *Construal level* refers to the level of abstraction people use when processing information and applying or forming their mental representations regarding targets such as events (Trope & Liberman, 2010; Wiesenfeld, Reyt, Brockner, & Trope, 2017). Higher construal level corresponds to a focus on broad, general, and central mental representations or situation features when people attempt to give meaning to the situation. In contrast, lower construal level involves a focus on narrow, specific, and contextualized mental representations or situation features (Falchetti, Cattani, & Ferriani, 2022; Steinbach, Gamache, & Johnson, 2019; Wiesenfeld et al., 2017). Positive versus negative emotions tend to lead to high versus low executives' construal levels. Positive emotions tend to drive people to continue their current line of thinking and broaden their attention scope (by focusing on the big picture, i.e., the forest) (Fredrickson, 2001; Fredrickson & Branigan, 2005; Gasper & Clore, 2002)—that is, they lead to executives' high construal level. On the other hand, negative emotions tend to impel individuals to detach from current views and narrow their attention scope (by focusing on the details, i.e., the trees) (Fredrickson, 2001; Fredrickson & Branigan, 2005; Gasper & Clore, 2002)—that is, they lead to executives' low construal level.

I propose that different modalities of controlled processing might be at work as a result of the combination of executives' low or moderate representational confidence levels with different patterns of representational emotion that might prevail during the emergence process. Moreover, I show that one particular combination of confidence and emotion patterns, in contrast to other combinations, may lead to the (above explained) required modality of controlled processing (i.e., new schema processing) and, thus, to high-quality ideas.

As noted, low or moderate confidence levels signal the existence of *mismatching situation features* (those without corresponding attributes in the activated schema; e.g., feature D in Figure 1, Panel II) and/or *mismatching schema attributes* (those not noticed in the situation; e.g., attribute B). When executives hold low or moderate confidence *and* positive emotions during the emergence process, such emotions (by triggering high construal levels) lead them to keep the same overall view of the shock provided by the initial automatic schema activation. First, they are likely to "assimilate" (Ghosh & Gilboa, 2014) any mismatching situation features, i.e., they will include them in the existing schema, maintaining the *same* shock representation. For example, by listening to a lion's roar for the first time, a child might learn that roaring is an attribute not yet included in his or her lion's existing schema based on photos only. The schema contents are adjusted, but the underlying concept remains intact: "a lion". Second, those executives also tend to "fill data gaps" (Walsh, 1995: 292) by ignoring the mismatching schema attributes. As a result of these assimilation and gap filling procedures, they will remove any remaining doubts and retain the same concept (a "lion" or an "industry downturn") while adjusting the attribute set of the schema, a modality of controlled processing here termed *schema update processing*. (As doubts are vanished, no further processing will be at work. There will be no room for a stage with negative emotions after this situation with positive emotions.) That is,

under these conditions of confidence and emotion, executives will tend to use the very same representation as in the prior automatic processing ("it's a lion", "we should go away"). No de-schematization, nor re-schematization will occur. Hence, problem definition and idea generation are likely to be ineffective, leading to low-quality ideas.

When executives hold low or moderate confidence *and* negative emotions, such emotions (by triggering low construal levels) lead them to focus on the details of the situation and question the initially activated (automatic-based) schema. So, they may embrace de-schematization. However, when such negative emotions persist during the emergence process, no re-schematization occurs subsequently and, thus, no new schema is created. I designate this modality of controlled processing, involving de-schematization without re-schematization, as *schema impasse processing*, which resembles cases of destructive criticism, as the old schema is solely questioned without the offering of a surrogate schema (concept). There is no clear problem definition as the initial ambiguity of the situation is not resolved and, thus, idea generation cannot be properly started: no response or, at best, unfocused response should be expected. High-quality ideas are unlikely under these conditions of confidence and emotion.

Only when executives hold low or moderate confidence combined with negative emotions, first, and positive emotions, later, we should expect *new schema processing* (i.e., de-schematization followed by re-schematization) and, hence, the origination of high-quality ideas. By holding negative emotions (and the associated low construal levels), initially, executives will tend to further process information by focusing on details and with a detachment from current views and, thus, enable the desirable removal of irrelevant attributes of the initially activated schema and the full consideration of neglected situation features (i.e., de-schematization). By holding positive emotions (and the associated high construal levels) after those analyses,

executives will tend to turn their cognitive efforts toward integrating those details into a new big picture, i.e., a new schema (i.e., re-schematization). As explained earlier, this sequence of de-schematization and re-schematization is likely to lead to more novel and useful ideas, i.e., high-quality ideas. Accordingly,

Proposition 3 [individual level]: When dealing with unprecedented shocks, executives with low or moderate representational confidence and negative representational emotion, first, and with low or moderate representational confidence and positive representational emotion, later, are more likely to engage in new schema processing than otherwise.

Proposition 4 [individual level]: When dealing with unprecedented shocks, executives with low or moderate representational confidence and negative representational emotion, first, and with low or moderate representational confidence and positive representational emotion, later, are more likely than otherwise to arrive at shock response ideas of high quality.

THE EMERGENCE PROCESS: DYADIC-LEVEL FACTORS

As executives originate shock response ideas in the context of their TMTs, and because TMTs can be considered as complex systems, I now examine the fundamental role of interactions between executives on the quality of the originated ideas. Specifically, I will argue that certain types of interactions (rather than others) will be more likely to help executives to arrive at high-quality ideas and will identify the specific emergent constructs that may propel such interactions. In the general model that I have been presenting so far, and particularly in this and the next sections (pertaining to the dyadic and team levels), as most of the literature on executives, I assume no significant variation in power across TMT members. The especial emphasis on top executives to explain firms' outcomes stems from the recognition of these managers as the firms' most powerful actors (Hambrick, 2007; Hambrick & Mason, 1984). However, in some cases, there might be meaningful variation in power within the TMT itself. So, later, after presenting my general model of the idea origination (emergence) process, I will expand it by also specifying my predictions for the situations characterized by significant power differences.

An understanding of the behavior of the components of a complex system (here, the TMT) requires an understanding of the "properties of the parts and the laws of their interaction" (Simon, 1996: 184). Moreover, we know that people rely on their peers to reassess their views (Festinger, 1954; Geana, Duker, & Coman, 2019; Smith & Mackie, 2016) and engage in controlled processing (Smith & DeCoster, 2000). Thus, in addition to the *autonomous* new schema processing above described, we also need to examine the *dynamics-driven* new schema processing that may enable executives to come up with high-quality shock response ideas.

I start this dyadic-level analysis by clarifying my conceptualizations of interactions and dynamics. *Interactions* are the particular ways in which individuals behave together when in contact with each other (McGrath, 1984). They involve action by an individual and reaction from another (Gibson, 2018; Morgeson & Hofmann, 1999). Thus, the *dyad* is the primary unit of interpersonal interaction (Humphrey et al., 2017; Kenny et al, 2020; Krasikova & LeBreton, 2012). Even when more than two individuals (e.g., individuals A, B, and C) are engaged in a given, simultaneous conversation (either in a family gathering or a strategy meeting), their dyadic interactions might differ: when A says something (action), B might carefully listen and reply (reaction), while C might hardly consider A's views and quickly refute them (reaction). These varied interactions are likely to contribute quite differently to the task at hand. Recent research has corroborated these possibilities of differentiated interaction (Veltrop et al., 2021). By *executive dynamics* I mean the particular patterns of dyadic interaction between TMT members of a given firm, which occur over a given period of time while they are performing a given task. Executive dynamics refer to "patterns of interaction" because, whereas interactions might vary over time, they are essentially patterned (Trefalt, 2013); rather than any single point of contact or interaction, what matters here is the dominant type of interaction that stands out

from the whole series of points of contact between TMT members during a given period (Humphrey et al., 2017; Morgeson & Hofmann, 1999), while performing a given task.

Next, I identify the two emergent constructs at the dyadic level that, by affecting dyadic dynamics, influence whether executives may arrive (or not) at high-quality ideas.

Confidence Symmetry, Dynamics by the Direction of Influence, and Controlled Processing

Two properties emerge at the dyadic-level from the two properties of the lower-level components (the individual executives), as it would be expected given of the complex system nature of the TMT: confidence symmetry and emotional symmetry (Figure 1). I focus on (a)symmetries as they correspond to forms of compilational (rather than compositional) emergence (e.g., De Jong & Dirks, 2012), given my emphasis on the creation of higher-level phenomena by considering both heterogeneity and homogeneity (rather than just homogeneity) of lower-level phenomena (Ployhart & Moliterno, 2011: 129; Humphrey et al., 2017), as noted.

Each time two members meet, they form a dyad that acquires its own properties based on the individual properties of the constituent members (Figure 3). *Confidence symmetry* corresponds to whether the dyad members hold the same level of representational confidence (i.e., whether there is symmetry) and, if there is symmetry, at what level of confidence it occurs. Given the three levels of confidence considered at the individual level, dyads can show symmetry at a high level (i.e., both members show high confidence), symmetry at a moderate level, symmetry at a low level, or asymmetry (when the two members differ in their confidence levels). Multiple distinct cases fall into the latter category: low level (for one member)-moderate level (for the other), low-high, moderate-high, or vice-versa. I collapse these latter (asymmetric) cases into a single category (asymmetry) as, according to the arguments explained below, all of them are expected to induce the same type of behavior in my context.

[Insert Figure 3 about here]

Confidence symmetry affects dynamics by the direction of influence. In complex systems such as TMTs, influence constitutes a fundamental aspect of interactions (Simon, 1996: 200). *Dyadic influence* is the extent to which one individual's views affect someone else's cognitions and behaviors and vice-versa (Barry & Fulmer, 2004). Confidence symmetry is essential to understand the flow of influence within each dyad as confidence can simultaneously determine whether each dyad member is willing (a) to inform their partner about their own views in order to influence them (*willingness to influence*), and (b) to be informed about their partner's views to reassess their own views (*willingness to be influenced*). On the one hand, representational confidence positively impacts willingness to influence. The more confident an executive is about their views, the more convinced they will be about their ability to persuade others (Ng & Lucianetti, 2016; Petty, Briñol, & Tormala, 2002). This higher persuasion belief, in turn, will enable the executive to overcome their natural inhibition to disclose their views (Stasser & Titus, 1985), thereby strengthening their willingness to influence.

On the other hand, representational confidence is negatively related to willingness to be influenced. Interactions with peers provide executives with the opportunity to (re)build their own views, as people do rely on others' opinions (Geana et al., 2019; Smith & Mackie, 2016). When executives have the opportunity to interact with their peers in dyadic exchanges, the higher their representational confidence levels, the lower is their motivation to rely on their peers' views (De Martino et al., 2017), and, hence, the lower is their willingness to be influenced. Thus, there will be a trade-off: executives who are highly confident in their shock representations will be prone to inform but not listen, whereas they will tend to listen but not inform when they have low levels of confidence. Only those with moderate confidence will be willing to *both* influence and be

influenced. Executives with high confidence will tend to be willing to influence but not to be influenced. Conversely, executives with low confidence will be willing to be influenced but not to influence. As a result, I argue, confidence symmetry is likely to affect executives' dynamics by the direction of influence (Figure 2).

The *direction of influence* refers to whether there is a full cycle of transmission and consideration of situation-relevant information from one dyad member to another, and vice versa (i.e., whether there is action and reaction regarding each dyad member). As patterns of dyadic interaction, executives' dynamics involve actions and reactions from each party (Gibson, 2018; Morgeson & Hofmann, 1999). *Action* refers to whether one executive transmits information to the other. *Reaction* refers to whether an executive seriously considers the transmitted views of their dyadic partner to reassess their views. As behaviors are preceded by behavioral intentions, i.e., the willingness to engage in a given behavior (Ajzen, 1991), to engage in the transmission of information *and* consideration of their peers' inputs, executives need to be willing to influence and willing to be influenced (the mechanisms at work here), respectively.

Driven by different possible combinations of willingness to influence and willingness to be influenced within the dyad, and the resulting action and reaction cases, four categories of dynamics may arise in terms of the direction of influence (two-way, one-way, half-way, and no way) and as a result of the focal dyad's confidence symmetry (Figure 4). When the dyad shows confidence symmetry at a moderate level (i.e., both members show moderate confidence), both parties are willing to influence and be influenced, so *two-way dynamics* are likely: one dyad member transmits their views to the other member (action) who considers such views as a valid input for reassessing their own opinions (reaction), and vice versa (as illustrated in Figure 4; cell at the center). When there is confidence asymmetry within the dyad, only one party is willing to

influence and/or only one party is willing to be influenced; is such cases, *one-way dynamics* are likely, that is, there is action and reaction in just one way (as in the top left corner of Figure 4). When the dyad shows confidence symmetry at a high level (i.e., both members have high confidence), neither is willing to be influenced, so *half-way dynamics* are likely: there is action by both dyad partners (i.e., both transmit their views to the other), but neither one reacts (top right corner of Figure 4). Finally, when the dyad is characterized by confidence symmetry at a low level, *no way dynamics* is the most likely outcome: neither dyad member acts because neither is willing to influence.

[Insert Figure 4 about here]

In order to originate high-quality ideas, as explained, executives should depart from mere automatic processing and engage in more controlled processing, and, specifically, get involved in one specific modality of controlled processing (new schema processing) rather than others. As noted, automatic processing is spontaneous and effortless, while controlled processing is deliberate and effortful (Kahneman & Frederick, 2002). Moreover, the outcomes of initial, automatic processing are typically hard to change (Kahneman, 2003; Strack & Deutsch, 2004). Thus, to help trigger controlled processing of the information, the exchanges between executives must provide a strong *mutual* stimulus and challenges that can enable them to exert the required cognitive effort to be gradually detached from their initial (automatic) shock representations.

Two-way dynamics are the category of dynamics by the direction of influence that is most likely to enable such an interpersonal, dynamics-driven new schema processing. In two-way dynamics, there is action and reaction in both directions of the dyad. Both sides listen and challenge each other because they are willing to influence and willing to be influenced. Such continuous and reciprocal influence attempts stimulate *both* dyad members to be involved in an

effortful, more analytic, and comprehensive thinking about the situation, which is what characterizes controlled processing. In contrast, the other three types of dynamics (by the direction of influence) are less likely or even unlikely to trigger controlled processing as they do not contain, by definition, such a vigorous cycle of *mutual* influence: in one-way dynamics, there is a potential influence in just one direction; in half-way dynamics, neither member is willing to be influenced; in no-way dynamics, neither member is willing to influence the other. It should be noted, nevertheless, that—whereas much less likely than the two-way dynamics to prompt the transformative cognitive work typically involved in the creation of new schemas—one-way dynamics are more likely than half-way and no way dynamics to induce more controlled processing (for example, by the diffusion of inputs from executive A to executive B that B may or may not use afterwards in his or her autonomous controlled processing). Hence,

> *Proposition 5 [dyadic level]: Dyads of executives with symmetrically moderate confidence are more likely to show two-way dynamics than any other type of dyads classified by confidence symmetry.*
>
> *Proposition 6 [cross level]: Executives of dyads with symmetrically moderate confidence are more likely to engage in more controlled processing than executives of any other type of dyads classified by confidence symmetry.*

Emotional Symmetry, Dynamics by the Focus of Attention, and New Schema Processing

When executives are prompted by their dyad's confidence symmetry to get involved in more controlled processing, whether or not they will follow a new schema processing will depend on their dyads' emotional symmetry. As confidence symmetry, this dyadic-level construct emerges from the properties of the individual executives involved in each dyad (Figure 3). *Emotional symmetry* refers to whether (or not) the dyad members feel the same type of emotion (i.e., positive or negative) and, if there is symmetry, what type of elicited emotion was shared. Dyads can be classified as *symmetrically positive* (if both dyad members experienced a positive emotion), *symmetrically negative* (if both members experienced a positive emotion), or

asymmetric (when one member experienced a positive emotion and the other a negative emotion).

While confidence symmetry affects the direction of influence, emotional symmetry shapes the focus of attention (Figure 2) as a result of its elicitation of executives' construal levels. When the symmetry is based on negative emotions, dyad members' construal level tends to be low and, hence, they may show a narrow attention scope, driving attention toward more concrete, detailed, and contextualized situation features—i.e., a "local" focus of attention (Carton et al., in press; Gasper & Clore, 2002). So, when both dyad members have a negative representational emotion, they are likely to be involved in *local-focused dynamics* (Figure 5): they will focus their discussions on atomistic views (i.e., very specific aspects) of the situation and challenge their previous lines of thinking; they will be construing the shock by focusing on the 'trees'. In result, two-way, local-focused dynamics are the most adequate for de-schematization (i.e., the first part of new schema processing): their directional (two-way) nature brings the continuous and reciprocal influence necessary for controlled processing, while their local focus may enable the desirable removal of irrelevant (current) schema components and the consideration of neglected situation features, i.e., enable the decomposition of the existing schema.

[Insert Figure 5 about here]

Conversely, when the symmetry is based on positive emotions, dyad members' construal level is typically high and, thus, they show a broad attention scope, focusing on more abstract, general, and central situation features—i.e., a "global" focus of attention (Carton et al., in press; Gasper & Clore, 2002). Thus, when both dyad members experience a positive representational emotion, they are likely to be involved in *global-focused dynamics*: they will focus their exchange on holistic views (i.e., general aspects) of the situation and preserve their previous lines of thinking;

they will be construing the shock by focusing on the 'forest'. These two-way, global-focused dynamics are precisely the kind of dynamics required for re-schematization (i.e., the second part of new schema processing), as long as preceded by two-way, local-focused dynamics (which may enable the necessary de-schematization), leading to the co-creation of new schemas and, hence, new shock representations: while spurring controlled processing given their directional (two-way) nature, their global focus may preclude dyad members from still questioning the relevance of each other's specific inputs (as it would happen in the local-focus condition)—which would lead to an impasse—and direct them instead toward a new understanding of the overall meaning of the inputs uncovered through the previous two-way, local-focused dynamics (i.e., toward a new schema).

Finally, when dyad members have divergent representational emotions (one member experiencing a positive emotion and the other feeling a negative emotion), *diametric-focused dynamics* should be expected. Due to such dissonant emotions, dyad members are likely to have a confused and unproductive exchange: one party (e.g., executive A), would be talking about the atomistic aspects of the shock (the 'trees'), while the other (e.g., executive B) would be referring to holistic aspects ('the forest'). For example, while executive A (characterized by negative emotions and local focus) would try to talk about some neglected situation features, executive B (characterized by positive emotions and global focus) would focus on the whole and try to be consistent with his or her previous line of thinking. Hence, B would at best just assimilate those features into his existing schema (Ghosh & Gilboa, 2014)—i.e., keeping the same, old concept—rather than decompose it (as it would be desirable for new schema processing). Or, while A would note that some features mentioned by B (as they were part of B's schema) do not belong to the focal situation, B would tend to engage in gap filling (Walsh, 1995), i.e., would dismiss

the pertinent observation made by A and insist in the relevance of his or her old schema. In addition, in both situations, B would not help A to decompose his or her own schema, and both executives would not be helpful to each other in co-constructing a new whole (i.e., schema).

So, such a misalignment in their focus of attention and thinking driven by divergent representational emotions is unlikely to lead to the desirable joint, constructive de-schematization, let alone subsequent re-schematization. Instead, it may ignite misunderstanding if not conflict, similar to what can happen with representational gaps (Cronin & Weingart, 2007) and cognitive barriers (Kaplan, Milde, & Cowan, 2017). One well-known example of the effects of unresolved differences in focus of attention is the so-called "micro-macro divide" within the Management scholarship, with some scholars focusing on parts and others focusing on wholes (e.g., Molloy, Ployhart, & Wright, 2011).

In sum, two-way, local-focused dynamics, first, and two-way, global-focused dynamics, afterwards, are the most adequate dynamics to engender the new schema processing required by high-quality idea origination. Such a sequence of dynamics can be driven by symmetrically moderate confidence and symmetrically negative emotion, first, and symmetrically moderate confidence and symmetrically positive emotion, later. Accordingly,

> *Proposition 7 [cross level]: Executives of dyads with symmetrically moderate confidence and symmetrically negative emotion, first, and symmetrically moderate confidence and symmetrically positive emotion, later, are more likely than otherwise to arrive at shock response ideas of high quality.*

THE EMERGENCE PROCESS: TEAM-LEVEL FACTORS

I have just examined one component of the dynamics-driven new schema processing—the one based on the *direct and active involvement* of the focal executive in dynamics inside dyads—that may allow executives to originate high-quality shock response ideas. I now suggest another component constituted by the effects of those dynamics analyzed at the team (i.e., the TMT)

level, namely, through the focal executive's *observation* of the whole set of dynamics occurring inside the TMT.

Two team-level constructs, which emerge from the two dyadic-level constructs (confidence symmetry and emotional symmetry), are important for such a purpose: dyad-type prevalence and dynamics-type prevalence (Figure 1). *Dyad-type prevalence* refers to the extent to which a given TMT comprises a certain type of dyads at a given point in time. For example, the prevalence of dyads with a symmetrically moderate confidence and symmetrically negative emotion in a given TMT is 4 when there are four dyads of this particular type at a given point in time. Likewise, *dynamics-type prevalence* is the extent to which a given TMT is composed of dyads categorized in a certain type of dynamics in a given period. For example, the prevalence of two-way, global-focused dynamics is 3 when there are three dyads in the focal TMT involved in that particular type of dynamics in a given period.

Dyad type prevalence (like dynamics-type prevalence) corresponds to a compilational rather than compositional form of emergence (Kozlowski & Klein, 2000; Mathieu & Luciano, 2019). In a *compositional emergence*, higher-level constructs are aggregations of lower-level properties based on the inclusion of all (equally relevant) lower-level units, e.g., individuals (for example, the average behavior or the degree of shared behavior within a group). In a *compilational emergence*, the lower-level properties are combined in complex and nonlinear ways to represent the higher-level entity (Cronin et al., 2011; Hitt, Beamish, Jackson, & Mathieu, 2007; Humphrey et al., 2017; Ployhart & Moliterno, 2011), i.e., not all lower-level elements need to be considered and/or some elements are disproportionately more important than others for the outcomes (as in the case of Humphrey, Morgeson, and Mannor's (2009) theory of the strategic core). Compilation-style constructs are a perfect fit in my theorizing as they can capture the unique

contribution of certain types of dyads (and the associated dynamics)—rather than others—to the team-level phenomenon.

Earlier, I suggested that, at the dyadic level, two-way, local-focused dynamics, first, and two-way, global-focused dynamics, later, are the most appropriate to induce new schema processing (i.e., de-schematization followed by re-schematization). Now I propose that the likelihood of individual executives engaging in new schema processing can also be affected by the *total* number of dyads within the TMT showing that pattern of dynamics (two-way, local-focused, first, and two-way, global-focused, then). That is, executives may be more prone to adopt new schema processing and, hence, improve the quality of their ideas simply by observing the prevalent dynamics of their TMT peers. In fact, people build representations of other people's beliefs, emotions, and behaviors captured by mere observation, and such representations may then influence the focal actor's own behavior (Smith & Mackie, 2016). An *observation-effect* is more likely when the observed individuals are socially connected with the focal actor, e.g., ingroup members (Smith & Mackie, 2016) such as TMT peers.

The observation-effect should be beneficial depending on the particular nature of the observed dynamics and the prevalence of such dynamics. First, because there is a disproportionate contribution to the quality of the shock-response ideas across types of dynamics (as explained above), a beneficial observation-effect is more likely to happen when the observed dynamics correspond to the two-way, local-focused types, first, and the two-way, global-focused, later. Second, the higher the total number of dyads within the TMT showing such particular dynamics, the more likely a beneficial observation-effect will be. Two factors contribute to this prediction: repeated exposure and legitimacy. The mental process of building representations of "adequate behavior" is rather gradual, as it demands multiple episodes or exposures to the new behavioral

information (Ghosh & Gilboa, 2014; De Martino et al., 2017). The repeated exposure brought by a higher number of dyadic dynamics of the relevant types makes the focal executive more likely to overcome the hurdles associated with behavioral change. In addition, the higher the total number of such dyads within the TMT, the greater will be the legitimacy effect (Suchman, 1995) of such specific kind of behavior. Based on legitimacy incentives, a higher number of such dyadic dynamics may improve the likelihood of imitation of those types of behaviors deemed more desirable and appropriate. (Given the nature of repeated exposure and legitimacy, it is the absolute number of beneficial dyads that matters here).

Hence, the higher the prevalence of dyads with two-way, local-focused dynamics, first, and two-way, global-focused dynamics, afterwards, the more likely the focal executive will engage in the desirable new schema processing and, as a result, originate high-quality ideas. As discussed earlier, such specific dynamics are likely to be propelled by dyads with symmetrically moderate confidence and symmetrically negative emotion, and dyads with symmetrically moderate confidence and symmetrically positive emotion, respectively: symmetrically moderate confidence spurs two-way dynamics, and local-focused versus global-focused dynamics are more likely in dyads with symmetrically negative emotion versus symmetrically positive emotion, respectively.

Proposition 8 [cross level]: The higher the prevalence of dyads (not involving the focal executive) with symmetrically moderate confidence and symmetrically negative emotion in a given TMT, first, and symmetrically moderate confidence and symmetrically positive emotion, later, the more likely their executives will be to arrive at shock response ideas of high quality than otherwise.

AN EXTENSION OF THE GENERAL MODEL: THE ROLE OF POWER

I have just completed the development of the general model of my theory of executive idea origination in the context of unprecedented shocks. Earlier, I have explicitly assumed no significant variation in power across TMT executives. In order to illustrate how smoothly this

general model can be extended in the future to incorporate any kind of contingencies of interest, I now examine the predictions, at the dyadic and team levels, for situations characterized by significant power differences.

The Role of Power at the Dyadic Level

Power refers to the capacity to influence others—as a result of the resources, rewards, or punishments under the control of the focal executive (Galinsky, Magee, Inesi, & Gruenfeld, 2006; Keltner, Gruenfeld, & Anderson, 2003). My initial assumption of TMT power homogeneity corresponds to what is sometimes designated as an egalitarian power structure (or shared leadership) (Tarakci, Greer, & Groenen, 2016): that is, all dyads comprise executives with a similar level of power. However, power might vary within the TMT (Finkelstein, 1992; Kisfalvi, Sergi, & Langley, 2016), so power asymmetries may arise within some dyads. *Power symmetry* refers to whether dyad members hold the same level of power (i.e., whether or not there is a symmetry) and, if there is symmetry, at what level of power (high or low) it occurs.

In TMTs with an egalitarian power structure, all dyads are considered as having power symmetry at an egalitarian level (i.e., both dyad members have the same power, which is the same as all other TMT peers). In TMTs with a non-egalitarian power structure, dyads can show power symmetry at a high level (i.e., both members have high power), symmetry at a low level, or asymmetry (when a high-power executive encounters a low-power peer). Considering power symmetry in my analysis of dynamics may be relevant because high-power individuals tend to interact differently from others (Keltner et al., 2003). Of interest here, high-power executives may show a high willingness to influence and a low willingness to be influenced regardless their representational confidence. First, high-power executives tend to "talk more, interrupt more, are more likely to speak out of turn, and are more directive of others' verbal contributions than are

low-power individuals" (Keltner et al., 2003: 277). That is, they tend to show a high willingness to influence. Second, high-power executives tend to be less willing to listen to other peers (See, Morrison, Rothman, & Soll, 2011) and to understand those others' perspectives (Galinsky et al., 2006). That is, they tend to show a low willingness to be influenced.

I have proposed earlier, when assuming TMT power homogeneity, that dyads of executives with symmetrically moderate confidence are more likely to show two-way dynamics than any other type of dyads classified by confidence symmetry because, by sharing moderate confidence, both dyad members will be willing to influence *and* be influenced. This prediction holds for dyads showing power symmetry at an egalitarian or low level. However, the proposed likelihood should be attenuated when the dyads are characterized by power asymmetry or power symmetry at a high level. In power asymmetry conditions, the executive with high power will tend to show low willingness to be influenced, so the focal dyad is more likely to engage in one-way dynamics than two-way dynamics. When there is power symmetry at a high level, both parties tend to show low willingness to be influenced, so we should expect no-way dynamics rather than two-way dynamics. Thus, by failing to present the desirable two-way dynamics, and based on my previous theorizing, dyads with power asymmetry or power symmetry at a high level are much less likely to embark in controlled processing than dyads with power symmetry at an egalitarian or low level. Accordingly,

> *Proposition 9 [dyadic level]: Dyads of executives with symmetrically moderate confidence are less likely to show two-way dynamics when they have power asymmetry or power symmetry at a high level rather than power symmetry at an egalitarian or low level.*
>
> *Proposition 10 [cross level]: Executives of dyads with symmetrically moderate confidence are less likely to engage in more controlled processing when those dyads have power asymmetry or power symmetry at a high level rather than power symmetry at an egalitarian or low level.*

The Role of Power at the Team Level

Power differences at the team level can also be easily included in my theory, by taking into consideration TMT power disparity. By *TMT power disparity* I mean the differences in the concentration of power within a given TMT (Harrison & Klein, 2007; Tarakci et al., 2016). The highest TMT power disparity occurs when only one executive has high power—e.g., when the Chief Executive Officer (CEO) is the single high-power TMT member (Finkelstein, 1992)—whereas the lowest level is reached when power is distributed equally (Harrison & Klein, 2007). A moderate power disparity corresponds to the presence of multiple high-power executives inside the TMT.

In my Proposition 8, I predicted that executives who belong to TMTs comprising a higher prevalence of dyads with symmetrically moderate confidence and symmetrically negative emotion, first, and symmetrically moderate confidence and symmetrically positive emotion, later, will be more likely to originate high-quality ideas than otherwise. As mentioned, this proposition relates to my general model, in which I have assumed power homogeneity, that is, low power disparity. However, when TMT power disparity is high or moderate, the strength of that relationship is likely to be mitigated. In fact, when one or more TMT members are more powerful than the rest of the team, because they are less prone to be influenced, dyads characterized by symmetrically moderate confidence that involve those high-power executives, will tend to lose their potential to induce two-way dynamics and, instead, will tend to generate no-way or one-way dynamics (depending on whether their dyad partners are or are not high-power executives too). Hence, for the very same prevalence of dyads with symmetrically moderate confidence and symmetrically negative emotion, first, and symmetrically moderate confidence and symmetrically positive emotion, later, we should expect a lower prevalence of dyads with two-way, local-focused dynamics, first, and two-way, global-focused dynamics, later,

when TMT power disparity is high or moderate versus when TMT power disparity is low. As a consequence, both repeated exposition and legitimacy associated with those particular dynamics will be lower, and so will be the observation-effect. Thus, each executive belonging to such TMTs will be less stimulated (by what is happening at the team level) to engage in dynamics more conducive to new schema processing and, by doing so, in high-quality idea origination.

Proposition 11 [cross level]: In TMTs with moderate or high power disparity, the effect of the prevalence of dyads (not involving the focal executive) with symmetrically moderate confidence and symmetrically negative emotion, first, and symmetrically moderate confidence and symmetrically positive emotion, later, on the likelihood of their executives arriving at shock response ideas of high quality will be lower than in TMTs with low power disparity.

DISCUSSION

In this article, I develop a novel theory of executive idea origination in the context of firms' strategic responses to major, unprecedented, exogenous shocks. I suggest that, at the individual level, when facing the shock, executives build a shock (mental) representation. This is immediately followed by the formation of the associated representational confidence and representational emotion, which jointly determine whether (or not) they are likely to engage in new schema processing and, as a result, to originate high-quality ideas. From those two individual-level constructs, two properties emerge at the dyadic level: (a) confidence symmetry, which determines the dyadic dynamics by the direction of influence; and (b) emotional symmetry, which drives the dyadic dynamics by the focus of attention. The combination of these two categorizations of dyadic dynamics then provides (or not) another channel to propel executives' new schema processing and, in turn, to originate high-quality ideas. From those two dyadic-level states emerges a team-level property, dyad-type prevalence, which (through its effect on dynamics-type prevalence) also may help to explain engagement in new schema processing and, in turn, the likelihood of high-quality ideas. Hence, there are distinct driving forces, located at three levels of analysis, mitigating or reinforcing each other.

This article makes several, important contributions to the strategy, creativity, and innovation literatures. First, by describing and explaining a process through which top executives can originate high-quality ideas for their firms' responses to unprecedented shocks, and given the fact that (to the best of my knowledge) there is no systematic theoretical account of this specific and fundamental process, I contribute with the creation of a new stream of research on top executives. I fill this surprising void (a) by identifying a particular subtype of information processing as the required intermediate outcome of the process and (b) by building an emergence process model underlying idea origination. In fact, whereas past research on executives' strategic choices tended to overlook the importance of dual-process models, I explicitly examine not only the importance of controlled processing over automatic processing but, more specifically, the need for executive engagement in new schema processing (instead of other modalities of controlled processing such as schema updating processing or schema impasse processing). In addition, by offering a novel emergence process of idea origination, I highlight the importance of considering a multilevel and dynamic approach in contrast to past reliance on single-level, cross-sectional analyses of executive behavior. Based on this multilevel and dynamic analysis, I am able to explain the existence of two complementary modes to develop new schema processing (autonomous versus dynamics-driven processing), and describe how emergent constructs located at the individual, dyadic, and team levels are formed, evolve, and shape the quality of executives' shock response ideas. Thus, in contrast to single-level analyses, my approach explains, for example, how the effects of individual-level factors can be reinforced or mitigated by dyadic- or team-level factors. Moreover, I complement extant theoretical views on the role of executives that have tended to rely on enduring, trait-like, situation-independent characteristics. Those views predict constant behaviors and response quality over time and across shocks.

Instead, I show how and why executives' behavior and outcomes may be much more dynamic and shock-specific: individual executives' psychological reactions after the shock (shock representations, representational confidence, and representational emotion) can vary across shocks and evolve over time. Thus, in contrast to previous accounts, my theory provides an explanation for the fact that executives and their firms may often end up with a set of shock response ideas that are surprisingly positive or negative in relation to what would have been predicted by considering single-level analyses and ex ante known traits.

Second, the present study contributes to research on the role of executives' interactions in their decision-making processes by complementing past emphasis on compositional accounts of interactions (focusing on the whole TMT and past-based, situation-independent, all-in, homogeneous interactions inside the TMT) with a more compilational perspective of interactions (focusing on the individual executive and actual, situation-specific, heterogenous interactions, and on the disproportionate impact the different types of interactions may have on outcomes of interest). The literature on top executives has tended to assume the TMT as an aggregate whose members interact in an "averaged," "usual", uniform manner (i.e., as a monolithic block) rather than displaying a "diverse array of interactions" (Carpenter et al., 2004: 768). Even in the stream of research on executives that is particular sensitive to interactions—the CEO-TMT interface—an explicit and specific treatment of the varying types of interactions at work inside the TMT has been missing to date, as "these variables are rarely specified or measured" (Simsek, Heavey, & Fox, 2018: 295). The same situation prevails in the small group literature as the different types of interactions leading to emergent constructs "have received limited research attention to date" (Srikanth, Harvey, & Peterson, 2016: 461). In contrast, by considering the TMT as a complex system, I treat interactions explicitly. As the dyad is the primary unit of interpersonal interaction,

contrary to what has been usual in this literature and elsewhere (e.g., Krasikova & LeBreton, 2012), I not only include a dyadic level of analysis in my process model but I also put dynamics—the dyadic patterns of interactions—at the center of my theorizing. Hence, I conceptualize two categorizations of dynamics (by the direction of influence and by the focus of attention) and show their antecedents (which are endogenous to the model) and consequences. So, instead of relying on the average behavior inside the TMT (as has been typically done in the past), my predictions are based on a clear differentiation of the nature of the dyads and its role in explaining why the process itself may be much more fickle and multifarious than previously considered. Future research can extend this explicit focus on types of interactions and their discrepant effects by considering the relations of executives with other key stakeholders (such as their firm's middle managers and members of the board of directors), or the specific nature of the task at hand (e.g., one-way dynamics might be relevant in information diffusion tasks).

Third, my article also contributes to research on idea generation developed within the creativity and innovation literatures. Dominant explanations for effective idea generation in those fields have tended to involve (a) the production of many different ideas (Campbell, 1960; Mednick, 1962), and (b) the adoption of distant search rather than local search (Katila & Ahuja, 2002). By linking dual-process models to idea origination, my theory suggests a new way to understand the transition from local to distant search: it may stem from a departure from automatic processing toward a specific modality of controlled processing (new schema processing). Moreover, I identify specific emergent constructs located at three different levels of analysis (individual, dyadic, and team) that might explain such a transition and show the importance of a dynamics-driven new schema processing in addition to the individual actors' adoption of the appropriate controlled processing on their own. Second, my theory shows that

there is a path toward effective idea generation other than by producing many different ideas and then recombine them (Litchfield, 2008; Mannucci & Perry-Smith, 2022). Fewer generated ideas, I suggest, can also lead to high-quality ideas as long as the underlying process includes an effective problem definition task (i.e., with de-schematization followed by re-schematization) in close connection with idea generation: such a problem definition activity may uncover important idiosyncrasies of the focal situation and, by doing so, push the potential of generated ideas (which may depend on how the problem is defined) beyond the local search perimeter. So, also important, whereas past research praised the virtues of jointly considering idea generation and idea evaluation (e.g., Harvey, 2014), my theory highlights the benefits of understanding and analyzing problem definition and idea generation in tandem.

Many new avenues for future research are opened up by the present paper, in addition to those noted above. My theory was developed to address a research question focused on idea origination (i.e., problem definition and idea generation). Yet, as problem definition and idea generation are essential components of the decision-making process underlying firms' actual shock responses, my theory may also significantly inform the broader question "Why do firms succeed or fail when facing exogenous shocks?". Firms might succeed or fail in such situations as a result of the high versus low quality of their shock responses ideas. Yet, their success or failure might also be affected by other relevant tasks (e.g., shock awareness, idea evaluation and selection, or implementation) or outcomes (e.g., the speed of the whole decision-making process). Moreover, if researchers intend to focus on the overall decision-making process, they might be interested in examining the relationship between decision speed and decision quality. The requirement of a new schema processing for decision quality purposes might constitute a

burden for decision speed goals given its likely time-consuming nature. Future research may benefit from investigating such potential trade-offs.

The removal of some of the boundary conditions of the present theory might also provide opportunities for future research. My conceptualization of idea origination is focused on major shocks. When these shocks occur, being aware of them (albeit, typically, in a superficial and hazy way) might not be a critical issue given their intrinsic nature. For example, it is clear that all major pharmaceuticals had noticed the outbreak of COVID-19 and the associated demand for a new vaccine. In fact, when some (then) leading firms arguably "missed big trends" (such as Kodak or Nokia), they typically were aware of the shocks that they failed to properly address. In fact, as explained earlier, despite being aware of the shock, executives may still fail to recognize the unprecedented nature of the shock when they inaccurately attach a high confidence level to their initial shock representations—which are based on their old schemas. Nevertheless, some shocks might be harder to notice. Future research efforts can focus on the determination of the nature of such shocks and the particular ways to expand my theory by integrating a shock awareness task as well.

Finally, future research can also further expand my general model on executive idea origination by including other moderating variables of interest. My theorizing explicitly specifies the mechanisms at work in each predicted relationship. Thus, it will be possible, in a relatively smooth way, to include other contingencies to the general model (as I did in my last section concerning power differences). For example, researchers might be interested in adding TMT communication density—the extent to which TMT members are in mutual communication with each other (de Jong, Curseu, & Leenders, 2014)—as a moderator at the team level. TMTs may behave as truly "teams" or as mere "groups". In low TMT density conditions, non-CEO

executives tend to communicate with the CEO only. In such cases, the potential created by the existence of dyads with symmetrically moderate confidence will not be fully realized as executives belonging to some of those dyads will not actually engage in all (otherwise beneficial) expected exchanges. So, the effect predicted in my Proposition 8 will be mitigated in low (versus high) TMT communication density. Relatedly, such an effect will also be attenuated when not all relevant dyadic dynamics are observable to all TMT members.

My theory involves cognitions, metacognitions, emotions, and interactions over time. In order to test the proposed relationships and future extensions, both traditional and more novel data collection methods can be employed. I would like to mention two, particularly promising, data collection opportunities: first, longitudinal surveys (e.g., Humphrey et al., 2017; Westphal & Shani, 2016)—administered immediately before and/or after top executives' meetings, or during strategy simulation games (e.g., Zhu, Wolfson, Dalal & Mathieu, 2021) used in MBAs or executive education programs; second, video recordings and video conferencing (e.g., Christianson, 2018; Jarrett & Liu, 2018; Veltrop et al., 2021). The latter option was recently suggested as a novel means of capturing interactions (Howard-Grenville et al., 2021) and is likely to receive an unprecedented boost due to the outburst of the COVID-19 pandemic and the resulting worldwide recognition of the virtues and possibilities of video conferencing.

All papers have their limitations and the present one is no exception. First, I have proposed representational confidence as a key driver of willingness to influence others. While I have also included executive power as an important moderator of that relationship, other dispositional factors, such as CEO personality style or executive overconfidence might be relevant as well. Second, my theory suggests a natural, emergent way through which a change in representational emotions can carry initial local focus of attention to subsequent global focus of attention.

According to recent suggestions (Steinbach et al., 2019), executives holding a high construal flexibility might be able to deliberately switch their construal level (and the resulting attentional focus). Future research can address this and other issues, such as the existence of other potential drivers of construal level (which might enable a change in the construal level while retaining the same type of emotion) or the integration of cognitive flexibility (Raes, Heijltjes, Glunk, & Roe, 2011) – and further develop my predictions. Third, for simplicity and space reasons, I have focused on optimal conditions only in my Propositions. Future empirical research can also test the relative effects of suboptimal conditions.

In sum, this article suggests that, in the presence of major, unprecedented, exogenous shocks (i.e., when navigating uncharted waters), once we consider TMTs as complex systems and the decision-making process as an emergence process, we can expect that individual executives may originate shock response ideas in much more fickle, multifarious, and shock-specific ways than when TMTs are considered as monolithic decision-making bodies of individuals carrying stable, situation-independent, ex ante known interactions or characteristics, as largely implied by extant literature for strategic situations, in general.

REFERENCES

Ajzen, I. 1991. The theory of planned behavior. ***Organizational Behavior and Human Decision Processes,*** 50: 179-211.

Amabile, T. M. 1988. A model of creativity and innovation in organizations. In B. S. Cummings (Ed.), ***Research in Organizational Behavior*** (pp. 123–167). Greenwich: JAI Press.

Anderson & Pearson, 2013. A schema-theoretic view of basic processes in reading comprehension. In P.D. Pearson, R. Barr, M.L. Kamil, & P. Mosenthal (Eds.), ***Handbook of Reading Research***: 255-291. New York, NY: Routledge.

Anderson, P. W. 1972. More is different. ***Science,*** 177: 393-396.

Arthur, W. B. 1999. Complexity and the economy. ***Science,*** 284: 107-109.

Barry, B., & Fulmer, I. S. 2004. The medium and the message: The adaptive use of communication media in dyadic influence. ***Academy of Management Review,*** 29: 272-292.

Bodenhausen, G. V., & Morales, J. R. 2013. Social cognition and perception. In I. B. Weiner, H. A. Tennen, & M. S. Suls (Eds.), ***Handbook of Psychology,*** vol. 5: 225-46. New York, NY: Wiley.

Campbell, D. T. 1960. Blind variation and selective retention in creative thought as in other knowledge processes. ***Psychological Review***, 67: 380–400.

Carpenter, M. A., Geletkanycz, M. A., & Sanders, W. G. 2004. Upper echelons research revisited: Antecedents, elements, and consequences of top management team composition. ***Journal of Management,*** 30: 749-778.

Carton, A. M., Knowlton, K., Coutifaris, C., Kundro, T. G., & Boysen, A. P. In press. Painting a Clear Picture while Seeing the Big Picture: When and Why Leaders Overcome the Tradeoff Between Concreteness and Scale. ***Academy of Management Journal***.

Chaiken, S., & Ledgerwood, A. 2011. A theory of heuristic and systematic information processing. In P.A.M. van Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), ***Handbook of Theories of Social Psychology: Volume one,*** 246-166. Thousand Oaks, CA: Sage.

Christianson, M. K. 2018. Mapping the terrain: The use of video-based research in top-tier organizational journals. ***Organizational Research Methods,*** 21: 261-287.

Cronin, M. A., & Weingart, L. R. 2007. Representational gaps, information processing, and conflict in functionally diverse teams. ***Academy of Management Review,*** 32: 761-773.

Cronin, M. A., Weingart, L. R., & Todorova, G. 2011. Dynamics in groups: Are we there yet? ***Academy of Management Annals,*** 5: 571-612.

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

De Jong, B. A., & Dirks, K. T. 2012. Beyond shared perceptions of trust and monitoring in teams: Implications of asymmetry and dissensus. ***Journal of Applied Psychology,*** 97: 391.

De Jong, J. P., Curşeu, P. L., & Leenders, R. T. A. 2014. When do bad apples not spoil the barrel? Negative relationships in teams, team performance, and buffering mechanisms. ***Journal of Applied Psychology*****,** 99: 514-522.

De Martino, B., Bobadilla-Suarez, S., Nouguchi, T., Sharot, T., & Love, B. C. 2017. Social information is integrated into value and confidence judgments according to its reliability. ***Journal of Neuroscience***, 37, 6066-6074.

Eagly, A.H. and Chaiken, S. 1993. ***The Psychology of Attitudes***. Belmont, CA: Wadsworth.

Epstein, S. 1994. Integration of the cognitive and the psychodynamic unconscious. ***American Psychologist*****,** 49: 709-724.

Falchetti, D., Cattani, G., & Ferriani, S. 2022. Start with "Why," but only if you have to: The strategic framing of novel ideas across different audiences. ***Strategic Management Journal,*** 43: 130-159.

Fazio, R. H. 1990. Multiple processes by which attitudes guide behavior: The MODE model as an integrative framework. ***In Advances in Experimental Social Psychology*** (Vol. 23, pp. 75-109). Academic Press.

Festinger, L. 1954. A theory of social comparison processes. ***Human Relations*****,** 7: 117-140.

Finkelstein, S. 1992. Power in top management teams: Dimensions, measurement, and validation. ***Academy of Management Journal,*** 35: 505-538.

Finkelstein, S., Hambrick, D. C., & Cannella, A. A. 2009. ***Strategic leadership: Theory and research on executives, top management teams, and boards.*** New York: Oxford University Press.

Fiske, S. T., & Taylor, S. E. 2013. ***Social cognition: From brains to culture.*** Thousand Oaks, CA: Sage.

Flavell, J. H. 1979. Metacognition and cognitive monitoring: A new area of cognitive–developmental inquiry. ***American Psychologist*****,** 34: 906-911.

Ford, J. D., & Baucus, D. A. 1987. Organizational adaptation to performance downturns: An interpretation-based perspective. ***Academy of Management Review***, 12: 366-380.

Forgas, J. P. 1995. Mood and judgment: the affect infusion model (AIM). ***Psychological Bulletin,*** 117, 39.

Fredrickson, B. L., & Branigan, C. 2005. Positive emotions broaden the scope of attention and thought-action repertoires. ***Cognition & Emotion***, 19: 313-332.

Fredrickson, B. L. 2001. The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. ***American Psychologist*****,** 56: 218-226.

Galinsky, A. D., Magee, J. C., Inesi, M. E., & Gruenfeld, D. H. 2006. Power and perspectives not taken. ***Psychological Science,*** 17: 1068-1074.

Gasper, K., & Clore, G. L. 2002. Attending to the big picture: Mood and global versus local processing of visual information. ***Psychological Science*****,** 13: 34-40.

Gawronski, B., & Creighton, L. A. 2013. Dual process theories. In D. E. Carlston (Ed.), ***The Oxford handbook of social cognition***: 282-312. New York, NY: Oxford University Press.

Geana, A., Duker, A., & Coman, A. 2019. An experimental study of the formation of collective memories in social networks. ***Journal of Experimental Social Psychology*****,** 84: 1-7.

Gersick, C. J. 1988. Time and transition in work teams: Toward a new model of group development. ***Academy of Management Journal*****,** 31: 9-41.

Gersick, C. J. 1989. Marking time: Predictable transitions in task groups. ***Academy of Management Journal*****,** 32: 274-309.

Ghosh, V. E., & Gilboa, A. 2014. What is a memory schema? A historical perspective on current neuroscience literature. ***Neuropsychologia***, 53: 104-114.

Gibson, K. R. 2018. Can I tell you something? How disruptive self-disclosure changes who "we" are. ***Academy of Management Review*****,** 43: 570-589.

Gilboa, A., & Marlatte, H. 2017. Neurobiology of schemas and schema-mediated memory. ***Trends in Cognitive Sciences*****,** 21: 618-631.

Gill, M. J., Swann Jr, W. B., & Silvera, D. H. 1998. On the genesis of confidence. ***Journal of Personality and Social Psychology*****,** 75: 1101.

Goldstein, J. 1999. Emergence as a construct: History and issues. ***Emergence*****,** 1: 49-72.

Grimaldi, P., Lau, H., & Basso, M. A. 2015. There are things that we know that we know, and there are things that we do not know we do not know: Confidence in decision-making. ***Neuroscience & Biobehavioral Reviews*****,** 55: 88-97.

Hällgren, M., Rouleau, L., & De Rond, M. 2018. A matter of life or death: How extreme context research matters for management and organization studies. ***Academy of Management Annals*****,** 12: 111-153.

Hambrick, D. C., & Mason, P. A. 1984. Upper echelons: The organization as a reflection of its top managers. ***Academy of Management Review*****,** 9: 193-206.

Hambrick, D. C. 1994. Top management groups: A conceptual integration and reconsideration of the "team" label. ***Research in Organizational Behavior,*** 6: 171-214.

Hambrick, D. C., Finkelstein, S., & Mooney, A. C. 2005. Executive job demands: New insights for explaining strategic decisions and leader behaviors. ***Academy of Management Review,*** 30, 472-491.

Hambrick, D. C. 2007. Upper echelons theory: An update. ***Academy of Management Review,*** 32: 334-343.

Hargadon, A. B., & Bechky, B. A. 2006. When collections of creatives become creative collectives: A field study of problem solving at work. ***Organization Science*****,** 17, 484-500.

Harris, S. G. 1994. Organizational culture and individual sensemaking: A schema-based perspective. ***Organization Science*****,** 5: 309-321.

Harrison, D. A., & Klein, K. J. 2007. What's the difference? Diversity constructs as separation, variety, or disparity in organizations. ***Academy of Management Review,*** 32, 1199-1228.

Harvey, S. 2014. Creative synthesis: Exploring the process of extraordinary group creativity. ***Academy of Management Review***, 39: 324–343.

Harvey, S., & Berry, J. In press. Toward a meta-theory of creativity forms: How novelty and usefulness shape creativity. ***Academy of Management Review***.

Higgins, E. T. 1996. Knowledge activation: Accessibility, applicability, and salience. In E. T. Higgins & A.W. Kruglanski (Eds.), ***Social psychology: Handbook of basic principles***: 133- 168. New York: Guilford Press.

Hitt, M. A., Beamish, P. W., Jackson, S. E., & Mathieu, J. E. 2007. Building theoretical and empirical bridges across levels: Multilevel research in management. ***Academy of Management Journal,*** 50: 1385-1399.

Holland, J. H. 1998. ***Emergence: from chaos to order.*** Oxford: Oxford University Press.

Howard-Grenville, J., Nelson, A., Vough, H., & Zilber, T. B. 2021. From the Editors –Achieving Fit and Avoiding Misfit in Qualitative Research. ***Academy of Management Journal,*** 64: 1313-1323.

Humphrey, S. E., Morgeson, F. P., & Mannor, M. J. 2009. Developing a theory of the strategic core of teams: A role composition model of team performance. ***Journal of Applied Psychology,*** 94, 48.

Humphrey, S. E., & Aime, F. 2014. Team microdynamics: Toward an organizing approach to teamwork. ***Academy of Management Annals*****,** 8: 443-503.

Humphrey, S. E., Aime, F., Cushenbery, L., Hill, A. D., & Fairchild, J. 2017. Team conflict dynamics: Implications of a dyadic view of conflict for team performance. ***Organizational Behavior and Human Decision Processes*****,** 142: 58-70.

Jarrett, M., & Liu, F. 2018. "Zooming with" a participatory approach to the use of video ethnography in organizational studies. ***Organizational Research Methods,*** 21: 366-385.

Jonassen, D. H. 1997. Instructional design models for well-structured and Ill-structured problem-solving learning outcomes. ***Educational Technology Research and Development,*** 45: 65-94.

Kahneman, D., & Frederick, S. 2002. Representativeness revisited: Attribute substitution in intuitive judgment. In T. Gilovich, D. Griffin, & D. Kahneman (Eds.), ***Heuristic and biases: The psychology of intuitive judgment*****:** 49–81. New York: Cambridge University Press.

Kahneman, D. 2003. Maps of bounded rationality: Psychology for behavioral economics. ***American Economic Review*****,** 93: 1449-1475.

Katila, R., & Ahuja, G. 2002. Something old, something new: A longitudinal study of search behavior and new product introduction. ***Academy of Management Journal***, 45: 1183-1194.

Kelley, C. M., & Lindsay, D. S. 1993. Remembering mistaken for knowing: Ease of retrieval as a basis for confidence in answers to general knowledge questions. ***Journal of Memory and Language*****,** 32: 1-24.

Keltner, D., Gruenfeld, D. H., & Anderson, C. 2003. Power, approach, and inhibition. ***Psychological Review,*** 110, 265-284.

Kenny, D. A., Kashy, D. A., & Cook, W. L. 2020. ***Dyadic data analysis*****.** New York, NY: Guilford Press.

Kier, A. S., & McMullen, J. S. 2018. Entrepreneurial imaginativeness in new venture ideation. ***Academy of Management Journal,*** 61, 2265-2295.

Kisfalvi, V., Sergi, V., & Langley, A. 2016. Managing and mobilizing microdynamics to achieve behavioral integration in top management teams. ***Long Range Planning,*** 49: 427-446.

Knight & Humphrey, 2019. Dyadic data analysis.In S. E. Humphrey & J. M. LeBreton (Eds.), ***The handbook of multilevel theory, measurement, and analysis:*** 423-447. Washington, DC: American Psychological Association.

Kozlowski, S. W., & Ilgen, D. R. 2006. Enhancing the effectiveness of work groups and teams. ***Psychological Science in the Public Interest*****,** 7: 77-124.

Kozlowski, S. W., & Klein, K. J. 2000. A multilevel approach to theory and research in organizations: Contextual, temporal, and emergent processes. In K. J. Klein & S. W. Kozlowski (Eds.). ***Multilevel theory, research, and methods in organizations: Foundations, extensions, and new directions*****:** 3-90. San Francisco, CA: Jossey-Bass.

Krasikova, D. V., & LeBreton, J. M. 2012. Just the two of us: misalignment of theory and methods in examining dyadic phenomena. ***Journal of Applied Psychology*****,** 97: 739-757.

Labianca, G., Gray, B., & Brass, D. J. 2000. A grounded model of organizational schema change during empowerment. ***Organization Science*****,** 11: 235-257.

Lebreton, M., Abitbol, R., Daunizeau, J., & Pessiglione, M. 2015. Automatic integration of confidence in the brain valuation signal. ***Nature Neuroscience***, 18: 1159-1167.

Levinthal, D. A. 2011. A behavioral approach to strategy—what's the alternative? ***Strategic Management Journal,*** 32: 1517-1523.

Lieberman, M. D. 2007. Social cognitive neuroscience: a review of core processes. ***Annual Review of Psychology***, 58: 259-289.

Litchfield, R. C. 2008. Brainstorming reconsidered: A goal-based view. ***Academy of Management Review,*** 33: 649-668.

Lyles, M. A., & Mitroff, I. I. 1980. Organizational problem formulation: An empirical study. ***Administrative Science Quarterly***, 25: 102-119.

Mathieu, J. E., & Luciano, M. M. 2019. Multilevel emergence in work collectives. In S. E. Humphrey & J. M. LeBreton (Eds.), ***The Handbook of Multilevel Theory, Measurement, and Analysis:*** 163-186. Washington, DC: American Psychological Association.

Marks, M. A., Mathieu, J. E., & Zaccaro, S. J. 2001. A temporally based framework and taxonomy of team processes. ***Academy of Management Review,*** 26, 356-376.

McGrath, J. E., Arrow, H., & Berdahl, J. L. 2000. The study of groups: Past, present, and future. ***Personality and Social Psychology Review*****,** 4: 95-105.

McGrath, J. E. 1984. ***Groups: Interaction and performance.*** Englewood Cliffs, NJ: Prentice-Hall.

Mednick, S. A. 1962. The associative basis of the creative process. ***Psychological Review***, 69: 220–232.

Meyer, A. D., Brooks, G. R., & Goes, J. B. 1990. Environmental jolts and industry revolutions: Organizational responses to discontinuous change. ***Strategic Management Journal,*** 11: 93-110.

Miller & Page, S. E. 2007. ***Complex Adaptive Systems: An Introduction to Computational Models of Social Life.*** Princeton, NJ: Princeton University Press.

Mintzberg, H., Raisinghani, D., & Theoret, A. 1976. The structure of" unstructured" decision processes. ***Administrative Science Quarterly***, 21: 246-275.

Molloy, J. C., Ployhart, R. E., & Wright, P. M. 2011. The myth of "the" micro-macro divide: Bridging system-level and disciplinary divides. ***Journal of Management***, 37: 581-609.

Morgeson, F. P., & Hofmann, D. A. 1999. The structure and function of collective constructs: Implications for multilevel research and theory development. ***Academy of Management Review*****,** 24: 249-265.

Nelson, T.O. and Narens, L. 1990. Metamemory: A theoretical framework and new findings. In G. H. Bower (Ed.), ***The psychology of learning and motivation: Advances in research and theory,*** vol. 26: 125-173. San Diego, CA: Academic Press.

Ng, T. W., & Lucianetti, L. 2016. Within-individual increases in innovative behavior and creative, persuasion, and change self-efficacy over time: A social–cognitive theory perspective. ***Journal of Applied Psychology*****,** 101: 14-34.

Norman, D. A., & Shallice, T. 1986. Attention to action. In R. J. Davidson, G. E. Schwartz, & D. Shapiro (Eds.), ***Consciousness and self-regulation*****:** 1-18. Boston, MA: Springer.

Petty, R. E., Briñol, P., & Tormala, Z. L. 2002. Thought confidence as a determinant of persuasion: the self-validation hypothesis. ***Journal of Personality and Social Psychology*****,** 82: 722.

Ployhart, R. E., & Moliterno, T. P. 2011. Emergence of the human capital resource: A multilevel model. ***Academy of Management Review***, 36: 127-150.

Ployhart, R. E., & Hendricks, J. L. 2019. The missing levels of microfoundations: A call for bottom-up theory and methods. In S. E. Humphrey & J. M. LeBreton (Eds.), ***The Handbook of Multilevel Theory, Measurement, and Analysis*****:** 141-162. Washington, DC: American Psychological Association.

Quelch, J. A., & Jocz, K. E. 2009. How to market in a downturn. ***Harvard Business Review***, *87*(4): 52-62.

Romanelli, E., & Tushman, M. L. 1994. Organizational transformation as punctuated equilibrium: An empirical test. ***Academy of Management Journal***, 37: 1141-1166.

Rumelhart, D. E., & Ortony, A. 1977. The representation of knowledge in memory. In R. C. Anderson, R. J. Spiro, & W. E. Montague (Eds.). ***Schooling and the acquisition of knowledge:*** 99-135. London: Routledge.

See, K. E., Morrison, E. W., Rothman, N. B., & Soll, J. B. 2011. The detrimental effects of power on confidence, advice taking, and accuracy. ***Organizational Behavior and Human Decision Processes,*** 116: 272-285.

Shea, N., & Frith, C. D. 2019. The global workspace needs metacognition. ***Trends in Cognitive Sciences*****,** 23: 560-571.

Sherman, J. W., Krieglmeyer, R., & Calanchini, J. 2014. Process models require process measures. In Sherman, J. W., Gawronski, B., & Trope, Y. (Eds.). ***Dual-process theories of the social mind***. Guilford Press: New York.

Simon, H. A. 1996. The sciences of the artificial (3rd ed.). Cambridge, MA: MIT Press.

Simsek, Z., Heavey, C., & Fox, B. C. 2018. Interfaces of strategic leaders: A conceptual framework, review, and research agenda. ***Journal of Management,*** 44: 280-324.

Smith, E. R., & DeCoster, J. 2000. Dual-process models in social and cognitive psychology: Conceptual integration and links to underlying memory systems. ***Personality and Social Psychology Review*****,** 4: 108-131.

Smith, E. R., & Mackie, D. M. 2016. Representation and incorporation of close others' responses: The RICOR model of social influence. ***Personality and Social Psychology Review*****,** 20: 311-331.

Sniezek, J. A., & Van Swol, L. M. 2001. Trust, confidence, and expertise in a judge-advisor system. ***Organizational Behavior and Human Decision Processes*****,** 84: 288-307.

Srikanth, K., Harvey, S., & Peterson, R. 2016. A dynamic perspective on diverse teams: Moving from the dual-process model to a dynamic coordination-based model of diverse team performance. ***Academy of Management Annals***, 10: 453-493.

Stasser, G., & Titus, W. 1985. Pooling of unshared information in group decision making: Biased information sampling during discussion. ***Journal of Personality and Social Psychology*****,** 48: 1467.

Staw, B. M., Sandelands, L. E., & Dutton, J. E. 1981. Threat rigidity effects in organizational behavior: A multilevel analysis. ***Administrative Science Quarterly,*** 26: 501-524.

Steinbach, A. L., Gamache, D. L., & Johnson, R. E. 2019. Don't get it misconstrued: Executive construal-level shifts and flexibility in the upper echelons. ***Academy of Management Review,*** 44: 871-895.

Strack, F., & Deutsch, R. 2004. Reflective and impulsive determinants of social behavior. ***Personality and Social Psychology Review*****,** 8: 220-247.

Suchman, M. C. 1995. Managing legitimacy: Strategic and institutional approaches. ***Academy of Management Review,*** 20: 571-610.

Tarakci, M., Greer, L. L., & Groenen, P. J. 2016. When does power disparity help or hurt group performance? ***Journal of Applied Psychology,*** 101: 415-429.

Trefalt, Š. 2013. Between you and me: Setting work-nonwork boundaries in the context of workplace relationships. ***Academy of Management Journal*****,** 56: 1802-1829.

Tripsas, M., & Gavetti, G. 2000. Capabilities, cognition, and inertia: Evidence from digital imaging. ***Strategic Management Journal*****,** 21: 1147-1161.

Trope, Y., & Liberman, N. 2010. Construal-level theory of psychological distance. ***Psychological Review,*** 117: 440-463.

Tushman, M. L., & Anderson, P. 1986. Technological discontinuities and organizational environments. ***Administrative Science Quarterly*****,** 31: 439-465.

Veltrop, D. B., Bezemer, P. J., Nicholson, G., & Pugliese, A. 2021. Too unsafe to monitor? How board–CEO cognitive conflict and chair leadership shape outside director monitoring. ***Academy of Management Journal,*** 64: 207-234.

Walsh, J. P. 1995. Managerial and organizational cognition: Notes from a trip down memory lane. ***Organization Science,*** 6: 280-321.

Watson, D., Clark, L. A., & Tellegen, A. 1988. Development and validation of brief measures of positive and negative affect: the PANAS scales. ***Journal of Personality and Social Psychology,*** 54: 1063-1070.

Weinberger, M. 2022, September 25. Microsoft CEO Satya Nadella says he voted against Steve Ballmer's $7.6 billion Nokia mistake. https://www.businessinsider.com/microsoft-ceo-satya-nadella-steve-ballmer-nokia-2017-9

Weinberger, M. 2022, November 9. Tech CEOs all made the same dumb mistake, thinking the pandemic boom would last forever. Now employees are paying the price with massive layoffs. https://www.businessinsider.com/meta-layoffs-tech-ceo-pandemic-boom-last-forever-dumb-mistake-2022-11

Westphal, J. D., & Shani, G. 2016. Psyched-up to suck-up: Self-regulated cognition, interpersonal influence, and recommendations for board appointments in the corporate elite. ***Academy of Management Journal,*** 59: 479-509.

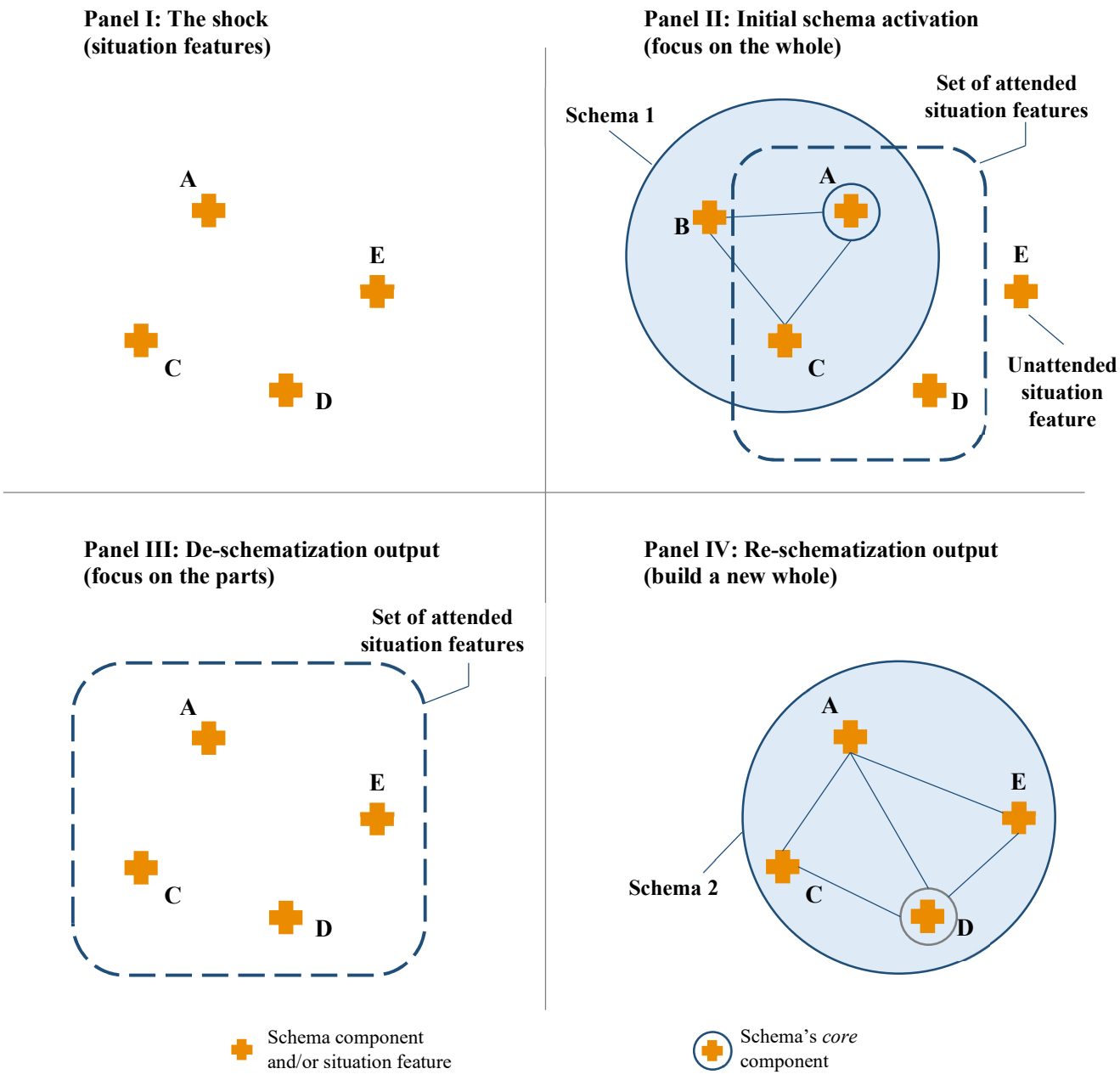
Wiesenfeld, B., Reyt, J. N., Brockner, J., & Trope, Y. 2017. Construal level theory in organizational research. ***Annual Review of Organizational Psychology and Organizational Behavior,*** 4: 367-400.

Xue, G. 2018. The neural representations underlying human episodic memory. ***Trends in Cognitive Sciences*****,** 22: 544-561.

Zhu, X. S., Wolfson, M. A., Dalal, D. K., & Mathieu, J. E. 2021. Team decision making: the dynamic effects of team decision style composition and performance via decision strategy. ***Journal of Management,*** 47: 1281-1304.

Zuckerberg, M. 2022, November 9. Mark Zuckerberg's Message to Meta Employees. https://about.fb.com/news/2022/11/mark-zuckerberg-layoff-message-to-employees/

FIGURE 1
The Shock, Schema Activation, De-schematization and Re-schematization (Individual Level)



Legend: The situation features A, C, D, and E characterize the focal shock (Panel I). A given executive notices A, C, and D features. Their schema that better matches the attended features is Schema 1 (Panel II) (e.g., an industry downturn schema), which is composed of elements A (a core component; e.g., a sudden drop in the focal firm's sales), C, and D. As a result, the executive quickly activates the industry-downturn schema and forms their initial shock representation (the output), even though their existing schema does not include the situation feature D (let alone their unawareness of the situation feature E). From that moment onward, they will only think about the whole (e.g., "it is an industry downturn") rather than the components. Panels III and IV illustrate the two required steps of the new schema processing.

FIGURE 2
The Emergence Process Model of Executive Idea Origination
(Multilevel Analysis)

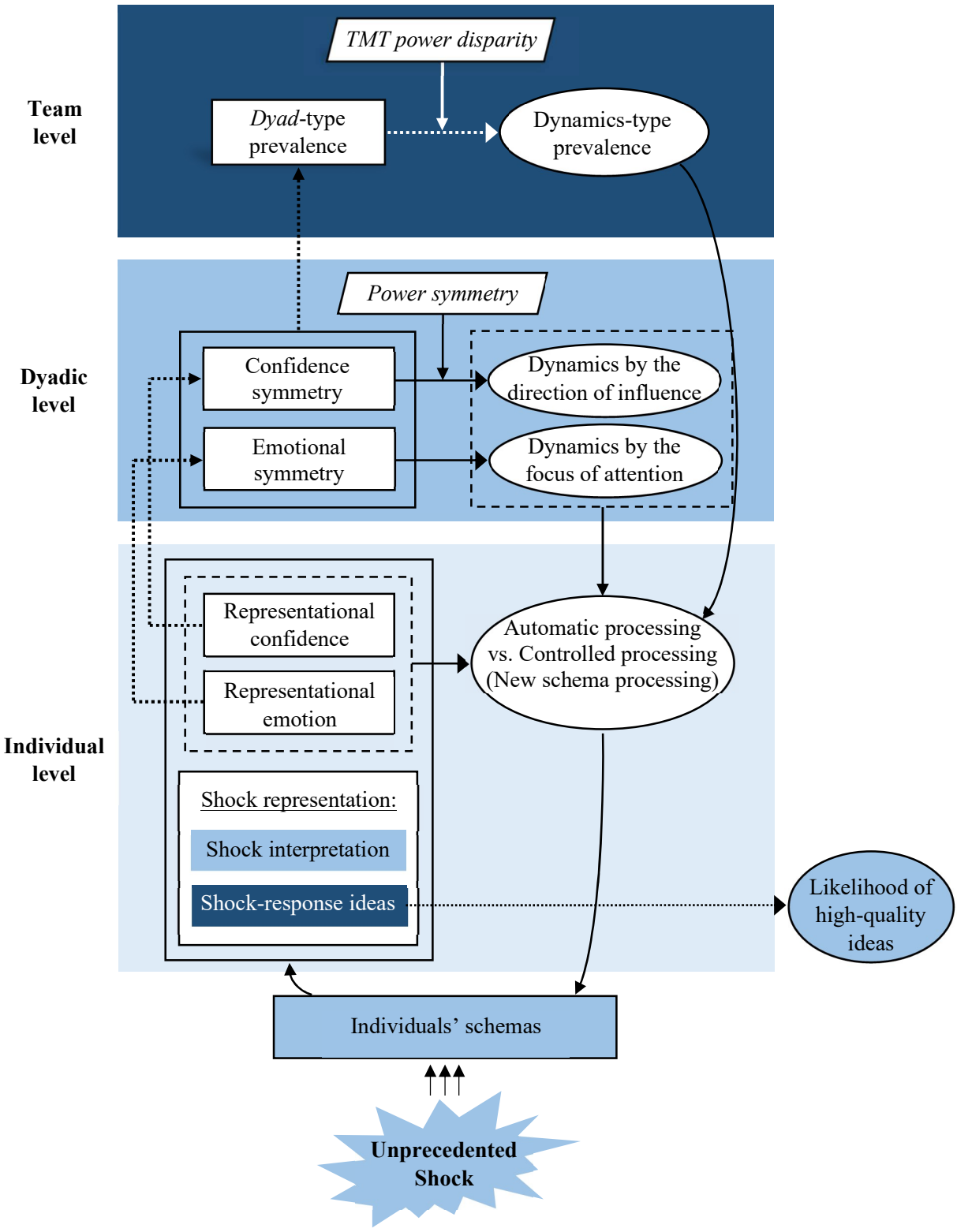


FIGURE 3
From the Individual-Level Constructs to the Dyadic-Level Constructs

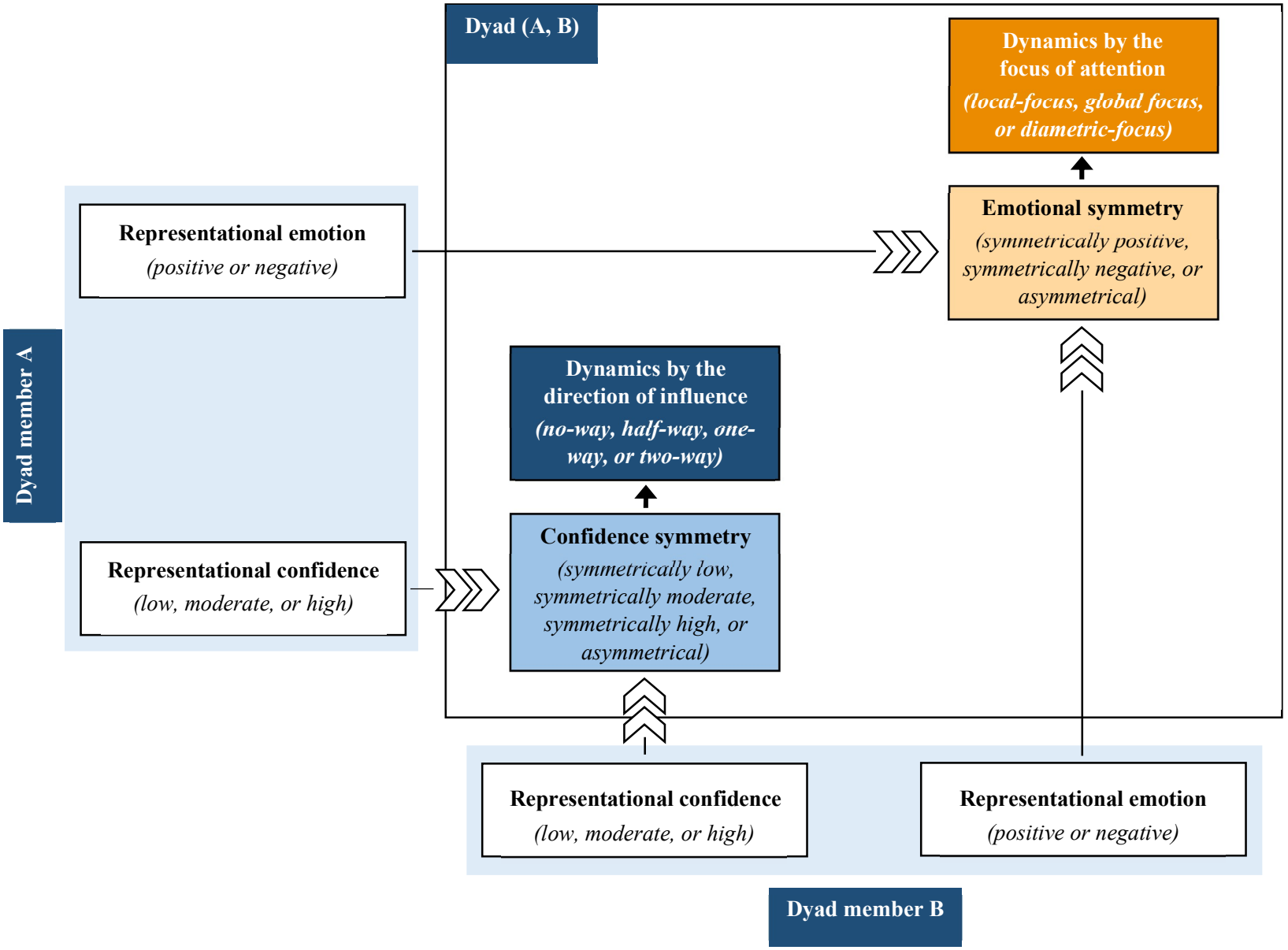
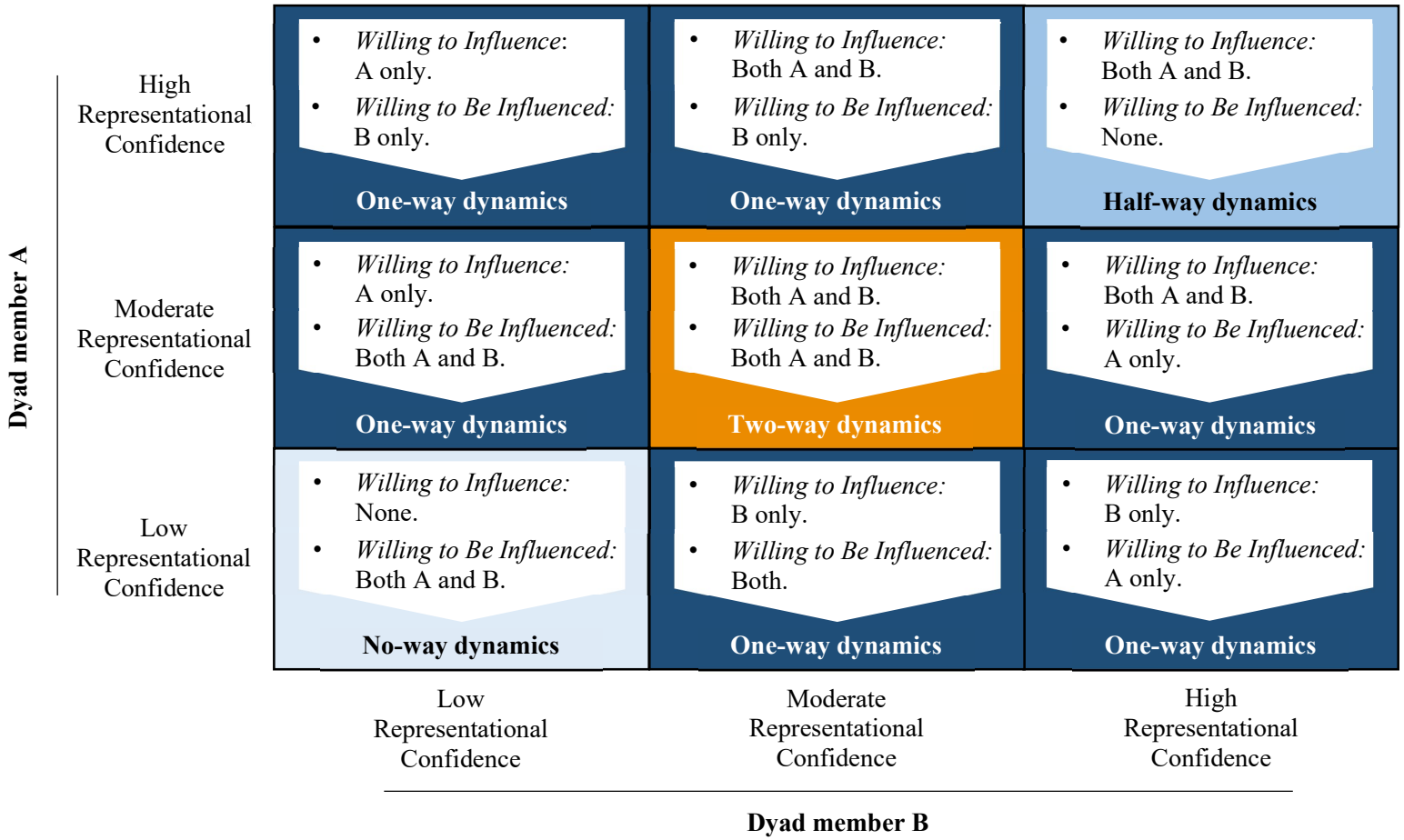
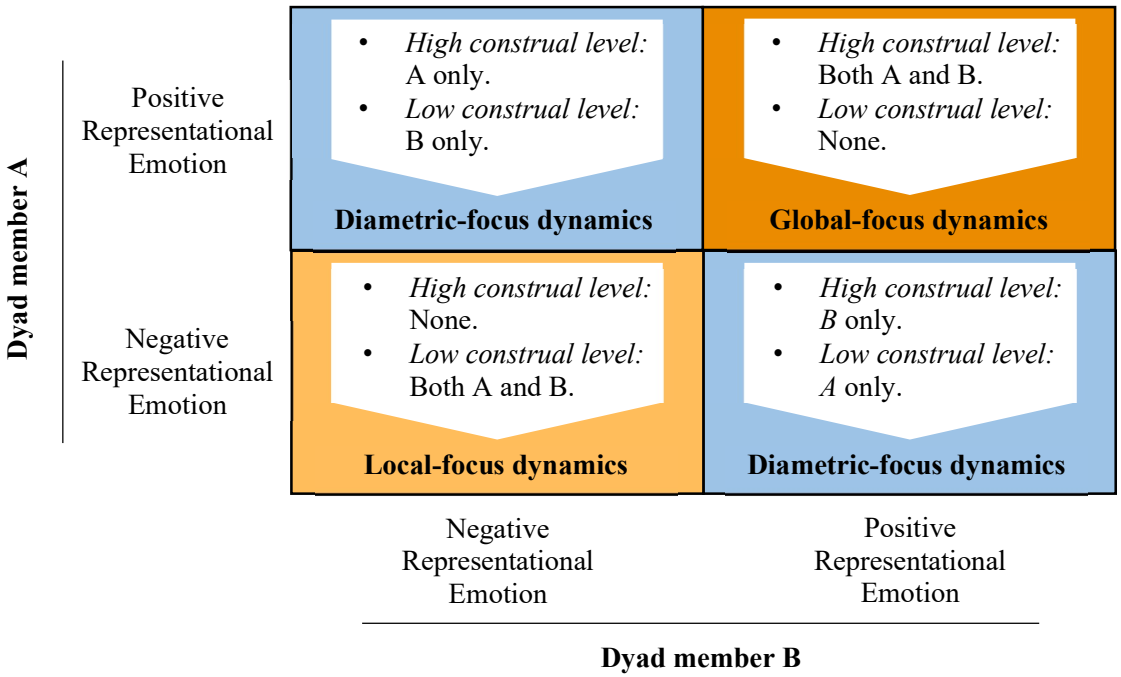


FIGURE 4
Classification of Dynamics by the Direction of Influence
(Dyadic Level)



- A and B are members of a given dyad.
- Conditions: for dyads showing power symmetry at an egalitarian or low level.

FIGURE 5
Classification of Dynamics by the Focus of Attention
(Dyadic Level)



- A and B are members of a given dyad.
- Conditions: for dyads with symmetrically moderate confidence and power symmetry at an egalitarian or low level.