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## **The microfoundations of recurrent action: Habits, routines and collective performance**

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### **Abstract**

The recurrent action patterns of individual persons (defined as habits) combine into organizational recurrent action patterns (defined as collective performances including routines, administrative procedures and genres of action). Among their other functions, habits and collective performances underpin patterns of stability and novelty at both individual and organizational levels of analysis. In order to understand the interaction between these two levels of action, scholars research their microfoundations. This paper does so as well. However, in contrast to much prior theorizing on this subject, I adopt a social cognitive theory of human personality and individual psychology. From this perspective, social context and situational contingency become central factors in the explanation of personality. Complex intra-psychic processes also play a central role. The resulting theory proposes that both individual habits and collective performances evolve from patterns of situated behavior that are mediated by complex cognitive-affective processes. Among its major contributions, my theory offers an explanation for the development and adaptation of collective performances, as well as the role of recurrent action patterns in the generation of behavioral variation. In doing so, my theory resolves a number of persistent questions regarding the mechanisms whereby habits are transformed into collective performance, and how these mechanisms support both organizational stability and novelty.

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### **ABSTRACT**

The recurrent action patterns of individual persons (defined as habits) combine into organizational recurrent action patterns (defined as collective performances including routines, administrative procedures and genres of action). Among their other functions, habits and collective performances underpin patterns of stability and novelty at both individual and organizational levels of analysis. In order to understand the interaction between these two levels of action, scholars research their microfoundations. This paper does so as well. However, in contrast to much prior theorizing on this subject, I adopt a social cognitive theory of human personality and individual psychology. From this perspective, social context and situational contingency become central factors in the explanation of personality. Complex intra-psycho processes also play a central role. The resulting theory proposes that both individual habits and collective performances evolve from patterns of situated behavior that are mediated by complex cognitive-affective processes. Among its major contributions, my theory offers an explanation for the development and adaptation of collective performances, as well as the role of recurrent action patterns in the generation of behavioral variation. In doing so, my theory resolves a number of persistent questions regarding the mechanisms whereby habits are transformed into collective performance, and how these mechanisms support both organizational stability and novelty.

Recurrent action patterns are fundamental to the behavior of individual persons and organizations (Mischel, 2004; Scott, 2004). Within individuals, recurrent action occurs as habits and expressions of personality (Wood, Quinn, & Kashy, 2002). Indeed, people can be described as “bundles of habits” (James, 1890: 3). Within organizations, patterns of recurrent action occur as types of collective performance, including routines, administrative procedures and genres of action (Cohen, Levinthal, & Warglien, 2014). Such patterns of actions support the stability and functioning of organizational systems and their capabilities (Scott & Davis, 2007; Winter, 2012). Therefore, habits underpin the stabilities of personality, while collective performances underpin the stabilities of organization. At the same time, organizations and persons frequently change and adapt, blending patterns of recurrent action with behavioral variation and novelty. Indeed, recurrent action is deeply implicated in both individual and organizational variation. Individual habits of creativity and the inherent variability of routines feed organizational innovation (March, 2006; Winter, 2006). Patterns of recurrent action therefore adapt, and in doing so, mediate organizational and individual change (Feldman & Pentland, 2003; Wood & Neal, 2007). For this reason, dynamic patterns of recurrent action are fundamental to both organizational innovation and personal development (Becker, Knudsen, & March, 2006; Epstein, 2003). The enduring research question which I address here is to explain the origins of recurrent action patterns, and how interactions across individual and organizational levels of analysis give rise to stability and novelty. My paper develops a theory of the microfoundations of these phenomena.

It is already understood that major categories of recurrent action are closely related: collective performances can be defined as the organized expression of shared habits (Cohen et al., 2014). Moreover, through the variation and recombination of personal habits and collective performances, individuals, groups and organizations develop new characteristics and capabilities

(Nelson & Winter, 1982; Tobias, 2009). The adaptive potential of recurrent action thus enables change within both persons and organizations (Feldman et al., 2003; Glăveanu, 2012). Given these consequences, it is not surprising that scholars seek to explain the origins of patterns of recurrent action. (e.g., Abell, Felin, & Foss, 2008; Felin, Foss, Heimeriks, & Madsen, 2012). Scholars ask how individual habits are transformed into collective performances, how individual learning and knowledge are embedded into procedural memory and then retrieved in collective action (Cohen et al., 2014; Tobias, 2009), and how variations then occur which give rise to organizational novelty (March, 2006). By understanding such microfoundational processes, scholars hope better to explain, predict and manage the development and adaptation of recurrent action patterns.

I also address these questions, and like others, I argue we must first adopt a fresh perspective on individual personality and psychology, one that integrates both cognitive and affective factors (e.g., Cohen, 2006). We need to reform the psychological foundations of microfoundational theories, ensuring they are “more extensively grounded in sound contemporary psychology” (Cohen et al., 2014: 334). Indeed, research into microfoundations requires us to revisit the psychological mechanisms whereby the complex cognitive and affective features of personality influence behavior and evolve over time. As Winter (2013: 126) writes, we need “microfoundations that offer an alternative to the standard brand “individuals” of economic theory.”

Central to my argument, therefore, is a revision of the dominant psychological theories which often characterize research on recurrent action, namely trait-based, behaviorist and type theories of personality (Cohen et al., 1996; Klein, Tosi, & Cannella Jr, 1999; Winter, 2011). In contrast, I adopt a social-cognitive perspective advocated by a number of leading psychologists

(Cervone, 2005; Kruglanski & Sheveland, 2012; Shoda, LeeTiernan, & Mischel, 2002; Wood & Beckmann, 2006). Notably, and in contrast to other theories of personality, social-cognitive theories reconfigure personality as socially situated, contextual and mediated by complex intra-psycho processes (Mischel, 2004). From this perspective, stable patterns of individual personality are not determined by universal traits such as neuroticism or extraversion, nor by pre-existing types such as introversion, nor simply by conditioning stimuli, but rather by more complex processes involving lower order social-cognitive and affective processes. Observed stabilities of personality can be understood as recurrent patterns of situated behavior, mediated by complex intra-psycho processes. In fact, personality traits and types are then viewed as epiphenomenal relative to the underlying intra-psycho processing system. The focus of analysis thereby shifts towards more complex interactions between cognitive-affective systems and the situational context. Notably, the same shift can be observed in areas of sociological thought. For example, sociologists use the concept of “habitus” to describe the process whereby the social context and experience within it give rise to mental and behavioral dispositions: social action and related mental schema are situated, contextual and developmental (e.g., Bourdieu, 1977). In the same vein, I will argue that situated psychological processes constitute the microfoundations of habits, collective performance and organizational novelty (see Cohen et al., 2014). From this perspective, both individuals and organizations can be seen as mediated systems of situations, actions and associations (Latour, 2005; Scott et al., 2007).

Furthermore, the social-cognitive conceptualization of personality obviates the need to aggregate individual characteristics when explaining the microfoundations of collective performance. This benefit is achieved because the exact same processing systems are common to the architecture of individual habits and collective performance, when viewed through a

behavioral lens. By unpacking habits and collective performances into their common, constituent elements, no aggregation is required (Salvato & Rerup, 2011). Individual habits and collective performance co-exist and co-evolve. Natural variations at the individual level thus co-exist and co-evolve with behavioral novelty at the collective level. The resulting theory therefore integrates related features of both psychological and organizational phenomena. It conceives of individual persons and organizations as interacting, mediated systems of situation-behavior processing. The theory also stresses the situational context of recurrent action and habit formation (Cohen et al., 2014). Assuming these principles, my theory proposes a deep complementarity between personality, individual habits and collective performances. Personality and habits are socially situated, and collective performances are personally encoded (Brewer, 2004; Cacioppo, 2004; Cervone, 2000).

The rest of the paper expands the foregoing arguments. To begin with, I review the background literature on individual habits and collective performance, and the role of recurrent action in variation and novelty. Building on this literature, I develop a new theory of their microfoundations, linking together the collective and individual levels of analysis. Finally, I discuss the implications for future research into the microfoundations of recurrent action patterns, organizational learning and adaptation, and behavioral theories of organizations and management.

## **HABITS AND COLLECTIVE PERFORMANCE**

Habits and collective performances require little if any deliberation (Bargh & Williams, 2006; Orbell & Verplanken, 2010). Both types of recurrent action are typically procedural and executed with limited mindfulness and effortful control (Levinthal & Rerup, 2006; Verplanken, Friberg, Wang, Trafimow, & Woolf, 2007). Neuroscientific evidence confirms this observation

regarding habits: studies show that brain injured patients with significant loss of memory and deliberative capacities can still acquire new habits and perform them successfully (Cohen, Ylvisaker, Hamilton, Kemp, & Claiman, 2010). That said, some habits and collective performances also exhibit a degree of conscious deliberate processing (Glăveanu, 2012; Zollo & Winter, 2002). Other neuroscientific studies support these findings. For example, Laureiro-Martinez (2014) shows that people possess a neurological propensity for routinization which interacts with deliberative executive control in decision making. In summary, the psychological origins of recurrent action patterns are complex and contextual. Any account of their microfoundations must therefore be grounded in a theory of individual psychology that accommodates these complexities.

Moreover, a particular recurrent action may be simultaneously viewed as personal habit and collective performance: habit when viewed in relation to a pattern of individual behavior, and collective performance when viewed in relation to a pattern of organizational behavior (Cohen et al., 2014). It is the level of analysis that distinguishes the two interpretations. However, their integration remains difficult to explain. Indeed, among the more intractable problems in research on this topic is how to link both levels of analysis and explain how individual habits transform into collective performances (Winter, 2013). Various attempts have been made to answer the question. A popular approach is to propose some type of aggregation mechanisms, whereby the individual habits of a group of individuals accumulate into collective performances (Felin & Foss, 2009). Yet scholars have yet to fully specify and explain such mechanisms.

Hence, a major challenge for microfoundational theories is to integrate different levels of analysis, and specifically the levels of individual habit and collective performance. Inappropriate

reductionism is common. On the one hand, in some accounts, individual psychological processes are viewed as fundamental and collective performances are reduced to epiphenomenal status. On the other hand, organizational forms and collective performances are sometimes viewed as fundamental and individual psychology is secondary or ignored. Both extremes exhibit an equal degree of ontological poverty. Complex realities are obscured. Trait-based, behaviorist and type theories of individual psychology reinforce these limitations by virtue of their emphasis on stable, universal characteristics at one level of analysis (Cervone, 2005). The deeper and more important challenge is to explain how individual persons and organizations co-evolve and interact within social contexts. This calls for a more pluralistic ontology, in which no single level of observed reality is privileged over others, whether at the individual, group or organizational level (Winter, 2013).

Microfoundational accounts must also tackle the issues of adaptation and novelty raised earlier. How do relatively automatic patterns of recurrent action contribute to behavioral variation and novelty? At separate levels of analysis, variation may be accounted for. First, regarding the individual level of analysis, psychologists explain that personal habits may encompass creative action (Glăveanu, 2012) and variation is inherent in the very nature of human personality (Mischel, 2004). Second, at the organizational level, the imperfect nature of collective performance plus situational contingency provide convincing explanations for routine variation and adaptation (Becker et al., 2006; March, 2006). Once again, the challenge is to integrate the individual and organizational levels of analysis into a more complete theory of the origins of variation and novelty. In order to do this, we must reconsider the psychological foundations of microfoundational theories.

## **Psychological assumptions**

In order better to explain the microfoundations of recurrent action patterns, we need to consider whether or not assumed major theories of individual psychology—and specifically trait-based, behaviorist and type theories—are suited to the task of explaining these complex phenomena. In fact, assumed psychological theories have long blinded researchers, in both psychology and sociology, to the deeper complexities of human personality and behavior (Camic, 1986; Lazarus, 1991). For example, such theories often obscure the role of emotion in cognition, the contextual nature of personality, and the continuum of automaticity and deliberation in human behavior (Cohen, 2006; Fiedler & Wanke, 2009). Leading social cognitive psychologists therefore question the overall validity of trait-based, behaviorist and type theories (and especially popular trait-based theories), and regard them as over-simplifications (Cervone, 2005; Mischel, 2004; Wood et al., 2006). Instead, these psychologists argue for more complex theories in which contextual and intra-psychic factors constantly interact, and they reject theories which assume stable, universal determinants of individual personality. Some organizational scholars argue likewise with regard to the microfoundations of collective performances (Cohen et al., 2014; Winter, 2013). These processes also entail more complex contextual and psychological factors interacting across levels of analysis.

Yet trait-based theories of personality are widely adopted in the organizational and management literatures. By doing so, persons are assumed to possess a fixed set of universal characteristics or traits in variable combinations. The most widely employed version of trait theory is McCrae and Costa's (1997) Five Factor Model (FFM). Their five traits being: neuroticism, extraversion, openness to experience, agreeableness and conscientiousness. Human personality is then conceived as a blend of the aforementioned traits, with each trait capturing a

fundamental feature of individual difference (McCrae & Terracciano, 2005). The FFM model has an enduring influence on organizational and management research. Scholars have employed the FFM of personality to investigate many topics, including executive leadership (Hiller & Hambrick, 2005), network behavior (Totterdell, Holman, & Hukin, 2008), entrepreneurship (Das & Teng, 1997) and job satisfaction (Judge, Heller, & Mount, 2002). In fact, the FFM theory of personality has almost attained normative status within management and organizational scholarship and few would question its validity and use. However, from the FFM perspective, it is difficult to explain the transformation of individual-level traits into phenomena such as collective goals, routines and capabilities. This is because traits are conceived as stable intra-psychic characteristics at the person level, independent of social mechanisms and situational factors (Mischel, 2004). In fact, variance is problematized and researchers then try to uncover reasons why individuals deviate from assumed norms (Wood et al., 2006). Important phenomenal richness is sacrificed for the sake of assumed theory.

In contrast, from a social-cognitive perspective, observable variance in human personality is fundamental and evidence of the inherent contextuality and complexity of individual psychology (Cervone, 2005). Psychological functioning is viewed as highly contextual and interactive, entailing external stimuli, the activation of intra-psychic processing and resultant behaviors. Social cognitive theories acknowledge the fundamental nature of person-situation interactions, the contextual dynamic of personality, and advocate a closer synthesis between personality and social psychology (Bandura, 2006; Brewer, 2004). Mischel and Shoda's (1995, 1998) Cognitive-Affective Processing System (CAPS) theory of personality is a leading example of such an alternative.

## **The CAPS theory of personality**

The CAPS theory of personality is grounded in the distinctive interrelations between situational stimuli, intra-psychic processes and resulting behaviors. In explaining this theory, Mischel and Shoda (1995: 253) analogize to the development of cognitive science and computing in the late twentieth century: the CAPS theory “is consistent with a new kind of revolution that has been occurring in cognitive and neuroscience in the last decade which shifts from the serial, centralized processing that had been modelled after the architecture of traditional digital computers to a more paralleled, distributed model.” However, their thinking about “situation” and “stimulus” differ from classic behaviorism. Situational stimuli are not the sole determinant of personality and behavior; behavioral responses are not mechanical results of conditioning. Rather, features of situations activate complex and variable intra-psychic processes within persons, both cognitive and affective, which reflect a person’s prior experience and dispositional characteristics. These intra-psychic processes involve five categories of cognitive-affective mediating units (Mischel et al., 1995: 253):

1. Encodings: categories (constructs) for the self, people, events, and situations (external and internal).
2. Expectancies and Beliefs: about the social world, about outcomes for behavior in particular situations, about self-efficacy.
3. Affects: feelings, emotions, and affective responses (including physiological reactions).
4. Goals and Values: desirable outcomes and affective states; aversive outcomes and affective states; goals, values, and life projects.

5. Competencies and Self-Regulatory Plans: potential behaviors and scripts that one can do, and plans and strategies for organizing action and for affecting outcomes and one's own behavior and internal states.

Mischel and Shoda (1995) therefore conceive of individual personality as a situation-behavior system (or a system of "if...then..." situation-behavior responses), mediated by an organized network of the five categories of cognitive-affective processing units. Personality is viewed as an organized, adaptive system, not a fixed set of universal traits. And while broad behavioral similarities exist between persons, each person possesses a unique, relatively stable cognitive-affective system which reflects the nature and degree of her or his individual difference. It is cognitive-affective processing systems which underlie individual stability and uniqueness, rather than presumed personality traits or types. In fact, Mischel and Shoda (1995: 151) argue that traits are over-simplified descriptions of widely shared and relatively stable patterns of cognitive-affective processing:

"when personality is conceptualized as a stable system that mediates how the individual selects, construes, and processes social information and generates social behaviors, it becomes possible to account simultaneously for both the invariant qualities of the underlying personality and the predictable variability across situations in some of its characteristic behavioral expressions."

Figure 1 shows a schematic version of the CAPS personality system. On the left side of the figure, features of situations stimulate responses in the form of cognitive-affective processes depicted in the central part of the figure, which in turn result in behavioral outcomes shown on the right. The Figure illustrates that (a) there are many possible relations among the cognitive-affective units but only some are functionally important; (b) cognitive-affective units become

activated in relation to situations and to other units in the personality system; (c) feedback activations occur that produce and sustain patterns of activation over time; and (d) units that become activated in the personality system activate other units through their distinctive organization in a network of relations, ultimately generating observable behaviors (Mischel et al., 1995).

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Insert Figure 1 about here  
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The lower section of Figure 1 also shows that resulting behaviors are encoded into the situation-behavior system. This occurs as triggering stimuli become embedded in the situational context, and the related cognitive-affective processes become embedded in a person's neurocognitive system. It is via this process that certain behaviors become recurrent: when repeat situations occur, the situational stimuli trigger encoded cognitive-affective processes which result in recurrent behavior. As Mischel and Shoda (1998: 239) write, "When certain configurations of situation features are experienced by an individual, a characteristic subset of cognitions and affects (shown schematically as circles) becomes activated through this distinctive network of connections in the encoding process." However, they do not fully explain why some situation-behaviors are encoded, while others are not. So we are left to ask: what is the selection mechanism in this regard? I will return to this question.

### **Variation, selection and encoding**

Within the CAPS theory, individual differences in personality are thus re-conceived as variable patterns of cognitive-affective processing, rather than as universal personality traits or types. Indeed, variance is inherent to the CAPS theory, both within and between persons. As Mischel and Shoda (1998: 243) write, "behavioral variation in relation to changing situations in

part constitutes a potentially meaningful reflection of the personality system itself.” They further explain that, “although the activated, cognitions, affects, and behaviors will change as the situation and its features change, their organization and the strengths of the relations among them may remain essentially the same across situations” (Mischel et al., 1995: 255-256). In summary, variation is inherent within personality, not a deviation from the norm, and even if outcome behaviors remain relatively stable over time, the intra-psychic cognitive-affective processes which accompany behavioral responses may vary in response to changing stimuli. Evolutionary history may explain this: in a changing, risky and uncertain world, the inherent variability of human cognitive-affective processing guarantees plasticity and adaptive advantages (Mayr, 2002).

However, as I noted earlier, Mischel and Shoda do not fully explain how and why some behaviors are adaptive, selected and encoded. To answer this question, I integrate a closely related and well-established concept in social cognitive psychology, namely the concept of discrepancy reduction (Bandura, 1991; Festinger, 1961; Higgins, 1987). The mechanism works as follows. Every person has an actual state of being, and also a preferred future state which he or she aspires to attain. At any time, there will be a discrepancy between the person’s current actual and preferred states. Any behavior will result in a reduction, an increase, or no change in that discrepancy. If the result is a reduction, the person moves closer to the preferred future state, and the behavior is therefore discrepancy reducing. Within the CAPS theory, such behavior could result from the interaction of a number of the cognitive-affective processing units, such as encodings of the self and world, values and goals, and competencies and self-regulatory plans (Mischel et al., 1995). For example, persons self-regulate to achieve a valued encoding of the self, thereby reducing the discrepancy between their current and preferred states. I argue that this

is the mechanism whereby some behavioral outcomes result in the encoding process depicted in the lower section of Figure 1. It is the degree of discrepancy reduction that determines whether a particular situation-behavior becomes encoded: the higher the discrepancy reduction, the stronger the encoding of the particular behavior into the person's situation-behavior system. Dewey (1895: 13) was prescient about this process when he wrote that some behaviors "are reduced to tendencies to action or to attitudes, and when instinctively aroused into action, serve as means for realizing ends," the complete consolidation of which become organic habit or coordination. And he was right to refer to instinctual arousal, for the perception of discrepancy reduction may be explicit and conscious, or implicit and unconscious (Vancouver & Day, 2005).

Furthermore, classes of situations often exhibit very similar features which allow for the categorization of behavioral responses across occurrences. For example, all games of chess exhibit the same basic situational features. In response to these similarities, groups of people possess similar cognitive-affective processing patterns and thus display similar behavioral dispositions when playing chess (Cohen et al., 2014). Moreover, if a group of chess players all share the same or very similar preferred future states, then they are likely to experience the same discrepancy reducing effects by playing chess. The result will be a similar pattern of behavioral encoding among the group. In this way, a group of people may develop similar behavioral responses to the same situational stimuli. And when viewed across a population of individuals and all situational contexts, these processing patterns approximate the appearance of universal personality traits (Mischel, Shoda, & Mendoza-Denton, 2002). However, trait theories thus naively assume that some processing systems are universally constant, even though intra-psycho processing may vary widely.

In summary, microfoundational theories call for a fresh approach to individual psychology. Commonly assumed theories of personality—whether trait-based, behaviorist or personality type theories—fail to capture and explain the inherent variability, complexity and contextuality of personality and individual psychology. Social cognitive theories do far better. And in particular, the CAPS theory embraces inherent variability, complexity and contextuality, explaining individual personality in terms of encoded situation-behavior responses: situational inputs stimulate mediating cognitive-affective processes which result in output behaviors. In addition, I argue that the resulting behaviors are selected for encoding via discrepancy reduction mechanisms. Notably, these features of an enhanced CAPS theory also correspond with the fundamental principles for microfoundational models of collective performance proposed by Cohen, Levinthal and Warglein (2014: 343-344) when they call for mechanisms linking “perceived situations, actions represented as functions, and activated-ends” whereby “we can represent an act as a transformation of a specific “input” situation into an “output” situation, a (typically new) point in the situation set.”

### **THE MICROFOUNDATIONS OF RECURRENT ACTION**

Ample evidence shows that groups of persons often exhibit very similar patterns of situational stimuli and behavioral response. For example, almost all people who play chess share a common goal directed at winning the game. However, their intra-psychic processes are not fully consistent or identical. Sometimes people will have stronger affective states when playing chess, becoming more elated or anxious. And other times not. The important point to note is that most occurrences of a particular situation-behavior will reflect a consistent core system of cognitive-affective processing—a core structural similarity—which is shared by all members of a group (Cohen et al., 2014; Mischel et al., 1995; Shoda & Mischel, 2006). In the example just

given, that shared core would typically include the goal of winning chess, related beliefs about the game and self-regulatory plans for playing it.

Figure 2 depicts this type of system. The first stage of the model (labelled “Features of situations” and indicated by the letters “a...g”) is similar to the base CAPS theory in Figure 1, where features of situations may include a variety of organizational characteristics or other social and environmental stimuli. In the second stage of the model (labelled “Cognitive-affective processes”), cognitive-affective processing units mediate three individuals’ personality systems (labelled A, B and C). Output behaviors (indicated by the letters “m...s”) are the third stage of the model, shown on the right. The heavy black line outlines the personality system of a single person B, encompassing a full set of situational inputs, mediating intra-psychic processes for person B, and a full set of resulting behaviors. The heavy black line therefore outlines a full personality system equivalent to that depicted in Figure 1.

Similar core cognitive-affective systems may occur for all three persons. Assuming this to be the case, the second stage of the model in Figure 2 shows the processing similarities between persons A, B and C. The figure shows that they possess similar, but not identical cognitive-affective processing systems in relation to the same situational stimuli. Stage three of the model then depicts the emergence of a set of outcome behaviors indicated by the letters “m...s”. The figure also depicts the feedback behavior generation and encoding process, whereby behaviors are encoded into the actor’s situation-behavior system. Once again, encoding is moderated by the degree of discrepancy reduction resulting from the behavior, or the degree to which behavior moves actors closer to their activated ends (Cohen et al., 2014). In that regard, three broad scenarios can occur: (a) when the behavior moves the actor(s) closer to the preferred future state (discrepancy reducing), encoding will be strong; (b) when the behavior simply

reinforces the current actual state (discrepancy maintaining), encoding will be weak; and (c) when the behavior moves the actor(s) further away from the preferred future state (discrepancy increasing), encoding will rarely if ever occur.

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Insert Figure 2 about here  
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### **The microfoundations of habits**

As I will now explain, Figure 2 also depicts the microfoundations of habits as a subset of an individual's overall situation-behavior response system. To begin with, instead of considering all situation-behaviors for a person, that is, the personality system as a whole, consider the case of a specific situation-behavior, such as playing chess. This condition is depicted by the dotted line shape in Figure 2. In this case, specific situational feature (labelled "d") triggers cognitive-affective processing within person B, which in turn generates a specific behavioral response (labelled "p"). The resulting outcomes are then fed back and encoded into the situation-behavior system, conditional on the degree of discrepancy reduction they entail. And as noted earlier, the perception of discrepancy reduction may be explicit and conscious, or implicit and unconscious. Those behaviors which reduce the discrepancy between actual and preferred future states will be encoded positively into memory and hence recurrent when the matching stimulus conditions recur. In other words, such behaviors become habits. In this way, the dotted shape in Figure 2 depicts the microfoundations of habits as a subset of an individual's overall situation-behavior system. It is important to note, however, that in the recurrent performance of any habit, the situational stimuli, cognitive-affective processes, and resultant behaviors are not fully identical. A degree of variance is inevitable. What makes each performance an example of the same habit is the recurrence of a minimally consistent pattern of stimuli, cognitive-affective processes, and

resultant behaviors (Cohen et al., 2014). In the case of chess playing habits, for example, the consistent stimulus is an opportunity to play chess, although the specific time, date and context will vary. Likewise, there may be significant variance in the associated cognitive-affective processes and resultant behaviors: sometimes you win, sometimes you lose.

**Proposition 1:** Situation-behaviors are encoded as habits (recurrent patterns of individual action) conditional on the outcome behavior's discrepancy reducing effect in the pursuit of an individual's preferred future states.

Considered at an individual level of analysis, therefore, discrepancy reducing behaviors are positively selected and likely to become habitual. Although, this does not imply that all habits are or remain discrepancy reducing. So-called bad habits can form and move people further away from their preferred future self. For example, the consumption of alcohol may move a person closer to a preferred state in the short-term (feeling elated), but the acquired habit may become discrepancy increasing over time (mental disorder owing to alcoholism) (Wood et al., 2007). Moreover, the inherent variability of situations means that encoded action patterns (habitual behaviors) often entail variable cognitive-affective processes as well. The intra-psychic correlates of behavior are consistently dynamic and responsive.

Many examples of this type of recurrent or habitual behavior occur: when the pedestrian traffic light turns green, most people cross the road; when the telephone rings, the majority of people answer it. Indeed, consistent habitual responses to situational stimuli are universally observed. Yet internal to the personality system, the related processing units are rarely identical across all instances of the behavior. For example, crossing the road at traffic lights may entail significant goal-related processing on some occasions, but not always; while a ringing telephone may sometimes trigger strong affective processing, often it does not. Therefore, just as

personality systems are responsive to situational context, individual habits are as well. Features of situations may include a variety of organizational characteristics or other social stimuli. In summary, the CAPS theory can be adapted to model habitual behavior by an individual, simply by holding specific situational stimuli and outcome behaviors relatively constant.

Moreover, some behavioral responses may be effectively automatic, in that little deliberate intervention occurs in their enactment (Bargh et al., 2006). Habits are this type of system (Wood et al., 2002). However, while claiming that habits entail less deliberative processing within situation-behavior responses, I do not thereby assert that habits are strictly and always non-deliberative. There can be habits of mind, after all. Nor do I thereby subscribe to strict dual processing theories, in which emotive and intuitive processes are classified as distinct from deliberative and calculative processing (e.g., Kahneman, 2011). Rather, I subscribe to the view that cognitive-affective processing styles are integrated and complex, in which different degrees of calculative and emotional processing take place, resulting in variable patterns of information processing, depending on the situational context, capability of the agent and related ecological factors (Cervone, 2005; Fiedler et al., 2009). For the same reason, I do not assume that habits are necessarily accompanied by non-deliberative, purely associative modes of reasoning (cf. Winter, 2013); rather, I argue that habits are typically accompanied by little if any deliberative processing.

### **The microfoundations of collective performance**

Next, consider groups. Assume that specific patterns of situational stimulus and behavioral response are relatively stable and consistent for an organized group of individuals. In other words, where there is a shared pattern of habitual behavior, entailing a common core system of cognitive-affective processing. Such a pattern is depicted by the dashed line in Figure

2. The shape encompasses the group of people labelled A, B and C. Each person is responding to the same situational stimuli (again labelled “d”), which triggers similar (although not identical) cognitive-affective processing within each person, resulting in similar behavioral response (again labelled “p”). In other words, persons A, B and C share similar habits. Once again, it is important to note that in recurrent performance, the situational stimuli, cognitive-affective processes, and resultant behaviors are not fully identical within or between persons. What makes each performance an example of the same shared habit is the recurrence of a minimally consistent pattern of stimuli, cognitive-affective processes, and resultant behaviors.

Such phenomena occur frequently: when the school bell rings, most student members of a class will typically enter or leave the classroom; or when a delivery of parts arrives at a factory, the responsible members of a work team will unload and store the inventory. And a core system of stimulus, situation-behavior processing and behavior is common to all, although each person will differ in terms of their complete cognitive-affective processing systems for such a habit. They only share a core system of intra-psychic processing. For example, for a group of students, they will all share the same general goal of escaping the classroom, common beliefs about the school timetable, and the same broad self-regulatory plans. However, each student may have a different affective state or encodings about self, and these states will vary over time. Therefore, while the broad situational stimuli, core cognitive-affective processes and habitual behaviors may be equivalent, overall intra-psychic processes often vary within and between persons. It is important to emphasize this fact: the common cognitive-affective processes which accompany a collective performance only comprise a subset of individuals’ processing systems for their corresponding individual habits.

Furthermore, when outcome behaviors are discrepancy reducing for a group, shared habits are encoded into social and organizational form as collective performances, recorded and exemplified in material artefacts, data stores, technological systems, cultural forms and operating procedures (Dosi & Marengo, 2007; Nelson et al., 1982; Winter, 2013). Indeed, organizations can be conceived as contexts of social action which embody the situational features which trigger shared patterns of action. At the group level, therefore, shared habits in the pursuit of collective goals can be viewed as collective performances (cf. Cohen et al., 2014).

**Proposition 2:** Situation-behaviors are encoded as collective performances (recurrent patterns of collective action) conditional on the behavior's discrepancy reducing effect in the pursuit of collective preferred future states.

For such a process to occur, the group or organization must possess preferred future states, and also be capable of recognizing discrepancies relative to current states. The first criterion (possessing aspirational goals) is widely viewed as an inherent feature of organizations; however, the recognition of discrepancy reduction is more complex. As Simon (1997: 142) wrote, "Most organizations are oriented around some goal.... If the goal is less tangible—like that of a religious organization—it becomes more debatable whether a particular activity contributes to the goal". In any case, when discrepancy reduction is clearly recognized, either implicitly or explicitly, routinization is likely to occur (Winter, 2013). Although, not all collective performances are, or remain, discrepancy reducing. Groups and organizations often encode recurrent action patterns which may be beneficial at one time, but subsequently prove to be discrepancy increasing. Survival then depends on the capacity to adapt, and many organizations cannot (Siggelkow, 2001; Tripsas & Gavetti, 2000).

Furthermore, because the collective performance depicted by the dashed line shape in Figure 2 is grounded in shared situation-behavior systems, there is no need to explain the aggregation of habits. Rather, habits and collective performances are complementary expressions of a common overall system or ecology of situation-behavior. The core situational stimuli are consistent for both, as are the core cognitive-affective processes and observed behavioral outcomes. Significant differences are found in the greater content and complexity of habitual cognitive-affective processing (Shoda et al., 2006). For these reasons, the model in Figure 2 does not entail methodological individualism or radical reductionism, but rather assumes ontological pluralism (see Winter, 2013). Individual habits and collective performances are depicted as nested systems within a wider ecology of situation-behavior.

### **Microfoundations of organizational stability**

The microfoundations of collective performance also help to explain organizational stability. In short, just as systems of individual habits constitute the stability of personality, so systems of collective performances constitute the stability of organization. Consider once again the pattern depicted by the dashed line in Figure 2. Assume that the three persons A, B and C share a common subset of cognitive-affective processes which are triggered by organizational stimuli. Within an organizational context, these processes will incorporate the five categories of processing units listed previously, but now they are organizational in nature:

1. Encodings: categories (constructs) for the *organizational* self, people, events, and situations (external and internal). Including encodings of organizational identity.
2. Expectancies and Beliefs: about the *organizational* world, about outcomes for behavior in particular situations, about self-efficacy.
3. Affects: *organizational* climate of affective responses.

4. Goals and Values: desirable *organizational* outcomes and affective states; aversive outcomes and affective states; goals, values, and life projects.
5. Competencies and Self-Regulatory Plans: potential *organizational* behaviors and scripts that members can do, and plans and strategies for organizing action and for affecting *organizational* outcomes and behavior.

Importantly, each category of processing unit is known to play a significant role in organizations generally (Scott et al., 2007), and specifically in routines as a type of collective performance: ontological encodings and identity moderate routinization (e.g., Kane, Argote, & Levine, 2005; Michel, 2014), so do shared beliefs and expectations (e.g., Levitt & March, 1988; Tripsas et al., 2000), affects and emotional responses may reinforce or undermine routines (e.g., Cohen, 2006; Lazaric & Denis, 2005), likewise for organizational goals and values (e.g., Winter & Szulanski, 2001) and competencies and self-regulatory regimes (e.g., Becker, Lazaric, Nelson, & Winter, 2005; Pentland, Feldman, Becker, & Liu, 2012).

Moreover, for each category of cognitive-affective processing within an organized group, core patterns of collective performance will evolve—or as Cohen et al (2014) explain, larger compilations of action ensembles will develop—conditional on their discrepancy reducing effects. The triggers for these patterns of performance will be embedded in the situational and organizational context. Reflecting the five categories listed above, these performances will incorporate encodings of organizational identity, organizational beliefs and expectancies, organizational affective climate, organizational goals and values, and organizational competencies and self-regulatory plans. The dashed-dotted shape in Figure 2 depicts a shared cognitive-affective processing sub-system of this type. Altogether, the five categories of organizational cognitive-affective processes form a coherent system which supports

organizational stability and distinctiveness. Hence, in the same way that core habits and their associated cognitive-affective processes constitute the stability of personality, so an organization's core pattern of collective performances and their associated cognitive-affective processes constitute the stable distinctive characteristics of the organization. In fact, these patterns of collective performance constitute an organization's institutional character (Scott et al., 2007).

### **The microfoundations of adaptation and novelty**

As noted previously, variation is inherent in the CAPS theory of personality (Mischel et al., 1998). Variations arise from the dynamism of situational stimuli and the complexity of individuals' cognitive-affective processing systems. Such variation has consequences for both habits and collective performance. First, recall that the stable core of situation-behavior responses constitutes personality; second, the cognitive-affective processes for an individual's habit are a subsystem of personality; and third, cognitive-affective processes relating to the corresponding collective performance are a subsystem of those for individual habit. Figure 3 depicts these conditions. It shows two versions of a cognitive-affective processing system. In the first version  $S_1$ , the cognitive affective processes associated with a collective performance  $C_1$  overlap substantially with the habit  $H_1$ , which in turn overlaps significantly with a core characteristic of personality  $P_1$ . The figure also depicts the five categories of cognitive-affective processing units. Each level and category therefore shares a relatively significant pattern of cognitive-affective processing. By contrast, in the second cognitive-affective processing system depicted as  $S_2$ , the cognitive affective processes associated with a collective performance  $C_2$  overlap only partially with habit  $H_2$ , which in turn overlaps only partially with a core

characteristic of personality  $P_2$ . And the lesser degrees of overlap are depicted to vary between the five categories of cognitive-affective processes.

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Insert Figure 3 about here  
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Important consequences follow. To begin with, the greater the overlap between  $P_1$ ,  $H_1$  and  $C_1$ , the more tightly encoded the three cognitive-affective systems will be. For example, if core cognitive-affective elements of a personality characteristic  $P_1$  are within the core for a particular habit  $H_1$  (e.g., the habit involves a person's deeply held values or beliefs) then the corresponding habit will be more deeply encoded for that individual. And if that degree of overlap with personality is common among a group, then the corresponding collective performance will be more deeply encoded as well, given its integration into individuals' personality systems. For the same reasons, such habits and collective performances will become more difficult to change and adapt, because significant change entails a concomitant disruption to personality systems (Brockner & Higgins, 2001; Hiller et al., 2005). Within  $S_1$ , therefore, cognitive-affective systems are more deeply encoded and integrated, and hence more difficult to change and adapt, because change at any level is likely to entail change at the other levels as well. Whereas in system  $S_2$ , the systems are less deeply encoded and integrated, and hence easier to change and adapt.

**Proposition 3:** The adaptiveness of any recurrent action pattern is inversely proportional to the integration of its core cognitive-affective processes within other levels of individual and group action that share the same situational triggers and behavioral responses.

A second consequence of these dynamics relates to the explanation of behavior at each level. In summary, the core cognitive-affective processes in recurrent action patterns are only partially translatable across levels: what is core for habit may not be core for collective performance, despite the fact that responses at each level of analysis are triggered by the same situational features and may result in the same behavior. Therefore, the explanation of collective performance at the group level will rarely if ever require the same complexity of psychological detail as the explanation of individual habitual action. The microfoundations of individual habits are not fully incorporated into collective performance. In that sense, the cognitive-affective processing of individual habit is underdetermined by the cognitive-affective processing of the corresponding collective performance.

Next, recall that variations are inherent in the CAPS theory—situational, processing and behavioral variations are frequent within personality systems. These changes will have an impact on related habits and collective performance. And the more integrated the system (e.g.,  $S_1$  depicted in Figure 3), the greater such an impact will be. For example, consider the situation where there is a change in a person's habit owing to a newly acquired cultural value. The new value becomes integrated into the person's cognitive-affective processing for the relevant situation-behavior, causing intra-psychic changes in habit processing. But what if that habit is also highly integrated into a collective performance, as it is in system  $S_1$ ? If that is the case, then the altered habit will impact on the person's processing of the collective performance. This will be especially likely if the relevant change in habit processing is shared among numerous members a group, for example, when many members adopt a new cultural value. In this way, variations at the individual person level may lead to changes in collective performance.

Furthermore, in circumstances when variations at the individual person level are deeply relevant at the group level—such as encodings of professional identity, or values attached to work activities—then individual level variations may also result in significant variations at the collective level. The impact will be determined by the degree of discrepancy reduction, from a collective perspective. When the variations are found to be discrepancy reducing (moving the group towards its preferred future state) then potentially random variations at the individual level will be replicated and encoded into collective performance. For example, a member of a group may possess or develop a strong competency relating to creativity. If this new cognitive-affective process is integrated into relevant habits, and is discrepancy reducing, then it may be replicated and encoded into collective performance. In this way, via the inherent and often random variations in individual cognitive-affective processing, novel situation-behaviors emerge among groups. Behavioral novelty in organizations therefore relies on (a) the inherent variability of situations and cognitive-affective systems to generate new behaviors; (b) the degree of overlap between cognitive-affective processes at the individual and collective levels of analysis; and (c) when behavioral variations are discrepancy reducing at the group level and thus encoded into collective performance.

**Proposition 4:** Behavioral novelty within an organization is proportional to the degree of variation within the overlapping cognitive-affective processes shared by individual habits and collective performances, and the extent to which such variation is discrepancy reducing.

### **Summary of microfoundations**

To summarize the foregoing arguments, when viewed from the perspective of an individual, the totality of recurrent patterns of situation-behavior constitute the personality

system; this condition is depicted by the heavy solid line shape in Figure 2. A subsystem of this system constitutes the habit of an individual, for some specific patterns of situation and behavior, depicted by the dotted line shape in Figure 2. And when the situational stimuli and behavioral responses associated with a particular habit are shared by a group, they constitute collective performance, as depicted by the dashed line shape in Figure 2. Within organizations, collective performances also incorporate the cognitive-affective processes relating to organizational identity, values, affects, beliefs and competencies, as depicted in the dashed-dotted shape in Figure 2. Finally, inherent situational changes and the dynamism of cognitive-affective processes generate constant variations within both individuals and groups, and some of these variations result in discrepancy reducing behavior. In this way, novel behaviors are encoded into collective performance.

Moreover, the degree of cognitive-affective complexity is inversely proportional to the complexity of the behavioral agents: core processing systems are more complex for personalities, less so for habits, and less again for collective performances. Inversely, the system of behavioral agents is least complex for personalities and habits (a single person), and more complex for collective performances in organizations (groups of persons). This has intuitive appeal. First, when focussing at the individual level, cognitive-affective processes are more complex and encoded at the individual level—people tend to change their personalities less frequently than their habits and collective performances, and they respond to a wide range of variable, contextual stimuli. At the same time, when collective performances such as routines attach to and reinforce core features of personality, people are more committed to that performance. Contrariwise, when changes in collective performances contradict features of personality, people tend to resist (Feldman et al., 2003; Kane et al., 2005). Second, when focussing at the organizational level,

cognitive-affective processes are less complex but more deeply encoded—hence organizations tend to change their collective performances less frequently than their constituent personalities. Indeed, the personalities within an organization often come and go, as members join or depart, even while collective performances remain relatively stable over time. Agency in relation to collective performance can then be conceived as the group of actors which experiences shared stimuli, has common cognitive-affective processes, and enacts responsive behaviors. But importantly, this does not imply the existence of a fully autonomous collective agent. By unpacking the reduced subsystem of intra-psychic processes, we can explain group level agency without invoking the aggregation of individual agencies, and without ascribing a psychological identity to the collective.

## **DISCUSSION**

Individuals and organizations co-evolve and interact within the social world. Situational features of that world stimulate intra-psychic cognitive-affective processes and resultant behaviors. The overall system is a behavioral ecology of groups of individuals who share situational stimuli, common patterns of intra-psychic processes and behavioral dispositions. Moreover, by virtue of their similarity, people behave in comparable ways, yet with varying degrees of collective coordination, deliberation and repetition. Thus conceived, the explanation of recurrent action patterns does not require the reduction of individual psychology to mechanistic biological determinants. Nor must any level of analysis occupy a privileged ontological status. Instead, individuals and organizations are complementary systems within a complex ecology of situation-behavior processes in which personal autonomy, inter-personal relatedness and organizational form co-exist with comparable significance (Mischel, 2004). Classical ontological distinctions between individuals and organizations are thereby relaxed.

In fact, ontological reconfigurations of this kind are a consistent feature of scientific endeavor. In numerous fields of study, and over many years, intuited ontological distinctions have been diluted or dissolved, once the underlying phenomena and their mechanisms of interaction become clear. Following this pattern, we might expect that some of the intuited ontological distinctions between individual and collective agency and action will dilute or dissolve as well. My theory reflects this expectation. A number of theoretical contributions follow.

### **Habits and collective performance**

Most importantly, my theory contributes a new approach to the microfoundations of recurrent action patterns, grounded in contemporary advances in social cognitive psychology. The theory achieves this by adopting the CAPS theory of personality, then building upon it to model habits and collective performances as nested recurrent situation-behavior patterns, mediated by cognitive-affective processes. As an original contribution to the CAPS theory, my paper also incorporates discrepancy reduction as the selection mechanism whereby some situation-behaviors are encoded and replicated as habits and collective performances. In this respect, my theory endorses a broadly evolutionary approach to behavioral change (Dosi et al., 2007). Individual persons and social organizations are thus viewed as co-evolving systems, albeit organized differently. At one level of analysis—focusing on individual persons—situation-behavior systems underpin the CAPS theory of personality and individual habits. While at the organizational level of analysis—focusing on recurrent action patterns among groups of persons—the same situation-behaviors constitute collective performances. Stabilities of personality are thus explained, as are the stabilities of organizations.

The resulting theory also addresses a number of persistent dilemmas in the study of habits and collective performances. First, it identifies the relationship between (a) individual-level cognition, affect and habitual behavior, and (b) organizational characteristics and behavior, but without needing a separate process of aggregation between the two levels of analysis. Rather, my theory posits that the distinction between individual and organizational levels of analysis is explained by different degrees of intra-psychic complexity and stability: greater intra-psychic complexity in relation to individual habits and personality, and less in relation to collective performance. But the fundamental phenomena are the same at each level, as depicted in Figures 3 and 4. Second, the theory incorporates affect, values, beliefs, competencies and encodings (the five types of cognitive-affective processing units) into the microfoundations of collective performance, responding to the call for a more sophisticated, contextual appreciation of human psychology in microfoundational theories (Cohen, 2006; Winter, 2013). Moreover, these units may help to explain microfoundations of variable organizational ontologies (encodings) and epistemologies (values and beliefs) (Michel, 2014). Future researchers should expand the analysis to identify the specific situational features and cognitive-affective units that interact in the origination of particular habits and collective performances (see Becker et al., 2006; Feldman et al., 2003).

### **Learning and novelty**

My theory also sheds new light on the role of recurrent action patterns in organizational learning. It suggests a new micro-level mechanism for the incorporation of knowledge and practices into collective memory, and especially procedural memory (Wilson, Goodman, & Cronin, 2007). Put simple, as new knowledge is created or acquired, it is absorbed into the inherently adaptive cognitive-affective systems that mediate collective performances. New

combinations of cognitive-affective processing thus evolve and interact. Via such combinations, discrepancy reducing behaviors can be generated (Mischel et al., 1998). Repeated performance encodes the new knowledge into recurrent action patterns. Hence much about organizational learning may be explained in terms of the dynamic combinatorics of cognitive-affective processing systems (see Becker et al., 2006). Moreover, as in the case of organizational change, learning may result from altered situational triggers as exogenous forces, for example, new market conditions, or from cognitive-affective processing changes as endogenous forces (see Dionysiou & Tsoukas, 2013), such as collective experience within collaborative teams (Argote, 1999). And the degree of overlap between core elements (depicted in Figure 3) will significantly determine the resilience of behaviors, the ease with which they change and the impact of adaptations (see Volberda, Foss, & Lyles, 2010). The greater the overlap, the more resilient the behavior, yet the greater the impact when adaptive variations do occur.

Similarly, by modelling recurrent action patterns in terms of mediated situation-behavior systems, my theory also contributes a new account of organizational novelty in terms of adaptive situation-behavior systems. In this regard, it is important to recall that variance is fundamental to the CAPS theory of personality (Mischel et al., 1995). Fixed personality traits and types do not exist. Instead, different combinations of situational features and cognitive-affective processing generate constant variation at the individual level. Such changes may result from altered situational features as exogenous drivers, or from new cognitive-affective processes as endogenous drivers (Cohen et al., 2014; Dionysiou et al., 2013). Both scenarios are accommodated by my theory. Furthermore, such changes may be generated by singular or systemic alterations in the situational context—including altered encodings of collective identity, cultural values, regulatory schemes, emotional climate. Alternatively, change may be generated

by changes in cognitive-affective processing among one or more members of an organization, in terms of encodings of self and the world, affects, expectancies and beliefs, goals and values, or self-regulatory plans. In this way, organizational novelty can be driven exogenously or endogenously, as individuals respond to situational stimuli and/or variation in their cognitive-affective processes (e.g., Gutierrez, Howard-Grenville, & Scully, 2010).

My theory further suggests an explanation for the imperfect replication of routines as a pre-condition of organizational novelty, adaptive learning and innovation (Becker et al., 2006). As Mischel and Shoda (1995) explain, the cognitive-affective processes that underpin personality are subject to constant variation in response to situational and psychological factors. Indeed, even the most stable cognitive-affective processing systems are prone to periodic variation. As a result, individual personalities and habits are neither static nor fixed, but incrementally evolving and impacting on collective performances. Exact replication of collective performance is therefore unlikely, owing to the inherent complexity, conditionality and variability of the underlying cognitive-affective systems. Moreover, it is only when these microfoundations are exposed, that the consequences of imperfect replication as a source of behavioral novelty can be understood (Becker et al., 2006). Future research should investigate these processes in greater detail.

### **Behavioral theories**

Microfoundational accounts also have strong links to behavioral theories, given that both share a deep commitment to exposing the social and psychological characteristics of individual and collective action. Consequently, my theory has implications for a range of behavioral topics. To begin with, the partial incommensurability and under-determination between different levels of cognitive-affective processing (between habits and routines, for example) suggests a novel

explanation for the divergence between the normative and positive projects of modern microeconomics. On the one hand, most normative theories assume a minimal core of cognitive-affective processing at the collective level, typically deliberative reasoning towards utility maximization unaffected by affect, similar to the cognitive-affective systems depicted by  $C_2$  in Figure 3. Specific processing units of interest are the values, beliefs and self-regulatory plans related to preferences. While on the other hand, most positive theories assume a richer core of cognitive-affective processing at the individual level, typically bounded cognitive processes influenced by affect (March, 2014), similar to the more complex cognitive-affective systems depicted by  $C_1$  in Figure 3. Specific processing units of interest also include encodings and affect within habitual behavior (Cohen et al., 2014), as well as values, beliefs and self-regulatory plans related to a variety of goal pursuits (Thaler, 2000). My theory suggests a way to clarify these theoretical distinctions: each focuses on a different level of analysis of situation-behavior and related cognitive-affective processing. For this reason, behavioral theories of individual choice are often inappropriate at the population level, because they capture an overly rich core of cognitive-effective processes which is not operative at the population level (March, 2014; Mazzoleni & Nelson, 2013).

Comparable dilemmas exist within other disciplines and areas of organizational and management theory, where scholars seek to integrate the micro-level analysis of individual behavior, with macro-level theories or organizational behavior (Gavetti, Levinthal, & Ocasio, 2007; Greve, 2013; Rousseau, 2011). In fact, there is a scaling issue here: the relatively complex cognitive-affective processes which explain behavior at the individual level rarely scale to the population level where less complex processes apply. Simple additivity (naïve aggregation) does not apply from the bottom up, and simple divisibility (naïve reduction) does not apply from the

top down. Different levels of analysis entail different, albeit nested psychological states (see Winter, 2008).

In relation to theories of the firm, my theory also presents a richer vision of human psychology, incorporating cognitive, affective, situated and social factors, thereby suggesting a way to expand and deepen the behavioral theory of the firm (Cohen et al., 2014; Gavetti et al., 2007). In particular, my theory highlights the role of collective aspiration levels, or shared aspirational goals, as a key reference point for discrepancy reduction and collective performance. As Cyert and March (1992: 34) explain, firm aspiration levels are “an optimistic extrapolation of past achievement and past aspiration.” My argument for discrepancy reduction relative to organizational aspirations maps onto their concepts of optimism and historical extrapolation. Firm aspiration levels can therefore be interpreted in terms of the shared cognitive-affective processes which support collective performance.

Furthermore, assuming that routines are constitutive of firm capabilities (Winter, 2013), then my theory also opens up new ways to research and potentially explain the microfoundations of capabilities as coordinated bundles of collective performances. In terms of the systems depicted in Figure 2, this would involve deeper theorizing and empirics about the integrated situation-behavior systems underpinning collective performance and the institutional form of organizations. Indeed, it may be reasonable to conceive of whole organizations in these terms. Just as the CAPS theory explains personalities as integrated situation-behavior systems related to individual goals, so organizations might then be understood as integrated situation-behavior systems related to collective goals.

Once elaborated and tested, the theory presented here may also lead to significant practical benefits. For example, it is known that inflexible habits and routines can lead to

competency traps that stifle exploratory learning and impede adaptation (March, 1991). Indeed, such recurrent action patterns are a major obstacle to effective organizational change and learning (Zbaracki & Bergen, 2010). My theory suggests that it may be possible to identify the specific core cognitive-affective processes that perpetuate obstructive and maladaptive behaviors. Often these processes will be those that overlap with core personality characteristics, such as identity and values. But once understood, it may also be possible to amend such systems by targeted interventions which alter cognitive-affective processing. Duhigg (2012) provides an example of this process. When the CEO of Alcoa aluminium, Paul O'Neill, triggered a significant change in fundamental routine behaviors by connecting them to employees' concerns for safety and shared well-being. In doing so, he deliberately touched deep values and beliefs. As shown by this example, managing the micro-level triggers and mediators of core cognitive-affective processes could significantly improve organizational adaptation and learning (Amabile, Schatzel, Moneta, & Kramer, 2004). Additional techniques might also be developed to enhance the occurrence of those situation-behavior variations which are more discrepancy reducing.

## **Conclusion**

Given the fundamental role of patterns of recurrent action in both individual and organizational stability and novelty, it is important to understand their microfoundations and interactions. However, past research on these topics has been inconclusive, often hampered by limiting theories of individual psychology. I present a fresh approach, adopting the CAPS theory as a novel social-cognitive perspective on individual personality and behavior. Building on this foundation, habits and collective performances are reconceived as nested configurations of situation-behavior systems, mediated by cognitive-affective processes. An individual's core pattern of habit is constitutive of his or her personality, while an organization's core pattern of

collective performance is constitutive of its institutional character. Behavioral novelties arise from the inherent variability of these systems and the situational context. Individual personality and habits, as well as collective performances and organizations, are thus reconceived as complementary systems within the same ecology of situation-behavior, thereby diluting traditional assumptions about the ontological distinctiveness of persons and collectives.

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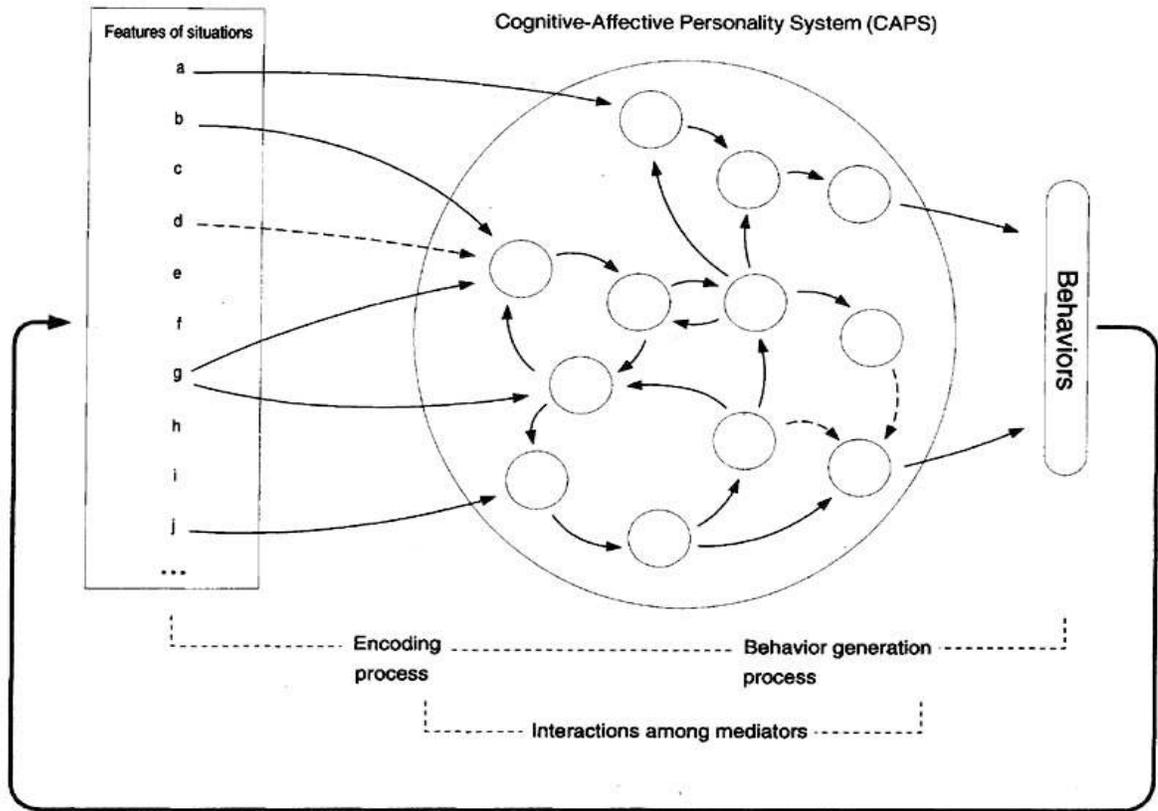
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Figure 1.

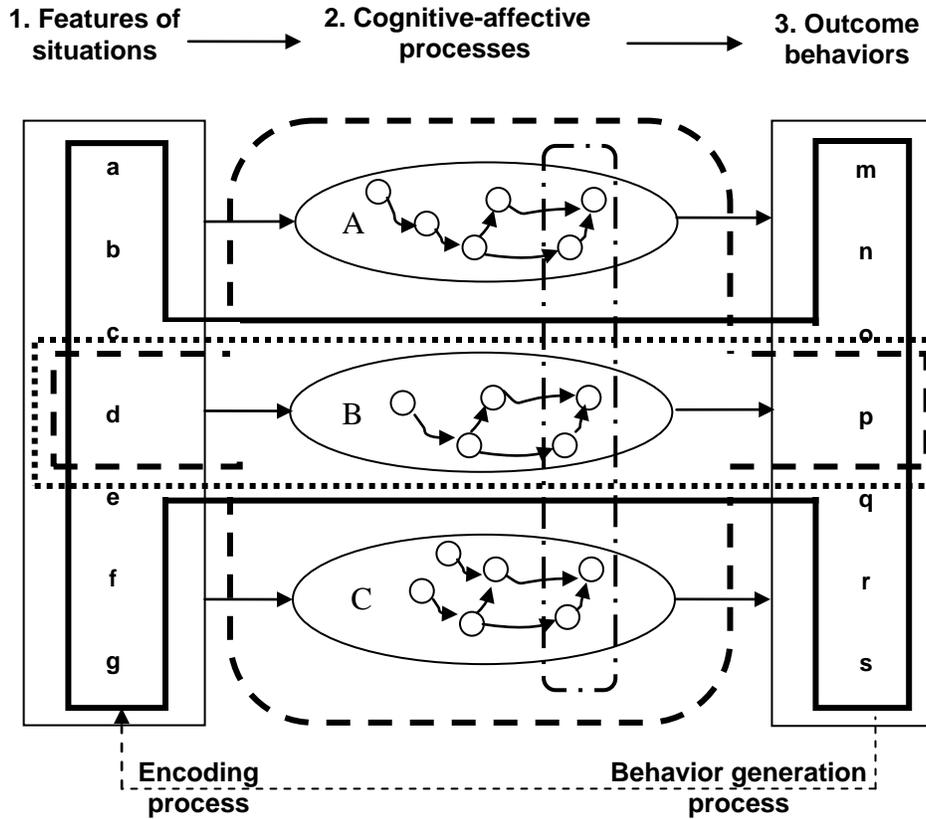
Cognitive-Affective Personality System (CAPS)



(Source: Mischel et al., 1995: 254)

Figure 2.

**Model of personality, habit and collective performance**



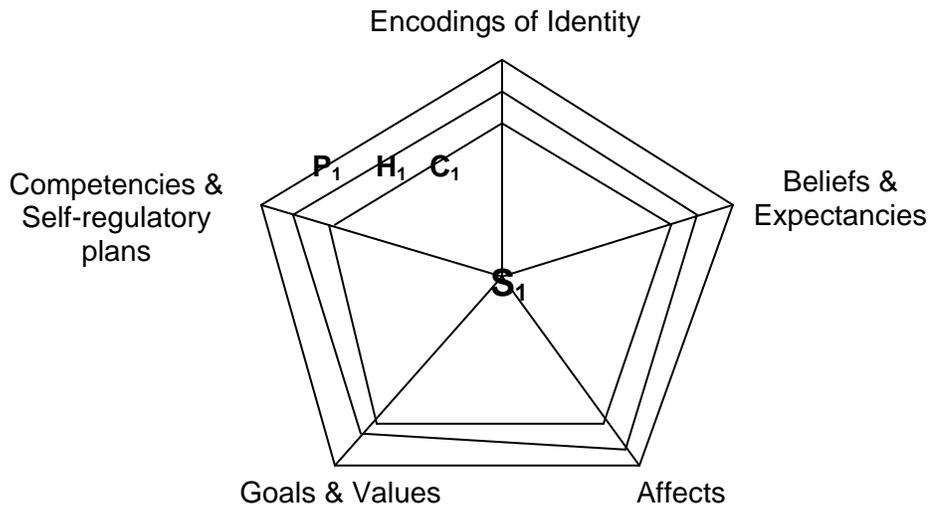
**Behavior generation and encoding process moderated by the degree of discrepancy reduction**

- Heavy line shape depicts personality system for person B, assuming full set of situations (a...g) and behaviors (m...s).
- Dotted line shape depicts a habit for Person B, assuming similar situations (d) and behaviors (p).
- Dashed line shape depicts a collective performance for Persons A, B and C, assuming similar situations (d) and behaviors (p).
- Dashed-dotted line shape depicts a subset of cognitive-affective processing for collective performance for Persons A, B and C, for example, an encoding of organizational identity.

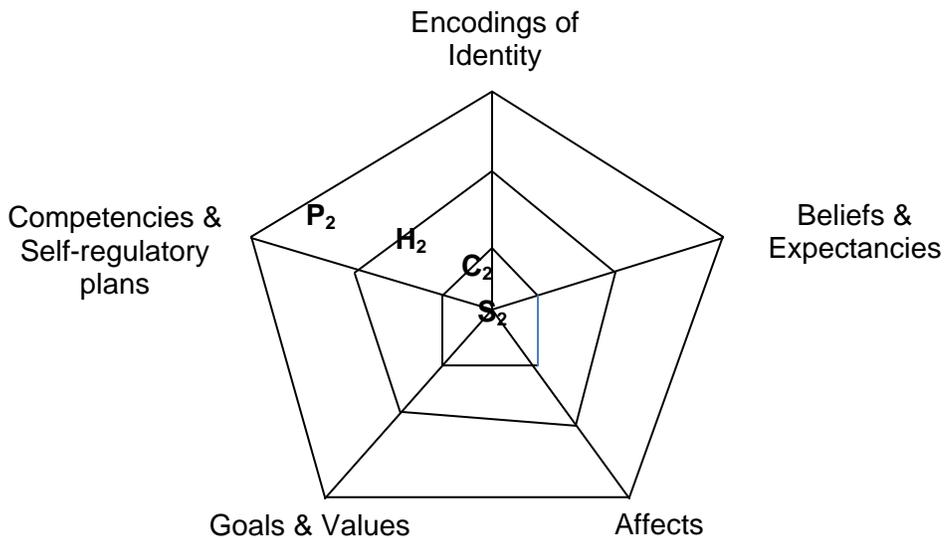
**Figure 3.**

**Inter-connections between levels of cognitive-affective processing**

**System S<sub>1</sub> - High overlap between cognitive-affective sub-systems**



**System S<sub>2</sub> - Low overlap between cognitive-affective sub-systems**



P<sub>1</sub>, P<sub>2</sub> = Personality systems  
H<sub>1</sub>, H<sub>2</sub> = Habit systems  
C<sub>1</sub>, C<sub>2</sub> = Collective performance systems