

Cognitive Psychology as the Background of Behavioural Strategies: Prolegomena on Theoretical Underpinnings

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Abstract

The paper content is embedded in both management science, especially strategic management and cognitive psychology – mainly in terms of mental systems, processes, models, mental processes representations, and cognitive styles. It has been envisaged that a behavioural strategy constitutes the strategy of an organization described from the managerial perspective and in terms of socio-psychological determinants.

Moreover, the paper concerns the *micro-foundations* concept that frequently constitute theoretical explanation of phenomena at higher epistemological levels using constructs of lower epistemological levels. Considering behavioural strategies as being determined by psycho-social imponderables of managers (i.e. mental processes), they might be regarded in the context of the micro-foundation in strategic management.

The purpose of the paper is to present a theoretical framework ordering various perception effects regarding the influence of cognitive psychology phenomena on managers' decisions.

Consequently, the most important research questions are as follows: a) do really mental processes influence a behavioural strategy phenomenon?, and b) which are the associations between mental processes and behavioural strategies' elements, including potential moderators and mediators?

The most general key finding and contribution of the theoretical framework presented is that the cognitive psychology phenomena constitute the antecedents of behavioural strategies that influence managers' decisions as well as it is still worth considering them and incorporating in behavioural strategies research.

The method that has been used is the critical comparable analysis of literature studies and scholars' research, and interfering is deductive.

Keywords: behavioural strategy, cognitive psychology, mental processes, mental models, cognitive styles.

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Introduction

‘Deduction is that mode of reasoning which examines the state of things asserted in the premises, forms a diagram of that state of things, perceives in the parts of the diagram relations not explicitly mentioned in the premises, satisfies itself by mental experiments upon the diagram that these relations would always subsist, or at least would do so in a certain proportion of cases, and concludes their necessary, or probable, truth’ (Pierce, 1931-1958)

The paper is embedded in strategic management, especially behavioural strategies concept emerging from behavioural economics’ fields (Figure 1) like, inter alia, some streams in cognitive psychology (Piórkowska, 2015). Those behavioural economics’ fields are attempted to be incorporated into strategic management.

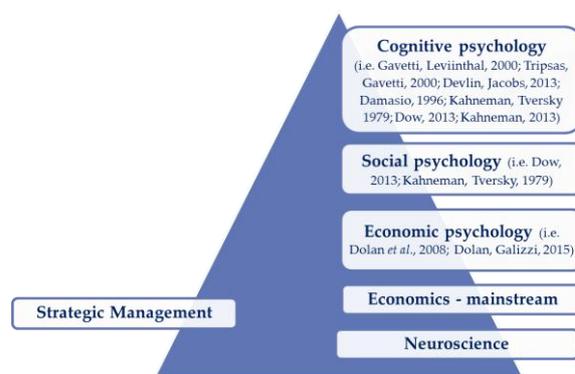


Figure 1: Behavioural strategies – background.

Hence, a behavioural strategy concept seems to live at the crossroads of i.e. social psychology, cognitive psychology, economic psychology, neuroeconomics, neuroscience, and even economics – mainstream. According to the paper content, it has been envisaged that a behavioural strategy constitutes the strategy of an organization described from the managerial perspective and in terms of socio-psychological determinants as well as under uncertainty (Piórkowska, 2014). Consequently, it is a strategy (a way of making decisions so as to adapt to environmental uncertain conditions) of a manager expressed by his/her attitude and/or behaviour, especially in the socio-psychological context.

Theoretical underpinnings of cognitive psychology phenomena, in general, encompass a) cognitive systems and processes (i.e. Kahneman, 2003; Kahneman & Tversky, 2000; Kahneman & Tversky, 1973; Kahneman et al., 1990; Simon, 1979; Frederick, 2002; Gigerenzer & Todd, 1999; Gigerenzer & Reinhard 2002; Kahneman & Shane, 2002; March & Herbert, 1958; Slovic et al., 2002), b) mental processes representations (i.e. Johnson-Laird, 1983; Gilbert et al., 1998; Churchland, 1995; Feldman, 2006; Stanovich & West, 2000; Evans & Stanovich, 2013), c) cognitive styles (i.e. Goldstein & Blackman, 1978; Nosal, 1990; Kogan, 1983; Messer, 1976;

Witkin *et al.*, 1971; Witkin & Goodenough, 1977, 1981; Sternberger & Grigorenko, 1997).

Simultaneously, the paper content concerns the concept of micro-foundations in strategic management explaining phenomena ranging from the micro to macro levels of organizational analysis, taking the links between micro- and macro-level into consideration (i.e. Schelling, 1978; Felin & Foss, 2005; Felin & Foss, 2006; Foss, 2010), especially in terms of the behavioural strategies.

The motivation has been the attempt to systematise a behavioural strategy phenomenon in terms of its antecedents in a plausible way owing to very limited and fragmented treatment of that issue in the literature.

The purpose of the paper is to present a theoretical framework ordering various perception effects regarding the influence of cognitive psychology phenomena on managers' decisions.

The aim of the paper has been realized attempting to find the answer for the following conceptual research questions: RQ1. Do really cognitive psychology's phenomena influence a behavioural strategy phenomenon?, RQ2. Which are the associations between cognitive psychology's phenomena and behavioural strategies' content including potential moderators and mediators?

The paper is conceptual and its content is exploratory so as to enhance the state of the art in the field of behavioural strategies concept and its antecedents.

Additionally, the structure of the paper is as follows. The first section presents theoretical underpinnings of cognitive psychology's selected phenomena: mental systems and processes including (ir)reasoning, consciousness, and affected by heuristics and biases, mental processes representations, and cognitive styles. It has led to the section emphasizing the associations between behavioural strategy concept and cognitive psychology phenomena. Finally, chief conclusions have been highlighted.

Selected phenomena of cognitive psychology - theoretical underpinnings

Mental systems and processes

In general, mental systems and processes are said to be divided into three areas: perception, intuition, and reasoning (Figure 2).

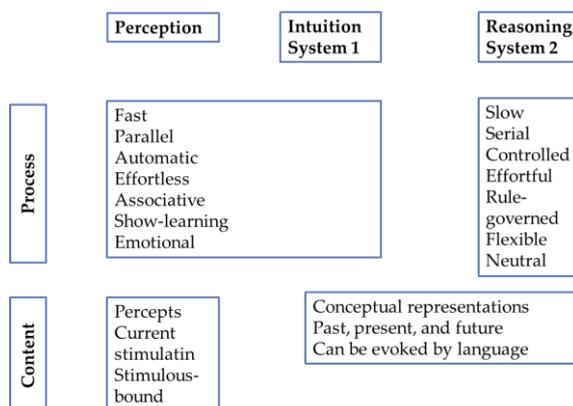


Figure 2: Cognitive systems (Kahneman, 2003).

The judgments that people express, the actions they take, and the mistakes they commit depend on the monitoring and corrective functions of System 2, as well as on the impressions and tendencies generated by System 1 (Kahneman, 2003).

Since the overall capacity for mental effort is limited, effortful processes tend to disrupt each other, whereas effortless processes neither cause nor suffer much interference when combined with other tasks.

A defining property of intuitive thoughts is that they come to mind spontaneously, like percepts. The technical term for the ease with which mental contents come to mind is accessibility (Higgins, 1996; Eitam & Higgins, 2010).

Conversely, the facility of System 2 is positively correlated with intelligence (Gilovich *et al.*, 2002), with the trait that psychologists have labelled 'need for cognition' (which is roughly whether people find thinking fun) (Shafir & LeBoeuf, 2002), and with exposure to statistical thinking (Nisbett *et al.*, 1983; Agnoli & Krantz, 1989; Agnoli, 1991).

Individuals employ heuristics in order to cope with cognitive limitations (Tversky & Kahneman, 1974) – yet, heuristics lead to systematic errors. The authors paid attention into cognitive biases that stem from the reliance on judgemental heuristics and they described three heuristics employed to evaluate probabilities and to predict values as well as biases to which those heuristics lead. The first heuristic is called the representativeness one – probabilities are evaluated by the degree to which A is a representative of B. The representativeness heuristic is also included in a broader class of prototype heuristics, which share a common psychological mechanism of the representation of categories by their prototypes and a remarkably consistent pattern of biases (Kahneman, 2003, p. 1463). The second (availability heuristic) helps assess the frequency of a class or the probability of an event by the ease with which instances or occurrences can be brought to mind. The availability heuristic leads to the following biases: biases due to the retrievability of instances, biases due to the effectiveness of a search set, and biases of imaginability. The last Tversky & Kahnemann's heuristic is connected with adjustment and anchoring – people make estimates by starting from an initial value that is adjusted to yield the final answer. This heuristic leads to the biases in the evaluating conjunctive and disjunctive events.

Judgment heuristics are applied in a wide variety of domains and share a common process of attribute substitution in which difficult judgments are made by substituting conceptually or semantically related assessments that are more simply and more readily accessible (Kahneman & Frederick, 2005).

As a consequence, intuition and accessibility to certain thoughts are salient, and even if they produce judgmental biases, they show how some decision-making processes arise from pre-analytical mechanisms.

Mental systems and processes have impact on creating so-called mental models and mental processes representations.

Mental processes representations

Mental processes representations reflect psychological impression about representations of real, hypothetical or imagined situations produced by human

thinking techniques (i.e. Johnson-Laird, 1983; Gilbert *et al.*, 1998; Churchland, 1995; Feldman, 2006; Stanovich & West, 2000; Evans & Stanovich, 2013). The representations produced by the techniques of human thinking on specific issues have been called, for instance: a) concept maps (Bilal & Wang, 2005; Carvalho *et al.*, 2001; Craik, 1943; Freeman, 2004; Novak, 1998), b) mind maps (Buzan, 1995), c) cognitive maps (Chown, 1999; Eden & Ackerman, 1998; Kearney & Kaplan, 1997; Peruch *et al.*, 2000), d) mental models (Craik, 1943; Johnson-Laird, 1989; Jonassen, 2004), and e) the other labels: cognitive models, mental maps, conceptual graphs, knowledge maps, knowledge visualizations, semantic networks, semantic webs, and topic maps (Cole *et al.*, 2007). The difference between mental models and the other names is that mental models exist inside individuals and reflect their mental systems and processes, while the other concepts refer to particular techniques, which through codes represent human mental processes. In analysing mental models, the characteristics, categories and classification schemes ought to be established. Nevertheless, there is a limited literature (i.e. in education, information science, chemistry (Cole *et al.*, 2007; Dayana *et al.*, 2013)) on ascertaining mental model characteristics (i.e. directions: horizontal, vertical, or equal) and categories or on the ways of categorizing mental models, concept maps, and the other notions.

Barsalou (1999) as well as Markman & Dietrich (2000) regard that cognitive science ought to eschew abstract representations in favour of representations rooted in perception.

It is regarded that mental processes and systems as well as mental models and mental processes representations determine the ability to apply a particular cognitive style.

Cognitive styles

Cognitive styles constitute the phenomenon in cognitive psychology and refer to the individually dependent and preferred ways of operating that people are disposed to select from the repertoire of cognitive behaviour possessed. The 'cognitive style' notion is related to the notion 'cognition' that is an assembly of mental processes that includes awareness, perception, reasoning, and judgment. Jung (1923) postulated that personality comprised of three facets each with a continuum description: attitude, perception, and judgment. Undoubtedly, the prominent initiators of cognitive styles are also Holzman (1960) and Scheerer (1953) who were describing so-called cognitive controls as the expression of personality in the cognitive sphere operating as peculiar tools to realize basic personality tendencies and to mediate between an individual and external environment. In a similar vein, Goldstein & Blackman (1978, p. 4) define a cognitive style as 'a hypothetical construct that has been developed to explain the process of mediation between stimuli and responses. The term cognitive style refers to characteristic ways in which individuals conceptually organize the environment'.

The scholars have examined a great many dimensions (variables) describing cognitive preferences, i.e. conceptual differentiation (Gardner, 1953; Gardner & Schoen, 1962) determining an equivalence range and illustrating adaptive functions of cognitive regulators as the personality tools, levelling – sharpening, extensiveness of scanning, constricted – flexible control, or tolerance for unrealistic experience (Nosal, 1990). What is crucial, a cognitive style has polar nature and the dimensions used for describing it are bipolar.

The paper is focused mainly on the four dimensions of a cognitive style: reflection – impulsivity, field dependence – independence, holist – serialist (abstract – concrete), and deep-level/surface-level processing. Impulsivity is a tendency to give fast answers and make many mistakes. In contrary, reflection means a tendency to long thinking and making fewer mistakes. The dimension reflection-impulsivity is also called ‘conceptual tempo’ (Kogan, 1983; Messer, 1976). It is worth mentioning that there is some hesitation whether that style applies in only high-uncertainty situations (Sternberger & Grigorenko, 1997). It is also important to note that impulsivity, as a cognitive style, is not the same as possessing impulsive personality traits (Sternberger & Grigorenko, 1997). The dimension field dependence – independence reflects the extent to which perception is determined by general perceptual field organization (Witkin *et al.*, 1971; Witkin & Goodenough, 1977, 1981; Witkin, 1978; Witkin *et al.*, 1977). Most people are on a continuum between being completely field dependent or field independent. According to Witkin *et al.* (1977, p. 8), ‘the individual, who, in perception, cannot keep an item separate from the surrounding field – in other words, who is relatively field dependent – is likely to have difficulty with that class of problems...where the solution depends on taking some critical element out of the context in which it is presented and restructuring the problem material so that the item is now used in a different context’. That dimension constitutes also a cognitive component of psychological differentiation.

The holistic – serialistic cognitive style was examined by Pask (1976). Holists tend to attempt to understand the overall principles and will develop and test multiple hypotheses at one time. By contrasts, serialists, or operation learners, proceeds with one hypothesis at a time and tend not to think about a larger global view of the problem. The holist – serialistic dimension of a cognitive style is congruent with the dimension called abstract – concrete (Goldstein & Scheerer, 1941) determining preferences concerning the generality level of used cognitive categories (visualizers *versus* verbalizers). Similar to the holist – serialists distinction is also Marton and Säljö’s deep-level/surface-level cognitive style research (Marton & Säljö, 1976). Deep-level processors, like holists, tend to quickly grasp the overall concepts and are rather intrinsically motivated, yet they might sometimes miss the details (globetrotting). Likewise, surface-level processors, like serialists, are concentrated on the details, require extrinsic motivation, and might sometimes miss the global view of a problem (improvidence).

Obviously, there are some inconsistencies present in the scholars’ debates on cognitive styles research that have not been taken into account in above considerations, for instance, the associations between particular cognitive styles’ dimensions and intelligence (i.e. Ridding & Cheema, 1991), either personality, or the connections between cognitive styles and learning styles or strategies (i.e. Entwistle, 1981; Roberts & Newton, 2000), however, those issues do not constitute direct interest of the paper.

Cognitive psychology and behavioural strategies – forwarding the debate

The literature review implies a brief discussion concerning how mental processes, systems, models, and their representations influenced by heuristics and cognitive biases as well as cognitive styles might relate to behavioural strategies concept. Mental systems and processes (perception processes, intuition, and reasoning) influence the employment of mental models and mental processes representations. On the other hand, cognitive and mental mechanisms and systems are under impact of cognitive limitations that lead to various heuristics and those, then, to particular biases. Those processes, mechanisms, and representations determine the type and character of cognitive styles usually implemented by individuals in a particular context. In recognition of those facts, it is proposed to elicit how cognitive psychology phenomena described might be associated with behavioural strategies understood, in general, as managerial attitude/behaviour invading formal strategies in the enterprise. Hence, the following presumptions have been made:

Presumption 1: Mental systems and processes influence mental models and mental processes representations.

Presumption 2: Cognitive limitations affect cognitive and mental processes, models and their representations as well as create heuristics leading to biases.

Presumption 3: Mental systems, processes, models, their representations have direct or indirect impact on cognitive styles.

Presumption 4: Cognitive styles influence the character of behavioural strategies.

Those four presumptions deductively lead to the following conceptual proposals:

Proposal 1: Envisaging that a behavioural strategy in terms of managerial particular attitudes/behaviour under uncertainty constitutes an independent variable in the potential research framework, mental and cognitive processes, systems, models and their representations might constitute a dependent variable.

Proposal 2: Envisaging that a behavioural strategy in terms of managerial particular attitudes/behaviour under uncertainty constitutes an independent variable in the potential research framework as well as that mental and cognitive processes, systems, models and their representations constitute a dependent variable, heuristics and biases could be insinuated as potential mediators.

Proposal 3: Envisaging that a behavioural strategy in terms of managerial particular attitudes/behaviour under uncertainty constitutes an independent variable in the potential research framework as well as that mental and cognitive processes, systems, models and their representations constitute a dependent variable, cognitive styles might be encompassed as potential moderators.

The potential associations between cognitive styles and behavioural strategies are presented in the table 1.

Table 1. Cognitive styles and behavioural strategies.

Dimensions	Cognitive style	Individual contextual (managerial) attitude/behaviour
Reflection - Impulsivity	Reflective	Convergent, intolerant to cognitive risk, systemic, controllability, preferring strong reinforcement – even deferred in time
	Impulsive	Divergent, tolerant to cognitive risk, preferring fast reinforcement, not systemic
Field dependence – Independence	Field dependent	Subordinate, cooperative, global, conformity
	Field independent	Selective, analytical, anti/non-conformity
Holist – Serialist (abstract – concrete)	Abstract	Complex, ambiguous, flexibility, independence
	Concrete	Simple, unambiguous, inflexibility, dependence
Deep-level/Surface - level processing	Deep processing	Complex, ambiguous
	Surface processing	Simple, unambiguous

Bipolar dimensions of cognitive styles and their characteristics involve particular contextual type of the individual attitude/behaviour – a behavioural strategy. Undoubtedly, it merits further exploration and requires deepened studies in that field. Summarizing, these implicitly delineated important potential *explanans* of behavioural strategies ought to be untangled in the further research.

Conclusion

The paper content proceeds from the behavioural strategy concept in strategic management and cognitive psychology phenomena as well as constitutes the prolegomena on theoretical underpinnings in terms of cognitive psychology as the background of behavioural strategies. The exploratory literature studies have examined and unveiled some cognitive psychology phenomena that might influence a behavioural strategy.

Referring to the conceptual research questions revealed in the paper, the following ascertainment have been made.

Ascertainment 1. Cognitive psychology's phenomena influence a behavioural strategy phenomenon.

Ascertainment 2. The cognitive psychology phenomena, by those managers are affected, like mental processes, systems, models, their representations, heuristics, biases, cognitive styles, etc. might constitute the antecedents of selected managers' attitudes/behaviour that influence managers' decisions.

It is worth being alluded that the cognitive psychology methodology gives the methodological directions for researching behavioural strategies in terms of combining quantitative methods and qualitative ones and could be partially incorporated into examining behavioural strategies. Nonetheless, there is a challenge to scrutinize and operationalize all dimensions and variables.

There are limitations of combining cognitive psychology and behavioural strategies since it is difficult to distinguish between *stricte* behavioural and more 'rational' explanations. Finally, there is a problem in attempting to incorporate models of irrational behaviour into general deductivist framework, however, researching behavioural strategies in the context of, inter alia, cognitive psychology might contribute to the development of the emerging field in strategic management dubbed – a behavioural strategy.

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