

Unfolding irrationality: how do meaningful coincidences influence management decisions?

Unfolding
irrationality

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Abstract

Purpose – This study aims to answer the following research question: “How do meaningful coincidences influence management decisions?” This question has gained relevance mainly because of the increasing attention of scholars in explaining the irrational pressures that shape management decisions, which should be inevitably taken into account to discover the causative factors of firms’ performances.

Design/methodology/approach – A multiparadigm approach to theory building has been adopted, known as “metatriangulation.” This study consisted of exploring the interplay between the synchronicity concept of Jung and cognitive studies. As a result, this work proposes a conceptual framework that refers to both sensemaking and cognitive decision-making literature.

Findings – The framework proposes that the perceived certainty (or not) about the potential outcome for the well-being, coming from the occurrence of meaningful coincidences, elicits a set of positive (or negative) affective states. These states activate a series of cognitive errors that drive the assignment of a symbolic content to the coincidences, bringing different risk-oriented management decisions.

Research limitations/implications – The provided model is purely conceptual and based on the current pool of knowledge available. As much as empirical evidence will be produced, this model may need revision. This framework proposes the interpretation of meaningful coincidences not only as the output of a number of information processing biases, but also as inputs, through the elicited affect heuristic, for the occurrence of other cognitive errors that drive management decisions.

Practical implications – The explained influence of irrational forces on management decisions, also considering luck and chance, can be fruitful to avoid these behaviors or to intentionally adopt them in selected cases, e.g. when looking for attractive unexploited opportunities within markets.

Originality/value – To the best of the author’s knowledge, this is the first work that attempts to unveil the impact of meaningful coincidences and, more in general, of irrational forces on management decisions. Moreover, the provided framework explains how superstitious events are sometimes looked for to guide decision-making.

Keywords Decision-making, Cognition, Sensemaking, Irrationality, Behavioral strategy, Coincidences

Paper type Conceptual paper

1. Introduction

In the middle of the 20th century, Herbert [Simon \(1947\)](#) disrupted the perfect rationality concept of classical and neoclassical economists ([Walras, 1883](#)) and introduced one that has been massively used in behavioral decision research ([Kahneman and Tversky, 1972, 1979](#)): *bounded rationality*. Humans have incompleteness of information, difficulty in anticipating the consequences of future actions and scarce knowledge of all possible behaviors, and these do not let individuals maximize their own expected utility when making decisions. Within the past 70 years, however, several scientific discoveries on human behavior – such as the



influence on cognition of emotions (Lazarus, 2006; Lerner and Keltner, 2000; Lerner *et al.*, 2013) and luck (Liu and De Rond, 2016; Denrell *et al.*, 2019; Stenholm and Jiang, 2019), considered as irrational variables (Sripada and Stich, 2004), have emanated. One recent research has stated: “future research on human rationality in management should instead investigate the impact of irrational forces” (Cristofaro, 2017a, p. 182). These aforementioned discoveries have been supported and followed over the years by eminent behavioral scholars (see also the works on irrational behavioral decisions of Ariely, 2008, 2010), who advanced the idea that irrational behavior is the standard answer when making decisions. To give an example, when *The New York Times* asked Richard Thaler – the behavioral economist and father of the nudge theory – how he would spend the money he won for the Economics Nobel prize in 2017, Thaler answered: “This is quite a funny question. I will try to spend it as irrationally as possible” (NYT, 2017).

Among the recent advancements made for understanding irrational behavior in management research and practice, some authors have tried investing the influencing perception of chance (i.e. randomness; Starbuck, 1994) and luck (self-attribution of random events; Darke and Freedman, 1997; Friedland, 1998; Liu and De Rond, 2016). However, another phenomenon that has gained academic and practical relevance in the past 60 years (Durant, 2002; Hocoy, 2012) that has not ever been investigated in behavioral decision theories in management is *meaningful coincidences*, meaning the “surprising concurrence of events, perceived as meaningfully related, with no apparent causal connection” (Diaconis and Mosteller, 1989, p. 853). These are random events (i.e. not intentionally looked for) that happen frequently (some studies estimated that 22%–84% of the population reported experiencing synchronicity at least once; Fach *et al.*, 2013) and assume meaning for individuals who usually are not adept in object reasoning about probability (Dagnall *et al.*, 2007) and/or *want* to assign relevance, because they are emotionally attached to them (Hand, 2014). In sum, these random events are different from luck and chance because they do not consider the concurrence of unrelated events to which symbolic content is assigned and require an emotional attachment. Hence, the question at the center of this work is: “*How do meaningful coincidences influence management decisions?*”; i.e. choices that occur at low-, middle- and top-management levels (Koontz *et al.*, 1980). For example, how do the contemporary announcement of a government to fund new technologies and a company wanting to raise capital from its investors influence the subsequent management decisions of the company?

Addressing this lively question is as relevant as investigating luck and chance, because meaningful coincidences alter the courses of lives (Brown, 1980) and are at the basis of several scientific discoveries (Griffiths and Tenenbaum, 2007) and foundations of enterprises (Görling and Rehn, 2008) – principally because of the fact that individuals sometimes rely on them to make important decisions (including business decisions) (Govier, 2003; Beitman, 2016). Indeed, meaningful coincidences are at the basis of the superstitious attitude of humans (Jung, 1952), which has been already found by Tsang (2004), through the empirical investigation of 199 Chinese companies, to hugely influence management decisions. However, this and other works dealing with the role of superstition in decision-making processes (Lepori, 2009; Poorsoltan, 2012) have never identified *how* the symbolic interpretation of an event and the emotional attachment to it practically influences management decisions.

Following similar works (Abatecola, 2014; Cristofaro, 2020), a multiparadigm approach to theory building has been adopted, known as “metatriangulation” (Lewis and Grimes, 1999). This study consisted of exploring the interplay between the *synchronicity* concept of Jung (1952) – who first tried building a theoretical framework for understanding the sense

made around meaningful coincidences (also called *synchronistic events*; they are synonymous) – and cognitive studies – that are mainly responsible, in management research, for the description of how decisions are made, often recurring to cognitive errors (Kahneman and Tversky, 1972, 1979; Abatecola *et al.*, 2018). As a result, this work proposes a conceptual framework that refers to both sensemaking and cognitive decision-making literature (Simon, 1947; Weick, 1979, 2005). The framework proposes that the perceived certainty (or not) about the potential outcome for the well-being, coming from the occurrence of meaningful coincidences, elicits a set of positive (or negative) affective states. These states activate a series of cognitive errors that drive the assignment of a symbolic content to the coincidences, bringing different risk-oriented management decisions.

Although studying meaningful coincidences and their impact on management decisions can be considered as an odd topic far from the conception of science, the demonstrated heavy impact of this and related irrational phenomena on firms' decisions and consequent performances (Tsang, 2004; Liu and De Rond, 2016), such as corporate spirituality (Vasconcelos, 2018, 2020 – *International Journal of Organizational Analysis*), underline that not considering them undermines a complete understanding of managerial decision-making and firms' performance. Indeed, several important decisions within organizations regarded as “irrational” strongly influence its outcomes (Brunsson, 1982); for example, the decision by the Kennedy administration to start the invasion in the Bay of Pigs, which was found to be based on poor rational analysis (Janis, 1972). Investigating the influence of meaningful coincidences on management decisions means, therefore, shedding light within the debate of the “causal ambiguity” phenomenon, the condition under which neither the firm nor its rivals can determine the causes of firm performance. Indeed, despite causal ambiguity, literature shows that some contextual (the elicitations of affective states) and personal factors (self-efficacy) demonstrated an increase in ambiguity of a firm's performance (Mosakowski, 1997; Powell *et al.*, 2006). Studying the superstitious learning resulting from decision-makers' misspecifications of causal linkages is a most important line of research to shed light on causal ambiguity (McGrath, 2011; Konlechner and Ambrosini, 2019).

The structure of this paper is as follows. First, the adopted methodology for theory building is shown; then, the phenomenon subject to be interpreted is defined (i.e. meaningful coincidences) through conflicting or complementary paradigms. Subsequently, creative leaps that transcend paradigm dualism are formed to propose a conceptual framework that explains how meaningful coincidences impact management decisions. Finally, discussion and conclusions, together with implications for future research and practice, are reported. Before starting this journey, it is worth noting that the explorative nature of this work – stemming from the fact it is the first time meaningful coincidences are treated in relation to management decisions – leads the proposed framework to be associated with the initial explanation of human behavior in general when facing synchronicity events. From this, it is then proposed to create a link, also referring to some practical examples, with management decisions.

2. Method

Because of the lack of prior theorization on how meaningful coincidences can impact management decisions, the related stream of research for this work (comprehensive of studies on the role of luck and chances) can be considered as “nascent.” Nascent streams, indeed, include “topics have attracted little research or formal theorizing to date, or else they represent new phenomena in the world” – as postulated by the highly cited work of Edmondson and McManus (2007, p. 1161). Works within these streams are based on research questions – in this case “*How do meaningful coincidences influence management decisions?*” – based on theory development and aimed at:

[...] understanding how a process unfolds, developing insight about a novel or unusual phenomenon. [Because of that], the essential nature of the contribution of this type of work is providing a *suggestive theory* [emphasis added] of the phenomenon that forms a basis for further inquiry (Edmondson and McManus, 2007, pp. 1162-1163).

According to these scholars, therefore, the method that fits the stage of development of the stream and the research question must be qualitative, like pure theory building.

In this vein, stemming from the fact that sensemaking and cognitive studies are streams of research belonging to different paradigms – “contextualist” for sensemaking and “reductionist” for cognitive studies (Powell *et al.*, 2011) – the multiparadigm approach has been used. This is called “metatriangulation” that builds a theory able to, by reconnecting these two streams, explaining the impact of the irrationality phenomenon of meaningful coincidences on management decisions. This approach (explained later) is needed because of the fact that only through the connection of these two streams and paradigms is it possible to entirely explain how individuals perceive the choice environment and how the consequent decision has been made – as recently advanced and proved by behavioral strategy scholars who already tried to reconnect sensemaking and cognitive studies to explain management decisions (Cristofaro, 2020). In this regard, it is worth noticing that the identified division of sensemaking and cognitive studies as belonging to different paradigms is not something to be regarded as “apparent,” and thus derived by the investigation of the approaches used and research foci. On the contrary, this division is really deep as it has been fostered by the founders of (at least) one of the two sides. Indeed, it was Weick (1995), who refused to include cognitive studies in his works, originally stating that:

[...] from the standpoint of sensemaking, it is less productive to follow the lead of behavioral decision theorists (e.g., Kahnemann, Tversky, Thaler) who gloat over the errors, misperceptions, and irrationalities of humans, and more productive to look at the filters people invoke, why they invoke them, and what those filters include and exclude (p. 57).

With regard to the “metatriangulation” approach for theory building, it:

[...] requires applying – with fidelity – multiple paradigms to explore their disparity and interplay and, thereby, arrive at an enlarged and enlightened understanding of the phenomena of interest, as well as the paradigms employed” (Lewis and Grimes, 1999, p. 676).

In other words, it helps to discover patterns that span conflicting understandings and proffer partial truths by offering a theoretical platform that links these contrasting or complementary representations (Gioia and Pitre, 1990). The adoption of this approach not only fits the aim of the paper, but it has also been regarded as pivotal for theorizing on issues on cognition (Schultz and Hatch, 1996).

In particular, this approach, according to Lewis and Grimes (1999), requires the following phases to be carried out:

- groundwork, thus defining the phenomenon subject to be interpreted by conflicting or complementary paradigms and understanding their basic assumptions (done within the following theoretical background);
- paradigm analysis, thus planning an itinerary for analyzing the conflicting or complementary paradigms – in this case, the first is sensemaking and the second is cognitive studies, following the perception–cognition of the choice environment rationale (Simon, 1947); and
- theory building, thus making creative leaps by transcending paradigm dualism, with the result of providing some assertions regarding the phenomenon of interest (as is shown in Section 4).

3. Groundwork and theoretical premises on cognitive studies

3.1 Synchronicity: interpreting meaningful coincidences

Jung (1952), with his *synchronicity* phenomenon, was the first to try to develop a concept able to explain why connections among surrounding things/events are subjectively made, deepening on the unconscious side of humans while making sense. In his words, synchronicity means “coincidence in time of two or more causally unrelated events which have the same or a similar meaning” (p. 25), underlining that these events refer to external events connected to a psychical state of whoever is experiencing them (Frentz, 2011); this is “in contrast to “synchronism,” which simply means the simultaneous occurrence of two events” (p. 25). According to Jung (1952), the link between the physical world and individuals’ consciousness can be seen in the existence of *meaningful coincidences* – so, events not linked by a cause – effect principle, and that are at the basis of *superstitious beliefs* (Main, 2014). In this vein, Griffiths and Tenenbaum (2007) argue that “a coincidence is an event that provides support for an alternative [possibly paranormal] to a current theory, but not enough support to convince us to accept that alternative” (p. 10).

In Jung’s view, besides the cause–effect principle, an *acausal connection* principle exists that is able to explain unrelated events. This principle, later developed by other psychologists (Hopcke, 1998; Brooks, 2015; Johansen and Osman, 2015, 2020), is based on four properties:

- (1) the concurrence of two or more *casually unrelated events*;
- (2) *a deep emotional experience*, i.e. the occurrence of a strong affective state contemporarily to the event. Synchronistic events, therefore, have a meaningful significance because of the subjective meaning of who is experiencing them (Hopcke, 1998; Griffiths and Tenenbaum, 2007). This property has also been defined as *numinosity*, i.e. the feeling humans experience when they perceive to be in the presence of something that transcends human limits (Jung, 1952). In other words, the physical energy is evoked by the synchronistic experience, which allows the individual to perceive a strong emotive sensation;
- (3) the *symbolic content* of the synchronistic experience. In other words, the same events can be full of meaning for one person but not for another, for whom the event is irrelevant; and
- (4) synchronistic events occur (usually but not mandatorily) during *life changes* of people that are experiencing the event. In these periods, individuals feel the need to change, and experiencing a synchronistic event lets them make a decision and proceed with their lives.

Therefore, synchronistic events can be conceived as occasions in which individuals start a sensemaking activity. The sensemaking activity (Weick, 2005) occurs when a trigger event/life change happens in individual/group/organizational life (e.g. an apparent firm’s financial crises), creating a chaotic situation (e.g. employees are not sure of being paid and organizational harmony is undermined), and it finishes when order is restored (e.g. managers indicate to employees that the apparent financial crises were only because of a temporary, but not pathologic, negative cash flow that will be easily restored), and all the subsequent events confirm the prior assumptions (Weick, 1979). Trying to find a connection between the psyche and the outer world is an application of the sensemaking activity, because it conceives understanding the events that surround the individual, who actively tries to make sense of them and find some order. An example of *synchronistic events* is given by Jung (1952) from his own observation:

A young woman I was treating had, at a critical moment, a dream in which she was given a golden scarab. While she was telling me this dream I sat with my back to the closed window. Suddenly I heard a noise behind me, like a gentle tapping. I turned round and saw a flying insect knocking against the window-pane from outside. I opened the window and caught the creature in the air as it flew in. It was the nearest analogy to a golden scarab that one finds in our latitudes, a scarabaeid beetle, the common rose-chaffer (*Cetonia aurata*), which contrary to its usual habits had evidently felt an urge to get into a dark room at this particular moment. I must admit that nothing like it ever happened to me before or since, and that the dream of the patient has remained unique in my experience (p. 22).

Another classical example of meaningful coincidences comes from research material, i.e. personal diaries, used for the investigation of meaningful coincidences by [Johansen and Osman \(2020\)](#):

[...] having been discussing the unlikelihood of bumping into a certain person that I have not seen for ages around campus; then, bumping into him/her on several occasions later that day (p. 6).

Yet, another example comes from the phenomenology study by [Russo-Netzer and Ickson \(2020\)](#) and is reported as follows:

One of my sons met a young lady from a foreign country, a special young lady. Following a few encounters here, he travelled to visit her in her country. It was serious between them. On the day he was supposed to return home, while I was sitting in my kitchen having breakfast, reflecting on their relationship and wondering whether it will lead to a wedding, right at that very moment I hear the radio broadcaster say “nothing will come of it”. I was shocked. I was stunned. The answer was clear and unequivocal. I knew that the story would end with no wedding. Indeed that’s what happened (p. 6).

From the reported examples, it can be derived that whoever experiences synchronistic events finds meaningful connections among unrelated things that others cannot identify; this leads to the building of a different order of things, a different reality from others that can drive further important decisions ([Jung, 1952](#)). The *belief* in their power of suggesting, somehow, a decision path takes the name of superstition ([Jung, 1952](#); [Tsang, 2004](#)), and this is what divides synchronistic events between those that have no effects on human behavior and those that do have an impact. From this, it seems that some individuals are more likely to believe in the directing power of meaningful coincidences; in this vein, some scholars ([Coleman and Beitman, 2009](#); [Beitman, 2011](#)) demonstrated that individuals that own self-referential thinking, faith in intuition and search for meaning are more inclined to spot meaningful coincidences.

However, there is another school of thought on meaningful coincidences that is less linked to the superstitious and unconscious interpretation of them, and that proposes those as an intentional cognitive strategy that individuals can use to make sense of events that appear to lack causality. In brief, [Johansen and Osman \(2015\)](#), through their pure psychological conceptual framework, state that coincidences are something that is rationally processed by the human mind with the latter able to calculate the “joint probability” of the chance events behind their occurrence.

So, this latter view allows meaningful coincidences to appear to be close to chance events – when they are not the same. To understand the difference, an example of a pure chance event can be found in the early success attained by Microsoft. As reported by [Wallace and Erickson \(1992\)](#), during the 80s, IBM was negotiating the supply of an operating system with the company Digital Research; however, despite the potential big deal for both, negotiations became stuck because of misunderstandings on the non-disclosure agreement. In the same months, Bill Gates bought Seattle Computer Products,

then a supplier of IBM, for \$50,000. Because of the problems experienced by IBM with Digital Research, the former asked Gates to produce an operating system similar to that provided by Digital Research, leaving the possibility for Microsoft (still not formally founded) to provide the same software to other PC producers. However, because of the potential legal issues raised by Digital Research to IBM, the latter offered the possibility for users to buy the Digital Research operating system (for \$240) or the Microsoft one (for \$40). Gates commented on these events, saying:

Our timing in setting up the first software company aimed at personal computers was essential to our success [...]. The timing wasn't entirely luck, but without great luck it wouldn't have happened (cited in [Mauboussin, 2012](#), p. 13).

The highlighted psychological view for interpreting meaningful coincidences, close to the one used for pure chance events, to which the previous example is referred, has the main pitfall of not taking into account the emotional side of interpreting meaningful coincidences – and is considered as pivotal for distinguishing it from pure chance events ([Jung, 1952](#); [Brooks, 2015](#)). This reported drawback is not present in another recent psychological conceptual framework, provided by [Russo-Netzer and Ickson \(2020\)](#), for which meaningful coincidences are processed according to the following schema:

- The individual is receptive or she/he has increased her/his attention and openness to feelings and cognitions.
- Two not causal-connected events are spotted and evoke, within the individual, memorable and distinctive emotions.
- Finally, the individual activates a conscious process of meaning detection to be able to connect the event to oneself to establish a sense of life control.

This view, anchored in [Jung's \(1952\)](#) classic example, is the adopted standpoint for this work.

3.2 Theoretical premises on cognitive studies: decision-making deceptions and dual mind processing

According to [Simon \(1947\)](#), the interpretation of reality is subjective and strongly biased; the effects of these distortions on decision-making were undertaken initially by [Kahneman and Tversky \(1972, 1979\)](#). Through a series of laboratory experiments, they formalized the existence of a set of heuristics in humans, namely, cognitive shortcuts that affect decision-making processes. According to them, decision-makers use “rules of thumb” to help them make complex judgments, which are conceived as driven by subjective probability – such as proposing a new product that has the same characteristics as an old one that amassed huge appreciation by customers in the past ([Cristofaro, 2017b](#)). However, these heuristics were originally assumed to work only in some tasks operated by our mind. [Kahneman \(2003\)](#) – main theorist of the so-called *dual-process theory* – defined human cognitive functioning as occurring in two different systems of our mind: System 1, devoted to operating mental processes that are spontaneous, fast and automatic, and System 2 devoted to operating mental processes that are “consciously monitored and deliberately controlled” ([Kahneman, 2003](#), p. 698). From this interpretation, System 1 is the first and most to be activated during our daily activities, so we rely on heuristics for the majority of our mental processes, and it is responsible for the instinctive and emotional answer in decision-making.

Regarding the mental functioning of our mind, besides the *default-interventionist* accounts of dual-process theory – the so-called “cold” cognition – that claims a non-concurrent operation of Systems 1 and 2 ([Kahneman, 2003](#)), there is another viewpoint, i.e.

the *parallel-competitive* alternatives approach (Hodgkinson and Sadler-Smith, 2018). In particular, the latter advances that Systems 1 and 2 processes can, “under most circumstances” (Pacini and Epstein, 1999, p. 972), operate in parallel – the so-called “hot” cognition (Kret and Bocanegra, 2016). In this approach, fast reasoning and rational judgment do not operate in silos according to the proposed task, but may concur in forming choices (Evans, 2008). This is well explained by the “Interactive Influence Model of Emotion and Cognition” of Luo and Yu (2015), who postulated – supported by behavioral studies and neuroimaging research – that emotion transcends cognition (meant as the acts of System 2) to affect decision-making by reducing cognitive capacity and enhancing emotional response, and this usually happens in cases where information is incomplete, there is a limited time to act and self-regulation is impaired. On the contrary, when decision-makers have the ability to self-regulate her/his emotions, cognition overwhelms emotion to influence decision-making (see also Cristofaro, 2019). In other words, emotion and reason cooperate to shape our decision-making.

Added to such heuristics – either considered in a positive or negative way and apart from the mental functioning standpoint from which they are approached – are a series of decision traps (Hammond *et al.*, 1998), namely, cognitive deviations from rationality that always harmfully influence decisions and impact the evolution of organizations (Grewatsch and Kleindienst, 2018). Some of the most studied cognitive biases (explained within the proposed framework) are as follows: availability heuristic, representativeness heuristic, confirmation bias, bounded awareness bias, risk-aversion bias, framing bias and affect heuristic (Abatecola *et al.*, 2018). The connections among these biases have been depicted in the recent *co-evolving diamond* of heuristics and biases by Abatecola *et al.* (2018), according to which, cognitive errors are “internally generated,” i.e. the manifestation of one of them is caused by the occurrence of another/others, which reinforce each other. This has been supported also by AlKhars *et al.* (2019) who found, when proposing different operations management scenarios to graduate students, that >50% of the respondents fall into six biases (e.g. insensitivity to predictability; for example, a company with a positive description is usually thought to have a higher profit compared with a company with a less positive description), all originating from the representativeness heuristic (used to solve problems such as “what is the probability that item A belongs to category B?”).

In particular, within the proposed framework, the driving, important bias is the affect heuristic: feelings activate the occurrence of other biases. In this vein, for example, it was found by Luo and Subrahmanyam (2019) that stockholders are affectively biased in their decision when buying stocks with the consequence of leading to another bias, the so-called halo effect bias, in the same way that users of Apple products have a positive affect toward Apple stock because of a favorable inclination toward its products. However, the work of Abatecola *et al.* (2018) – useful for the development of the cognitive side of the following framework – does not take into account how the initial perception of decision-makers occurred, thus the sensemaking activity (Weick, 2005). From that, the metatriangulation between sensemaking and decision-making studies is necessary to understand how meaningful coincidences impact management decisions.

4. Theory building: biasing meaningful coincidences

To better understand the influence of meaningful coincidences on management decisions, a conceptual framework has been built based on Jung’s (1952) synchronicity principle and cognitive management literature.

First, two causally unrelated meaningful coincidences are spotted by an individual; for example, one day a production plant manager (PPM) notices that the multinational company

in which she/he works – that is experiencing poor financial performance – is looking for a global Chief Operations Officer (COO), and the same day she/he receives the latest report of her/his individual performance showing above average performance with respect to her/his past performance. This is in line with the sensemaking literature, which says that sensemaking starts when “discrepant events, or surprises, trigger a need for explanation” (Louis, 1980, p. 241); “such occurrences, when noticed, interrupt people’s ongoing flow, disrupting their understanding of the world and creating uncertainty about how to act” (Maitlis and Christianson, 2014, p. 70; see also Weick, 2005). Perceiving acausal connections between two unrelated events leave the human reflecting on what is going on (Hopcke, 1998); in these terms, meaningful coincidences work as a *trigger* for the sensemaking activity of the decision-maker. This is in line with the assumption of humanistic theories for which people, to flourish, need to believe that their lives are meaningful and that the things they do are significant (Martela and Steger, 2016); from that, they activate their sensemaking when experiencing something that has a strong meaning for them. In these cases, the decision-maker tries to make sense of perceived meaningful coincidences, thinking: Do I care about what is happening? Is it good or bad for me? The facts faced by individuals are considered or not according to the person’s level of belief in synchronistic events and then appraised in terms of their implications for well-being. So, when confronted with a threat to their belief of being in control over situations, individuals tend to identify patterns (Whitson and Galinsky, 2008). If the decision-maker tends to look for a causality explanation and does not believe at all in acausal principles, then she/he will not follow this path but tries to apply a cause – effect rational reasoning (Johansen and Osman, 2015). On the contrary, if the decision-maker believes in the concurrence of events, the first appraisal – as reported by the business literature investigating the role of superstitious attitudes in management decision-making (Tsang, 2004; Lepori, 2009; Poorsoltan, 2012) – is done in terms of the clarifying power of the synchronistic events. The highlighted appraisal is conducted in terms of a lower or higher degree of uncertainty about the potential outcome for the well-being (A) once the synchronistic events are verified. This has been supported also by the study of Rothausen *et al.* (2017) which, through the thematic analysis of 59 informants’ interviews, found that when informants perceived a threat from jobs, the first element spotted for assessing these events was the consequences for the personal well-being across different domains of their life.

The elicited degree of uncertainty from the assessment of the situation toward the well-being leads, almost contemporarily, to the emergence of an affective state (B) (Jung, 1952; Smith *et al.*, 1993; Lazarus, 2006) whose valence depends on the degree of uncertainty

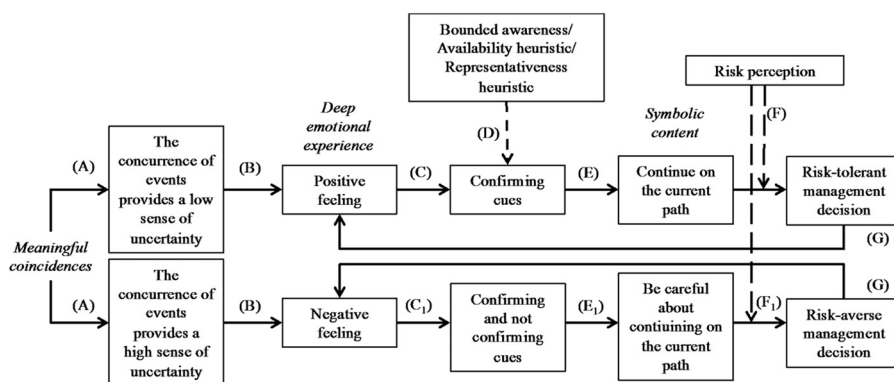


Figure 1.
The influence of
meaningful
coincidences on
management
decisions

perceived from the synchronistic events taking place. This has been empirically proved by the study of [Bar-Anan et al. \(2009\)](#) who found, through a series of four studies involving a total of 194 respondents that were asked about their feelings and uncertainty while looking at some film clips, that the lower/higher the sense of uncertainty coming from the clips, the greater positive/negative affective states felt. In sum, meaningful coincidences are interpreted here as a trigger for individual sensemaking, which elicits a degree of certainty and a related affective state that, cognitively, orients the collection and interpretation of information for decision-making activities. This interpretation is in line with the appraisal/emotion theory ([Lerner and Keltner, 2000](#); [Scherer and Moors, 2019](#)) and the affect-as-information model ([Greifeneder et al., 2011](#)) that advance the driving function of feelings in interpreting information and that underline the intrinsic attachment of affective states to the lived experience. This is even more true, according to [Fiedler \(1991\)](#), when the judgmental domain is unstructured, novel or ambiguous (i.e. *malleable*), as in the case of perceiving meaningful coincidences, which require construction of judgment.

The *emotional experience*, therefore, takes place as a consequence of the appraisal of meaningful coincidences, but its valence depends on the affective state attributed or attached to the objects underlying the synchronistic events ([Greifeneder et al., 2011](#)). However, in synchronistic events, the function of affective states is greater than in standard circumstances, because they *substantiate the meaningfulness of unrelated events* ([Hopcke, 1998](#); [Russo-Netzer and Ickson, 2020](#)); indeed, without an emotional link, meaningful coincidences would not be considered by the individual ([Jung, 1952](#)). In theorizing the different influences of affective states while making sense of circumstances, [Epstein \(1994\)](#) stated that stimuli of a judgment process activate feelings that “are pleasant, they motivate actions and thoughts anticipated to reproduce the feelings. If the feelings are unpleasant, they motivate actions and thoughts anticipated to avoid the feelings” (p. 716) (see also [Bar-Anan et al., 2009](#)). From this, it can be derived that feeling positive affective states, when facing meaningful coincidences, leads to collecting confirming cues to replicate, through the decision to be made, the same affective state in the future (C). Following this conceptualization, [Maitlis et al. \(2013\)](#) similarly asserted that when negative emotions are aroused while making sense of a situation, decision-makers feel pushed to search for meaning ([Tversky and Kahneman, 1973](#)). This searching is directed toward collecting either confirming or disconfirming cues to find the most plausible account for the situations (C₁), to avoid similar negative affective states in the future ([Kirkeboen and Nordbye, 2017](#)). In this vein, [Tiedens and Linton \(2001\)](#), in a study involving 498 individuals investigating whether emotions create appraisal-congruent judgments, found that certainty appraisals promote heuristic processing – such as relying on the expertise of a source of a persuasive message for their own cognitive processing – whereas emotions characterized by uncertainty appraisals result in systematic processing. Following the proposed example, the PPM may feel a positive/negative affective state (because of the hope of escalating within the hierarchy/worry of huge responsibility) leading her/him to collect cues that are geared to confirm/better investigate whether to be the potential candidate for the COO position.

From the aforementioned, when decision-makers perceive positive feelings (e.g. excitement) as a reaction to meaningful coincidences, they avoid disconfirming pieces of information and select all subsequent ones to confirm prior assumptions; decision-makers are victims of a confirmation bias as an effect of bounded awareness ([Simon et al., 2000](#)). In other words, if meaningful coincidences appear, as well as positive emotions being felt, they are interpreted according to existing frameworks and categories elicited by the bounded awareness, trying not to deviate from the established thought. This increases the overconfidence of the decision-makers to rely more on their own cognitive abilities, thus on

mental schemas and related shortcuts (Cristofaro, 2020). Indeed, on these occasions, all the pieces of information are embedded into established categories (i.e. representativeness heuristic) reinforcing prior assumptions that rely on the same available information (i.e. availability heuristic) (Abatecola *et al.*, 2018) (D). This flow follows the appraisal tendency function of emotions in judgment; indeed, as reported by Lerner and Keltner (2000, p. 477), “each emotion activates a cognitive predisposition to appraise future events in line with the central-appraisal dimensions that triggered the emotion”; on this point, see also the recent review by Scherer and Moors (2019).

The favorable framing of a choice situation (because of the increased confirming cues) negatively affects the risk perception of decision-makers, eliciting a sense of certainty (Cristofaro, 2020). In this case, the decision-maker, because of collecting confirming cues, feels in control of the meaningful randomness (Friedland, 1998) and assigns a positive symbolic content to the occurrence of the synchronistic events, that suggests continuing on the current path (E) (Pinger *et al.*, 2018). This has also been recently supported by the study of Chang and Luo (2019) who found, through the investigation of biases in auditing activities, that data visualization used when performing auditing activities interprets data favorably, leading auditors to the confirmation bias, and to be sure about their understanding of the accounting situation.

The process from (D) to (E) is in line with the view that affective states characterized by certainty appraisals promote heuristic processing (Tiedens and Linton, 2001; Lazarus, 2006). Referring back to the example, if the PPM feels a positive affective state because of the perception of meaningful coincidences, she/he starts collecting only the pieces of information (e.g. performance reports, subordinates’ opinions, etc.) oriented to verifying the high value of his/her competences (e.g. selecting only the confirming information).

Having cues confirmed repeatedly through their collection and having assigned a symbolic content toward continuing on the current path, the decision-maker naturally has a low risk perception, orienting toward risk-tolerant decisions (F) (Finucane *et al.*, 2000; Schlösser *et al.*, 2013). This is supported by the literature advancing that decision-makers with a positive feeling are risk-oriented (Liu and Maitlis, 2014; Steigenberger, 2015). An example can be found in the study of Cassell *et al.* (2019) who found, using archival evidence, that auditors with previous experience with clients, whom had a prior successful history (in auditing terms), usually fall victim of confirmation bias, thus looking for evidences that can lead her/him to confirm the prior auditing judgment; thanks to the collection of evidences, the auditor lowers her/his level of perceived risk for the auditing activity. In the provided example of the PPM, the set of confirming evidence leads the PPM to perceive meaningful coincidences as a symbol of her/his predestination for the COO position. This would drive the PPM to continue working hard to find circumstances to show her/his capabilities – e.g. proposing an innovative project for the plant’s processes – to whoever makes the hiring decisions.

When the decision-maker in a negative affective state starts collecting confirming and disconfirming cues, the non-corroborating set of information leaves a sense of uncertainty (Cornelissen and Clarke, 2010), because he/she does not feel in control of the situation (Friedland, 1998; Abatecola *et al.*, 2018; Cristofaro, 2020). A negative symbolic content is assigned to the meaningful coincidences and perception of a sense of indecisiveness in continuing on the current path (D₁) (Marks, 1998). The highlighted relationship between the comprehensiveness of cues and the sense of indecisiveness has been proved also by Patalano *et al.* (2015). Through a series of behavioral experiments conducted on 193 individuals, the authors found that decision-makers who collect an increased number of choice option alternatives, disregarding confirmation of any preconceptions, without any

preconception, are concerned with the potential consequential loss and are doubtful about the decision path they are following. Then, the uncertainty appraisals emerging from systematic processing of cues lead to a high risk perception of circumstances and related risk-averse management decisions (E_1) (Darke and Freedman, 1997; Lerner and Keltner, 2000; Steigenberger, 2015). This has been found, for example, by Yang *et al.* (2019) who showed that the 348 rural households they contacted have the tendency to buy hazard insurance for reducing risk to adverse environmental change, such as mountain hazards, when they try assessing something that is unknown.

In sum, and in line with Abatecola *et al.* (2018), decision-makers' feelings determine the weight of outputs in risky decisions (i.e. affect heuristic). Managers who feel a negative affective state activate less risky firm strategies, whereas managers who feel a positive affective state initiate more risk-oriented strategies. This is in accordance with prior results, strongly suggesting a direct connection between negative affective states and risk-averse orientation (Liu and Maitlis, 2014). Returning to the example of the PPM, feeling a negative affective state (because of the perception of meaningful coincidences) leads to collecting all the possible pieces of information, e.g. oriented toward investigating the decisions a COO has to make during daily activity and their potential consequences for current colleagues. The disconfirming pieces of information about the convenience or not of having COO responsibilities during a firm's period of economic problems bring uncertainty and assign a negative symbolic content to the meaningful coincidences, which suggest being cautious in what to do. Therefore, she/he will carefully consider whether to continue to work for the organization, because of the possibility of being appointed as COO during bad conditions, or change position. The production manager, in the meanwhile, will not be oriented toward leading new innovative projects but, in contrast, will deeply verify plant costs, for instance.

Whatever the affective state, at the end of the synchronistic sensemaking process, the decision-maker chooses which related feelings reinforce the initial emotional basis (F) (according to a self-reinforcing process; Cristofaro, 2019, 2020), with the consequence of forming a memory for the next sensemaking activity. According to the proposed example, the PPM who took the decision to advance an innovative project/verify plant costs will experience a connected positive/negative affective state that reinforces the emotional basis, and that will be automatically recalled when the next synchronistic events are encountered, despite not being connected or similar. This is also supported by Lerner and Keltner (2000), who state:

[...] an emotion's ability to focus cognition may be so strong that the emotion not only directs thoughts relevant to the initial emotion-eliciting event but also to unrelated events. For example, anger triggered in one situation automatically elicits blame cognitions in other situations (pp. 476–477).

5. Discussion and implications

This work has been aimed at answering the following research question: "How do meaningful coincidences influence management decisions?" This question has gained relevance mainly because of the increasing attention of scholars in explaining the irrational pressures that shape management decisions (Cristofaro, 2017a), which should be inevitably taken into account to discover the causative factors of firms' performances (Mosakowski, 1997). Because of the lack of prior theorization about how meaningful coincidences can impact management decisions, a multiparadigm approach to theory building has been adopted, known as "metatriangulation" (Lewis and Grimes, 1999), which methodologically fits with the investigation of nascent streams (Edmondson and McManus, 2007). In particular, in line with similar studies (Cristofaro, 2020), the different paradigms that have

been put into play for building a theory that is able to explain this phenomena are as follows: sensemaking (i.e. a “contextualist” paradigm; Powell *et al.*, 2011) through the focused consideration of the *synchronicity* concept of Jung (1952), and cognitive studies (i.e. a “reductionist” paradigm; see Powell *et al.*, 2011) with regard to the cognitive errors that the human mind suffers (Kahneman and Tversky, 1972, 1979; Kahneman *et al.*, 2011). In brief, the resultant theoretical framework postulates that the occurrence of meaningful coincidences (i.e. *synchronistic events*) initially pushes the decision-maker to assess their potential outcome for their well-being (e.g. Do I care about what is happening? Is it good or bad for me?); the high (low) degree of uncertainty emerging from this assessment elicits some positive (negative) affective states (Jung, 1952; Smith *et al.*, 1993; Lazarus, 2006; Bar-Anan *et al.*, 2009). The elicited positive (negative) emotional answer subsequently activates a series of cognitive errors that drive the assignment of a symbolic content, i.e. continuing (or not) on the current path (Patalano *et al.*, 2015; Chang and Luo, 2019), to the coincidences, bringing high (low) risk-oriented management decisions. The affective states perceived at the end of this process will reinforce, in a co-evolutionary way, the original affective base (Cristofaro, 2019).

The *first* contribution of this work to the literature, from what has been reported, lies in having proposed a theoretical framework that explains how meaningful coincidences influence management decisions. This proposition does not consider the perception of meaningful coincidences as a pure psychological experience (Johansen and Osman, 2020), but as a *physical and psychological experience*. This standpoint is anchored in both Jung’s (1952) classical and Russo-Netzer and Ickson’s (2020) conceptions of meaningful coincidences, for which coincidences are not interpreted by humans according to the law of joint probability of two chance events (De Rond and Thietart, 2007; Frank, 2016), but their interpretation depends on the belief on their directing power, the assigned symbolic content and the elicited emotional attachment to the co-occurrence of events. This interpretation can be advanced because, contrary to other frameworks that tried to explain meaningful coincidences (Johansen and Osman, 2015), it considered both the sensemaking and cognitive perspective – usually not bound together because of belonging to different paradigms. The perception of meaningful coincidences, therefore, is assumed to activate a sensorial and emotional answer that, in turn, has the inevitable consequence of cognitively looking for a causal structure in reality and acting accordingly. In brief, meaningful coincidences *per se* cannot affect reality, but it happens through the emerged affective states and activated cognitive interpretations that consequently influence management decisions. This is almost in line with some management and organization studies on luck, such as the retrospective investigation of Stenholm and Jiang (2019) who found that luck, for the successful 22 service and/or product entrepreneurs they interviewed, does not make anything happen, but is regarded as linked with their actions.

The potential of this first contribution to the literature can be greatly understood if conceiving meaningful coincidences are not only seen as something that *happens* in the life of individuals, but also as an attitude, thus events that are sought by decision-makers. This is called *intentional synchronicity* (Hopcke, 1998), thus paying attention to any synchronistic events to inform a decision for which an option has to find support or there are no options at all. A decision-maker who wants to find an insight for an ongoing management decision is pushed to look for meaningful coincidences that can inspire the judgment itself, such as searching for symbols (e.g. numbers) and consciously connecting them to the decision to be made, transforming it into an omen. This is in line and supported by De Rond and Thietart (2007) and by the recent work of Denrell *et al.* (2019), who theorized that strategists may benefit from focusing on unintuitive phenomena to take advantage of attractive unexploited

opportunities within markets. Thanks to the proposed framework, also the investigation of the superstitious phenomena in management and organization studies is advanced; indeed, a framework is provided to explain how superstitious events are sometimes looked for to guide decision-making (Lepori, 2009; Poorsoltan, 2012; Main, 2014).

The *second* contribution of this framework – connected to the first – lies in proposing the interpretation of meaningful coincidences not only as the output of a number of information processing biases – as postulated, for example, by Diaconis and Mosteller (1989) and Johansen and Osman (2015), but also as inputs, through the elicited affect heuristic, for the occurrence of other cognitive errors that drive management decisions. Apart from adding relevant support to the co-evolutionary interpretation of cognitive errors driven by the affect heuristic (Abatecola *et al.*, 2018), this advancement supports the view of the functioning of the human mind (Systems 1 and 2) as occurring through parallel processes, which may collaborate in forming choices (Evans, 2008; Luo and Yu, 2015; Kret and Bocanegra, 2016; Kirkeboen and Nordbye, 2017; Hodgkinson and Sadler-Smith, 2018). Indeed, affective states and cognition are framed here as collaborative forces whose interplay leads to the shape of management decisions – as also assumed by the recent Affect-Cognitive Theory (ACT) of management decisions (Cristofaro, 2020).

The *third* contribution of the proposed framework sheds light on the irrational variables that impact management decisions (Sripada and Stich, 2004; Cristofaro, 2017a). In particular, this is the first theoretical framework – to the best of the author's knowledge – in management and organization studies detailing how irrational forces, in this case meaningful coincidences, shape management decisions. This is pivotal in the management and organization scientific debate if considering that irrational behavior is considered, for some eminent scholars, as the standard answer when making decisions (Ariely, 2008, 2010; Thaler and Sunstein, 2008). So, this literature is massively advanced through the proposition of a framework that establishes, from the beginning to the end, how an irrational force impacts management choices, practically shedding light on the relationship between chance coincidences and strategic choice that was only intuited by De Rond and Thietart (2007). Yet, this work contributes also to causal ambiguity studies, a stream highly connected with the one on irrationality because of the fact that the debate on irrationality advances the discussion of how managers cognitively connect organizational inputs and outcomes. In this vein, prior studies on causal ambiguity (Mosakowski, 1997; Konlechner and Ambrosini, 2019) did not include irrational perceptions of managers as a complementary explanation of a firm's performance, but they provided limited evidence that some contextual (the elicitations of affective states) and personal factors (self-efficacy) increase the ambiguity of a firm's performance. In this regard, this work adds a well-detailed explanation of how causal ambiguity depends also on the belief in irrational (because of not being governed by a cause – effect principle) events and the symbolic meaning assigned to them.

Regarding the practical implications of this theory, the main one is having explained how meaningful coincidences can influence management decisions; this would help avoiding these behaviors or to intentionally adopt them in selected cases, e.g. when looking for attractive unexploited opportunities within markets (Denrell *et al.*, 2019). What can be done, in some way, to manage the impact of meaningful coincidences on management decisions, is to work on the “affective architecture” of the individual/group/firm (Cristofaro, 2019), thus their emotional composition and affective relationships; and the emanated cognitive errors. In the former, shifting from one decision-making path to another is, as proposed by the conceptual framework, a matter of experienced affective states. From that, the individual/group in charge of making management decisions should first be investigated (e.g. by using the Positive and Negative Affect Schedule questionnaire; Watson *et al.*, 1988) in terms of

their emotional composition; also studying of the emotional climate of the organizational context (in terms of affective states perceived when dealing with policies and culture) can be beneficial. After this analysis, the organizational context and composition of decisional teams should be oriented toward the main affective state that it wants to emerge to guide the risk of management decisions; this can be done using some emotional indirect suggestions that are able to influence decision-making, i.e. nudges (Thaler and Sunstein, 2008). Regarding emanated cognitive errors, decision-makers can benefit from focused training on biases; in this regard, the development of decision-making courses, within university management education or company training programs, that explain the influence of irrational forces on management decisions, can be fruitful as to correct the behavior of people (Denrell *et al.*, 2019). Within these training programs, teaching of Kahneman *et al.* (2011) checklist can be considered – a set of 12 questions, each one aimed at discovering whether a heuristic/trap occurred while making a decision – to avoid the same errors in the future. However, this should be modified by adding a question on the affective state felt during the sensemaking/decision-making path to be more effective in bias recognition, i.e. “Which were the affective states perceived during the entire decision-making path?” Last but not least, if managers perceive that they are going to be a victim of biasing meaningful coincidences, they should try increasing the available time for the decision-making process (e.g. move deadlines or re-prioritize tasks). Indeed, stemming from the fact that heuristics and biases are more likely to happen when decision-makers are under time pressures (Kahneman and Tversky, 1972, 1979), extending the time for the decisions allows reducing the probability of being a victim of cognitive errors.

Regarding the implications for future research, the main one is that a complete theory of strategic choice cannot be built without the consideration of irrational forces. In this regard, the proposed theoretical model can be used and implemented for a better comprehension of similar phenomena studied in management research, i.e. chance and luck (De Rond and Thietart, 2007), and then inserting them within a broader decision-making theory, such as the ACT (Cristofaro, 2020). In fact, despite the interest of scholars in studying these phenomena, no theoretical frameworks have studied the effect of these events on management decisions, taking into consideration the role of affective states and cognitive errors (Friedland, 1998; Darke and Freedman, 1997; Liu and De Rond, 2016). A connected question to be answered is: *Do chance and luck events influence management decisions in the same manner as meaningful coincidences?* Moreover, because of the fact that it is an exploratory study that tries to unveil what is considered as “irrational” in classical decision-making models, another question to be answered is: *How should we integrate synchronicity into the existing prescriptive models of decision-making?* Other interesting questions to be explored and that are now open to discussion consist of: *What is the role played by synchronicity in group decision-making? Are there some cultures that are more oriented to include synchronicity in their decision-making processes than others?* Finally, and this would be more important for increasing the practical implications of the study of meaningful coincidences, individual differences in educational background, intelligence quotient, gender, and occupation should be investigated. Indeed, they can be reliable predictors of the frequency with which coincidences are experienced.

However, this work suffers from two main inter-related limits. First, this is an explorative work that initially depicts human behavior in general when facing synchronistic events, and then explains how they influence management decisions. As for similar conceptual frameworks (Steigenberger, 2015), the second limitation of the model is that it is purely conceptual and based on the current pool of knowledge available. As much as empirical

evidence will be produced, this model may need revision. To empirically exploit and validate the proposed model, a reminder is given here of [Diaconis and Mosteller's \(1989\)](#) suggestions, themselves being unique scholars concerned with the empirical analysis of coincidences. They suggested doing:

- observational studies referring to anecdotes and case studies;
- experiments based on permutation tests (i.e. randomization tests); and
- exploratory data analysis, applying significance tests in the presence of data that emerge in an unplanned way.

A structured methodological approach for the study of accounts of coincidences comes from [Stockbridge and Wooffitt \(2019\)](#), pointing out that:

[...] broadly ethnomethodological focus to identify the tacit language norms and practices that inform the text and provide for its sense as a striking coincidence, and through which a particular range of inferential concerns can be managed (p. 450) is the most suitable method.

Yet, transformations that occur within participants, researchers and consumers of research could make a fruitful contribution to the study of synchronicity, because of the fact that the perception of meaningful coincidences often comes along with an enhanced sense of meaning and life change ([Braud and Anderson, 1998](#)). Finally, here, affective states are treated, similarly to other conceptual works ([Lerner et al., 2013](#); [Cristofaro, 2019](#)), as an umbrella term [comprising emotions (first and second order), mood, feelings and temperament] without giving a clear distinction between them. Indeed, despite all affective states linking to actions, the links for some are stronger than for others ([Williams et al., 2006](#)) because threatening signals are thoroughly processed. Future research might extend the understanding of the influence of affective states on meaningful coincidences alongside this distinction.

References

- Abatecola, G. (2014), "Untangling self-reinforcing processes in managerial decision making, co-evolving heuristics?", *Management Decision*, Vol. 52 No. 5, pp. 934-949.
- Abatecola, G., Caputo, A. and Cristofaro, M. (2018), "Reviewing cognitive distortions in managerial decision making. toward an integrative co-evolutionary framework", *Journal of Management Development*, Vol. 37 No. 5, pp. 409-424.
- Abatecola, G. and Cristofaro, M. (2020), "Hambrick and mason's "upper echelons theory": evolution and open avenues", *Journal of Management History*, Vol. 26 No. 1, pp. 116-136.
- AlKhars, M., Evangelopoulos, N., Pavur, R. and Kulkarni, S. (2019), "Cognitive biases resulting from the representativeness heuristic in operations management: an experimental investigation", *Psychology Research and Behavior Management*, Vol. 12, pp. 263-276.
- Ariely, D. (2008), *Predictably Irrational*, Harper Collins, New York, NY.
- Ariely, D. (2010), *The Upside of Irrationality*, Harper Collins, New York, NY.
- Bar-Anan, Y., Wilson, T.D. and Gilbert, D.T. (2009), "The feeling of uncertainty intensifies affective reactions", *Emotion*, Vol. 9 No. 1, pp. 123-127.
- Beitman, B. (2016), *Connecting with Coincidence: The New Science for Using Synchronicity and Serendipity in Your Life*, HCI, Deerfield Beach.
- Beitman, B.D. (2011), "Coincidence studies", *Psychiatric Annals*, Vol. 41 No. 12, pp. 561-571.
- Braud, W. and Anderson, R. (1998), *Transpersonal Research Methods for the Social Sciences: Honoring Human Experience*, Sage Publications, London.

- Brooks, M. (2015), *Chance*, Profile Books, London.
- Brown, H.C. (1980), "Nobel lecture", available at: www.nobelprize.org/prizes/chemistry/1979/brown/lecture/ (accessed on December 14th 2018).
- Brunsson, N. (1982), "The irrationality of action and action rationality: decisions, ideologies and organizational actions", *Journal of Management Studies*, Vol. 19 No. 1, pp. 29-44.
- Cassell, C.A. Dearden, S. Rosser, D. and Shipman, J.E. (2019), "The effect of confirmation bias on auditors' risk assessments: Archival evidence", available at SSRN: <https://ssrn.com/abstract=3162317>, (accessed on April 9th 2020).
- Chang, C. and Luo, Y. (2019), "Data visualization and cognitive biases in audits", *Managerial Auditing Journal*, doi: [10.1108/MAJ-08-2017-1637](https://doi.org/10.1108/MAJ-08-2017-1637).
- Coleman, S.L. and Beitman, B.D. (2009), "Characterizing high-frequency coincidence detectors", *Psychiatric Annals*, Vol. 39 No. 5, pp. 271-279.
- Cornelissen, J.P. and Clarke, J.S. (2010), "Imagining and rationalizing opportunities inductive reasoning and the creation and justification of new ventures", *Academy of Management Review*, Vol. 35 No. 4, pp. 539-557.
- Cristofaro, M. (2017a), "Herbert Simon's bounded rationality: its evolution in management and cross-fertilizing contribution", *Journal of Management History*, Vol. 23 No. 2, pp. 170-190.
- Cristofaro, M. (2017b), "Reducing biases of decision-making processes in complex organizations", *Management Research Review*, Vol. 40 No. 3, pp. 270-291.
- Cristofaro, M. (2019), "The role of affect in management decisions: a systematic review", *European Management Journal*, Vol. 37 No. 1, pp. 6-17.
- Cristofaro, M. (2020), "I feel and think, therefore I am": an affect-cognitive theory of management decisions", *European Management Journal*, Vol. 38 No. 2, pp. 344-355.
- Dagnall, N., Parker, A. and Munley, G. (2007), "Paranormal belief and reasoning", *Personality and Individual Differences*, Vol. 43 No. 6, pp. 1406-1415.
- Darke, P.R. and Freedman, J.L. (1997), "Lucky events and beliefs in luck: paradoxical effects on confidence and risk-taking", *Personality and Social Psychology Bulletin*, Vol. 23 No. 4, pp. 378-388.
- De Rond, M. and Thietart, R.A. (2007), "Choice, chance, and inevitability in strategy", *Strategic Management Journal*, Vol. 28 No. 5, pp. 531-551.
- Denrell, J., Fang, C. and Liu, C. (2019), "In search of behavioral opportunities from misattributions of luck", *Academy of Management Review*, Vol. 44 No. 4, pp. 896-915.
- Diaconis, P. and Mosteller, F. (1989), "Methods for studying coincidences", *Journal of the American Statistical Association*, Vol. 84 No. 408, pp. 853-861.
- Durant, R. (2002), "Synchronicity: a post-structuralist guide to creativity and change", *Journal of Organizational Change Management*, Vol. 15 No. 5, pp. 490-501.
- Edmondson, A.C. and McManus, S.E. (2007), "Methodological fit in management field research", *Academy of Management Review*, Vol. 32 No. 4, pp. 1246-1264.
- Epstein, S. (1994), "Integration of the cognitive and the psychodynamic unconscious", *American Psychologist*, Vol. 49 No. 8, pp. 709-724.
- Evans, J.S.B.T. (2008), "Dual-Processing accounts of reasoning, judgment, and social cognition", *Annual Review of Psychology*, Vol. 59 No. 1, pp. 255-278.
- Fach, W., Atmanspacher, H., Landholt, K., Wyss, T. and Roessler, W. (2013), "A comparative study of exceptional experiences of clients seeking advice and of subjects in an ordinary population", *Frontiers in Psychology*, Vol. 4, pp. 1-10.
- Fiedler, K. (1991), "On the task, the measures and the mood in research on affect and social cognition", In Forgas, J.P. (Ed.), *Emotion and Social Judgments*, Pergamon, Oxford, pp. 83-104.

- Finucane, M.L., Alhakami, A., Slovic, P. and Johnson, S.M. (2000), "The affect heuristic in judgments of risks and benefits", *Journal of Behavioral Decision Making*, Vol. 13 No. 1, pp. 1-17.
- Frank, R.H. (2016), *Success and Luck: Good Fortune and the Myth of Meritocracy*, Princeton University Press, Princeton, NJ.
- Frentz, T. (2011), "Creative metaphors, synchronicity, and quantum physics", *Philosophy and Rhetoric*, Vol. 44 No. 2, pp. 101-128.
- Friedland, N. (1998), "Games of luck and games of chance: the effect of luck- versus chance-orientation on gambling decisions", *Journal of Behavioral Decision Making*, Vol. 11 No. 3, pp. 161-179.
- Gioia, D.A. and Pitre, E. (1990), "Multiparadigm perspectives on theory building", *Academy of Management Review*, Vol. 15 No. 4, pp. 584-602.
- Görling, S. and Rehn, A. (2008), "Accidental ventures – a materialist reading of opportunity and entrepreneurial potential", *Scandinavian Journal of Management*, Vol. 24 No. 2, pp. 94-102.
- Govier, E. (2003), "Brainsex and occupation: the role of serendipity in the genesis of an idea", *Journal of Managerial Psychology*, Vol. 18 No. 5, pp. 440-452.
- Greifeneder, R., Bless, H. and Pham, M.T. (2011), "When do people rely on affective and cognitive feelings in judgment? A review", *Personality and Social Psychology Review*, Vol. 15 No. 2, pp. 107-141.
- Grewatsch, S. and Kleindienst, I. (2018), "How organizational cognitive frames affect organizational capabilities: the context of corporate sustainability", *Long Range Planning*, Vol. 51 No. 4, pp. 607-624.
- Griffiths, T.L. and Tenenbaum, J.B. (2007), "From mere coincidences to meaningful discoveries", *Cognition*, Vol. 103 No. 2, pp. 180-226.
- Hambrick, D.C. and Mason, P.A. (1984), "Upper echelons: the organization as a reflection of its top managers", *Academy of Management Review*, Vol. 9 No. 2, pp. 193-206.
- Hammond, S., Keeney, R. and Raiffa, H. (1998), "The hidden traps in decision making", *Harvard Business Review*, Vol. 84 No. 1, pp. 118-126.
- Hand, D.J. (2014), *"The Improbability Principle: Why Coincidences, Miracles, and Rare Events Happen Every Day"*, Farrar, Straus and Giroux, New York, NY.
- Hocoy, D. (2012), "Sixty years later: the enduring allure of synchronicity", *Journal of Humanistic Psychology*, Vol. 52 No. 4, pp. 467-478.
- Hodgkinson, G. and Sadler-Smith, E. (2018), "The dynamics of intuition and analysis in managerial and organizational decision making", *Academy of Management Perspectives*, Vol. 32 No. 4, pp. 473-492.
- Hopcke, R.H. (1998), *There Are No Accidents: synchronicity and the Stories of Our Lives*, Riverhead Books, New York, NY.
- Janis, I.L. (1972), *Victim of Groupthink*, Houghton Mifflin, Boston, MA.
- Johansen, M.K. and Osman, M. (2020), "Coincidence judgment in causal reasoning: How coincidental is this?", *Cognitive Psychology*, Vol. 120, p. 101290.
- Johansen, M.K. and Osman, M. (2015), "Coincidences: a fundamental consequence of rational cognition", *New Ideas in Psychology*, Vol. 39, pp. 34-44.
- Jung, C.G. (1952), *Synchronicity: An Acausal Connecting Principle*, [English Translation], Princeton University Press, Princeton, NJ.
- Kahneman, D. (2003), "A perspective on judgment and choice: mapping bounded rationality", *American Psychologist*, Vol. 58 No. 9, pp. 697-720.
- Kahneman, D. and Tversky, A. (1972), "Subjective probability: a judgment of representativeness", *Cognitive Psychology*, Vol. 3 No. 3, pp. 430-454.

-
- Kahneman, D. and Tversky, A. (1979), "Prospect theory: an analysis of decision under risk", *Econometrica*, Vol. 47 No. 2, pp. 263-291.
- Kahneman, D., Lovallo, D. and Sibony, O. (2011), "The big idea. Before you make that big decision", *Harvard Business Review*, Vol. 89 No. 6, pp. 50-60.
- Kirkeboen, G. and Nordbye, G.H. (2017), "Intuitive choices lead to intensified positive emotions: an overlooked reason for 'intuition bias'?", *Frontiers in Psychology*, Vol. 8, p. 1942.
- Konlechner, S. and Ambrosini, V. (2019), "Issues and trends in causal ambiguity research: a review and assessment", *Journal of Management*, Vol. 45 No. 6, pp. 2352-2386.
- Koontz, H., O'Donnell, C.E. and Wehrich, H. (1980), *Management*, McGraw-Hill.
- Kret, M.E. and Bocanegra, B.R. (2016), "Adaptive hot cognition: how emotion drives information processing and cognition steers affective processing", *Frontiers in Psychology*, Vol. 7, p. 1920.
- Lazarus, R.S. (2006), "Emotions and interpersonal relationships: toward a person-centered conceptualization of emotions and coping", *Journal of Personality*, Vol. 74 No. 1, pp. 9-46.
- Lepori, G.M. (2009), "Dark omens in the sky: do superstitious beliefs affect investment decisions?", SSRN 1428792.
- Lerner, J.S. and Keltner, D. (2000), "Beyond valence: toward a model of emotion-specific influences on judgement and choice", *Cognition and Emotion*, Vol. 14 No. 4, pp. 473-493.
- Lerner, J.S., Li, Y., Valdesolo, P. and Kassam, K. (2013), "Emotions and decision making", *Annual Review of Psychology*, Vol. 66 No. 1, pp. 1689-1699.
- Lewis, M.W. and Grimes, A.I. (1999), "Metatriangulation: Building theory from multiple paradigms", *Academy of Management Review*, Vol. 24 No. 4, pp. 672-690.
- Liu, C. and De Rond, M. (2016), "Good night, and good luck: perspectives on luck in management scholarship", *Academy of Management Annals*, Vol. 10 No. 1, pp. 409-451.
- Liu, F. and Maitlis, S. (2014), "Emotional dynamics and strategizing processes: a study of strategic conversations in top team meetings", *Journal of Management Studies*, Vol. 51 No. 2, pp. 202-234.
- Louis, M.R. (1980), "Surprise and sensemaking: what newcomers experience in entering unfamiliar settings", *Administrative Science Quarterly*, Vol. 25 No. 2, pp. 226-251.
- Luo, J. and Subrahmanyam, A. (2019), "The affect heuristic and stock ownership: a theoretical perspective", *Review of Financial Economics*, Vol. 37 No. 1, pp. 6-37.
- Luo, J. and Yu, R. (2015), "Follow the heart or the head? The interactive influence model of emotion and cognition", *Frontiers in Psychology*, Vol. 6, p. 573.
- McGrath, R.G. (2011), "On the pitfalls of superstitious learning", *Harvard Business Review*, No. 7.
- Main, R. (2014), "The cultural significance of synchronicity for jung and pauli", *Journal of Analytical Psychology*, Vol. 59 No. 2, pp. 174-180.
- Maitlis, S. and Christianson, M. (2014), "Sensemaking in organizations taking stock and moving forward", *Academy of Management Annals*, Vol. 8 No. 1, pp. 57-125.
- Maitlis, S., Vogus, T.J. and Lawrence, T.B. (2013), "Sensemaking and emotion in organizations", *Organizational Psychology Review*, Vol. 3 No. 3, pp. 222-247.
- Marks, L.I. (1998), "Deconstructing locus of control: implications for practitioners", *Journal of Counseling and Development*, Vol. 76 No. 3, pp. 251-260.
- Martela, F. and Steger, M.F. (2016), "The three meanings of meaning in life: distinguishing coherence, purpose, and significance", *The Journal of Positive Psychology*, Vol. 11 No. 5, pp. 1-15.
- Mauboussin, M.J. (2012), *The Success Equation: Untangling Skill and Luck in Business, Sports and Investing*, Harvard Business School Press, Cambridge, MA.
- Mosakowski, E. (1997), "Strategy making under causal ambiguity: conceptual issues and empirical evidence", *Organization Science*, Vol. 8 No. 4, pp. 414-442.

- NYT (2017), "Quotation of the day: Honor goes to expert in harnessing the power of irrational behavior", available at: www.nytimes.com/2017/10/09/todayspaper/quotation-of-the-day-honor-goes-to-expert-in-harnessing-the-power-of-irrational-behavior.html (accessed on April 4th 2020).
- Pacini, R. and Epstein, S. (1999), "The relation of rational and experiential information processing styles to personality, basic beliefs, and the ratio-bias phenomenon", *Journal of Personality and Social Psychology*, Vol. 76 No. 6, pp. 972-987.
- Patalano, A.L., Weizenbaum, E.L., Lolli, S.L. and Anderson, A. (2015), "Maximization and search for alternatives in decision situations with and without loss of options", *Journal of Behavioral Decision Making*, Vol. 28 No. 5, pp. 411-423.
- Pinger, P., Schäfer, S. and Schumacher, H. (2018), "Locus of control and consistent investment choices", *Journal of Behavioral and Experimental Economics*, Vol. 75, pp. 66-75.
- Poorsoltan, K. (2012), "How superstitious beliefs influence the process of decision making in the world of business", *Business Studies Journal*, Vol. 4 No. 1, pp. 93-120.
- Powell, T.C., Lovallo, D. and Caringal, C. (2006), "Causal ambiguity, management perception, and firm performance", *Academy of Management Review*, Vol. 31 No. 1, pp. 175-196.
- Powell, T.C., Lovallo, D. and Fox, C.R. (2011), "Behavioral strategy", *Strategic Management Journal*, Vol. 32 No. 13, pp. 1369-1386.
- Rothausen, T.J., Henderson, K.E., Arnold, J.K. and Malshe, A. (2017), "Should I stay or should I go? Identity and well-being in sensemaking about retention and turnover", *Journal of Management*, Vol. 43 No. 7, pp. 2357-2385.
- Russo-Netzer, P. and Ickerson, T. (2020), "Engaging with life: synchronicity experiences as a pathway to meaning and personal growth", *Current Psychology*, doi: [10.1007/s12144-019-00595-1](https://doi.org/10.1007/s12144-019-00595-1).
- Scherer, K.R. and Moors, A. (2019), "The emotion process: event appraisal and component differentiation", *Annual Review of Psychology*, Vol. 70 No. 1, pp. 719-745.
- Schlösser, T., Dunning, D. and Fetchenhauer, D. (2013), "What a feeling: the role of immediate and anticipated emotions in risky decisions", *Journal of Behavioral Decision Making*, Vol. 26 No. 1, pp. 13-30.
- Schultz, M. and Hatch, M.J. (1996), "Living with multiple paradigms the case of paradigm interplay in organizational culture studies", *The Academy of Management Review*, Vol. 21 No. 2, pp. 529-557.
- Simon, H.A. (1947), *Administrative Behavior*, The Free Press, New York, NY.
- Simon, M., Houghton, S.M. and Aquino, K. (2000), "Cognitive biases, risk perception, and venture formation: how individuals decide to start companies", *Journal of Business Venturing*, Vol. 15 No. 2, pp. 113-134.
- Smith, C.A., Haynes, K.N., Lazarus, R.S. and Pope, L.K. (1993), "In search of the 'hot' cognitions: attributions, appraisals, and their relation to emotion", *Journal of Personality and Social Psychology*, Vol. 65 No. 5, pp. 916-929.
- Sripada, C.S. and Stich, S. (2004), "Evolution, culture and the irrationality of the emotions", in Evans D. and Cruse P. (Eds), *Emotion, Evolution and Rationality*, Oxford University Press, New York, NY, pp. 133-158.
- Starbuck, W.H. (1994), "on behalf of naivete", in Baum, J. and Singh, J. (Eds), *Evolutionary Dynamics of Organizations*, Oxford University Press, New York, NY, pp. 205-220.
- Steigenberger, N. (2015), "Emotions in sensemaking: a change management perspective", *Journal of Organizational Change Management*, Vol. 28 No. 3, pp. 432-451.
- Stenholm, P. and Jiang, Y. (2019), "Luck in action – creating luck momentum in an entrepreneurial context", *Academy of Management Proceedings*, Vol. 2019 No. 1, p. 17353.
- Stockbridge, G. and Wooffitt, R. (2019), "Coincidence by design", *Qualitative Research*, Vol. 19 No. 4, pp. 437-454.

- Thaler, R.H. and Sunstein, C.R. (2008), *Nudge: Improving Decisions about Health, Wealth and Happiness*, Yale University Press, New Haven, CT.
- Tiedens, L.Z. and Linton, S. (2001), "Judgment under emotional certainty and uncertainty: the effects of specific emotions on information processing", *Journal of Personality and Social Psychology*, Vol. 81 No. 6, pp. 973-988.
- Tsang, E.W. (2004), "Toward a scientific inquiry into superstitious business decision-making", *Organization Studies*, Vol. 25 No. 6, pp. 923-946.
- Tversky, A. and Kahneman, D. (1973), "Availability: a heuristic for judging frequency and probability", *Cognitive Psychology*, Vol. 5 No. 2, pp. 207-232.
- Vasconcelos, A. (2018), "The lack of spiritual perspective of organizations: an exploratory study", *International Journal of Organizational Analysis*, Vol. 26 No. 5, pp. 915-940.
- Vasconcelos, A. (2020), "Spiritual intelligence: a theoretical synthesis and work-life potential linkages", *International Journal of Organizational Analysis*, Vol. 28 No. 1, pp. 109-134.
- Wallace, J. and Erickson, J. (1992), *Hard Drive*, John Wiley and Sons, Hoboken.
- Walras, L. (1883), *The 'orie Mathe'matique de la Richesse Sociale*, Duncker and Humblot, Lausanne.
- Watson, D., Clark, L.A. and Tellegen, A. (1988), "Development and validation of brief measures of positive and negative affect: the PANAS scales", *Journal of Personality and Social Psychology*, Vol. 54 No. 6, pp. 1063-1070.
- Weick, K. (1979), *The Social Psychology of Organizing*, 2nd ed., Addison-Wesley, Reading.
- Weick, K.E. (1995), *Sensemaking in Organizations*, Sage Publications, Thousand Oaks, CA.
- Weick, K.E. (2005), "The experience of theorizing: sensemaking as topic and resource", in Smith, K.G. and Hitt, M.A. (Eds), *Great Minds in Management: The Process of Theory Development*, Oxford University Press, Oxford, pp. 394-413.
- Whitson, J.A. and Galinsky, A.D. (2008), "Lacking control increases illusory pattern perception", *Science*, Vol. 322 No. 5898, pp. 115-117.
- Williams, L.M., Palmer, D., Liddell, B.J., Song, L. and Gordon, E. (2006), "The "when" and "where" of perceiving signals of threat versus non-threat", *NeuroImage*, Vol. 31 No. 1, pp. 458-467.
- Yang, F., Tan, J. and Peng, L. (2019), "The effect of risk perception on the willingness to purchase hazard insurance – a case study in the three gorges reservoir region, China", *International Journal of Disaster Risk Reduction*, Vol. 45, doi: [10.1016/j.ijdrr.2019.101379](https://doi.org/10.1016/j.ijdrr.2019.101379).

Further reading

- Makridakis, S., Hogarth, R. and Gaba, A. (2009), *Dance with Chance: Making Luck Work for You*, Oneworld, London.

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