



Coincidences: A fundamental consequence of rational cognition[☆]



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ARTICLE INFO

Article history:

Received 11 November 2014

Received in revised form

23 June 2015

Accepted 5 July 2015

Available online xxx

Keywords:

Coincidences

Pattern repetitions

Contingency learning

Causality

Induction

ABSTRACT

Believers tend to view the experience of coincidences as evidence for a variety of paranormal beliefs in mind and mysterious causal mechanisms out in the world. On the other hand, skeptics (e.g. most psychologists) tend to dismiss the psychological experience of coincidences as just yet one more demonstration of how irrational people can be. Irrationality in this context means an association between the experience of coincidences and biased cognition in terms of poor probabilistic reasoning and a propensity for paranormal beliefs. In this article, we present a third way: the rationalist perspective on the psychology of coincidence occurrence. We develop this new emphasis, including a new definition of coincidence, out of reviewing and synthesizing the extant literature on coincidences. We then propose a new three stage model to describe the psychological experience of coincidence, the 3C's model: 1. (C)oincidence detection, 2. (C)ausal mechanism search 3. (C)oincidence versus cause judgment. The core principles in this model are that people use the same properties relevant for causal reasoning when detecting and evaluating events that are ultimately judged to be coincidental, and we describe how the model can account for the key prior research on coincidences. Crucially, rather than just being examples of irrationality, we argue that the experience of coincidences is a necessary consequence of rational causal learning mechanisms and provides a widely ignored approach to evaluating the mechanisms of causal reasoning.

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1. General approaches to understanding coincidences

There are two basic views of the psychological experience and occurrence of coincidences that are fundamentally at odds with each other: The believer view, prevalent among members of the general public, is that coincidences are in fact evidence for various paranormal beliefs, held in the mind, and are induced by mysterious/hidden/paranormal causes, operating out in the world. The contrasting, skeptic view—prevalent among many scientists, particularly psychologists studying coincidences—is that the occurrence of coincidences, as psychologically experienced, is induced by noisy, chance occurrences out in the world which are then misconstrued via irrational cognitive biases into unfounded, possibly even paranormal beliefs in the mind.

The focus of this article is to argue that there is a third way of

conceptualising coincidences, that is, from a rationalist perspective that their occurrence in terms of being a psychological experience is an inevitable consequence of the mind searching for causal structure in reality. We propose that a co-occurrence (as observed by a human) may end up being judged to be causal or it may be judged to be coincidental, but either way, both are dependent on the same inductive mechanisms. In essence this alternative position suggests that the occurrence of coincidences *as psychologically experienced* is integrally involved with a rational conception of the mind. More to the point, coincidences are psychological phenomena that occur as a result of how the mind perceives events. Most often, these events are perceived as meaningful. That is to say, they have personal direct relevance or consequences for us (i.e. meaningful psychologically and/or instrumentally), in both cases the events have causal impact because they can effect a change in us psychologically, but also can cause behavioral changes should we decided to act on the events.

Before we present this alternative perspective of coincidences, it is important to emphasize what this perspective is not claiming to do. It is *not* claiming to describe a third type of ontological causal

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mechanism operating out in the world that is in some way distinct from the normal causal mechanisms believed to operate in the world by most everyone and the paranormal causal mechanisms believed to operate by some. Rather it is intended to be a psychological theory describing the *experience* of coincidences and the resultant reasoning about them as they occur in mind. So when we make reference to “coincidence occurrence” or “coincidences” this should be generally taken to mean the *experience* of coincidence in the mind, thus emphasizing the psychological perspective.

To make the case for this alternative conceptualisation, in this article we review two aspects of psychological research on coincidences, the definitions, and the empirical studies of the phenomena. We evaluate the current research from the rationalist conceptualisation by proposing a new definition and theoretical framework. In addition, not only do we want to propose that coincidences reflect rational cognition, we claim that the psychology behind coincidences is another route to better understanding causal induction and the underlying coincidence detection mechanisms it is based on.

1.1. Coincidences: an illustration

To start with an example, consider the real case of identical twins separated at birth and living in different states in the US (Burger & Starbird, 2005). After being reunited 40 years later, the brothers shared a surprising number of attributes. Along with identical facial appearances (e.g., eye colour, hair colour), they drove the same make of car, chain-smoked the same brand of cigarettes, and preferred the same type of light beer. They both also remarried, and both initially married a Linda before then marrying a Betty. They also found out that they were audience members on the same night of the Tonight Show Starring Johnny Carson.

This example has many of the key aspects we develop into a new definition and theoretical framework for coincidences below in terms of the mechanisms for inferring causality. Some of the attributes shared by the twins can plausibly be explained as just chance regularities—for example if they drove a car manufacturer by Ford, smoked Marlboros, and drank Budweiser—especially as such individual attributes are common in the US population. Also divorce rates are high and the names of the women that they married are common, so chance can clearly explain individual shared attributes, though the overall combination of the attributions is still quite surprising. While admittedly the attributes listed here do not include the many features they did not share, the conjunction of many moderately probable features that they do share still seems relatively unlikely by chance and surprising, inviting causal explanation. Some kind of paranormal twin connectedness through psychic links is one possible causal mechanism, which could easily be contested (Blackmore, 1992). Shared genes are a more plausible causal explanation for some of the shared attributes, but it is difficult to extend this explanation to shared preferences for the same light entertainment show that they attended on the same night. This surprising coincidence is troubling in part because of its real world messiness in that the relative uniqueness of the events makes the assessment of the overall probabilities quite unclear at least in terms objective event frequencies. Also it seems likely that while these events are surprising to us, they are nowhere near as surprising and meaningful as they likely were to the brothers! In summary: on the one hand, the events seem quite unlikely just by chance, making “it’s just chance” quite unsatisfactory, but this still seems a preferred explanation given that the available causal mechanisms do not fully or compellingly explain all the shared details.

The point to take from this illustration is that the process by which the mind detects pattern repetitions, and the way in which it

evaluates them (i.e. cause or coincidence) is based on processes that are used to detect and infer causality; a view currently shared by very few (but see Dessalles, 2008; Griffiths & Tenenbaum, 2007). The key point here and developed at length in this article is that coincidences need not be characterized *only* as evidence for biased probabilistic reasoning or paranormal belief, which is a common view taken by many researchers studying coincidences. The proposed rationalist conceptualizing that is presented here is that coincidences provide insights into studying the mind’s induction mechanisms, i.e. contingency learning and causal reasoning.

1.2. Purpose and plan

The purpose then of this article is to establish this alternative conceptualization of coincidences. To begin with, we situate the rationalist conceptualization within extant definitions of coincidences and use them to derive a new definition. We then review research on coincidences by organizing this section around empirical work examining psychological processes associated with coincidental experiences. We discuss how our conceptualization emphasizes some limitations in current research on coincidences, which then provides the platform for proposing our 3 C’s Framework of Coincidences—1. Co-incident detection, 2. Causality search and 3. Coincidence versus cause judgment. The framework is designed to provide an understanding of the process of detection and interpretation of coincidental events. In essence, we build on our conceptualisation in order to argue that while coincidental events do not have an underlying causal mechanism that jointly brings them about, they share similar properties to those used to detect actual causal mechanisms—temporal and spatial proximity, similarity, statistical regularity, and so forth—and so we suggest fruitful directions for future research. It is for this reason that understanding the basis by which people discriminate between coincidence and cause can help clarify the important properties of causal learning.

2. Definitions of coincidences

We start by introducing the various prior definitions of coincidence as a motivation for a definition from the third way, rationalist perspective. Also, the kind of descriptions that theorists have used to refer to coincidences broadly reflects the ways in which coincidences have been studied, and so this provides a context for the literature which we review in the next section.

2.1. Definitions emphasizing low probabilities

Some researchers have refrained from giving definitions of coincidences outside of referring to the laws of probability. The reason for this is that coincidences are classified as chance events and nothing more; so coincidences don’t need additional psychological description. John Venn (1866) *The Logic of Chance* exemplifies this point by suggesting that laws of probability are enough to explain away coincidental events, “... there can be no doubt that, however unlikely an event may be, if we (loosely speaking) vary the circumstances sufficiently, or if in other words, we keep on trying hard enough, we shall meet with such an event at last” (p. 274). By associating coincidences with unambiguous, low probabilities (e.g., double lottery winners, common birthdates, etc.), a bench mark is established by which people’s reasoning about coincidences can be compared.

2.2. Definitions emphasizing connected mental states

The similarity between this set of definitions and the previous set is that coincidences are low probability events which have no

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