Humans seem to have a tendency to perceive connections between unrelated things. This essay will introduce 3 concrete examples of this tendency, gambler’s fallacy, pareidolia and Post hoc fallacy, in the following paragraphs and explain why these phenomena happen.

Gambler’s fallacy refers to a belief that, if something happens less frequently than usual in current time period, then it will happen more frequently in next time periods. An example is repeatedly tossing a coin, where the chance of getting a head is 0.5 and so is the chance of getting a tail. After getting 5 heads in 5 tosses, a person may believe that the next toss will be more likely to have a tail. This is because the possibility of getting 6 heads in 6 tosses is $0.5^6 = 0.015625$, which seems really low. However, this is an erroneous belief. That the possibility of having 6 heads is 0.015625 is true only before the first toss. After a toss is done, its result will become a truth, which can be considered as a 100% possibility. Therefore, after the first 5 tosses are finished, the 5th’s chance of getting a head and a tail are both 0.5.

Pareidolia is the phenomenon of perceiving a familiar pattern from a image or sound stimulus where no pattern exists. Common examples are perceiving animals, faces or objects from random images, such as human faces on the surface of the moon. This happens because human has a cognitive process of retrieving information from memory and matching it with the stimuli, which is a called pattern recognition. Pareidolia is a false pattern recognition.

Post hoc fallacy is a false belief stating that since event Y follows event X, event X must be the cause of event Y. For example, sunrise is caused by roosters’ crowing because roosters crow before sunrise. This false belief happens frequently since usually a causal factor of an event comes earlier than the event. However, this kind of connection is merely concluded based on the order of the events, ignoring the possibility that event X and event Y are just coincidentally happening in order. There might be other causal factors for event Y.

The above examples indicate that human desire to find connections. We need to be careful when concluding that there exists a relationship between things, since the connections found might be illusory.
REFERENCES: