From the time of Aristotle to the present, philosophers and scientists have debated among themselves about the nature and meaning of causation. Some of the issues concerning causation in psychology are the influence of unconscious processes in human life, the role of intention or purpose in determining behavior and the question of whether the individual can be an agent of change. Let us review some of the classic and modern approaches to the problem of causation.

Aristotle was one of the first to struggle with the meaning of causation, and his original and creative thought on the topic paved the way for centuries of debate and speculation. Aristotle believed that causation is not a simple one-dimensional affair. To know the cause of anything, we must understand four things. First, we must understand the antecedent conditions. Aristotle referred to these conditions as the efficient cause. The efficient cause is that which immediately sets a thing in motion.

When domino B falls after being impacted by A, we can say that the movement of A is the efficient cause of the fall of B. Aristotle also believed that an understanding of the material structure of a thing is necessary to an understanding of causation. When the physicians’ hammer strikes the patellar tendon we normally observe a knee reflex. If the physicians’ hammer is the efficient cause of the reflex, there must also be a material cause. In this case, we would not observe the reflex if there had been nerve or muscle damage.

Aristotle also taught that the understanding of a sequence of event may depend on having some knowledge of goals and purposes. Let us go back to the example of the knee reflex. We might say that we observe the knee reflex because the physician produced it to fulfill the purpose of completing a neurological examination. Aristotle called this the final cause, the end purpose for which a change was produced.

Aristotle might argue that you cannot understand the knee reflex, until you understand the intentions or purpose of the physician.

So, part of the cause of the reflex is the material structure (nerves, tendon, muscles) on which it depends. In other words, the reflex is dependent on a physical substrate, which Aristotle called the material cause. Domino A (an efficient cause) impacting domino B could knock B over if they were made of the same material. But if B were made of lead and A of light wood, then B would not fall when impacted by A. Thus, the so-called causal sequence is dependent on a material structure as well as antecedent conditions.
A fourth kind of cause, according to Aristotle, is the **formal cause**.

- The formal cause he believed to be the form, shape, or identifying properties of thing.
- The same piece of granite may be chiseled and shape into a bust of Beethoven or Mozart.
- The material is the same but the form is different and the form carries with it information value.
- The functional or causal properties of a thing will depend on form.

For Aristotle, knowledge of causation rests on understanding:
- form (formal cause),
- material (material cause),
- antecedent conditions (efficient cause), and
- the purpose or end (final cause) for which a thing is intended.

Aristotle believed in a balance of emphasis on all these dimensions of causation.

The Aristotelian notion of final causation was consistent with **teleological** interpretations of the world to be found later in Christian theology.

The term **teleology** refers to purpose or design.

Technically, teleology can be defined as the investigation of evidence that there is design or purpose in nature.

The assumption that there is design in nature leads us to the next question:
- What was the origin of the design or purpose?
- Intrinsic teleology is the position that design, order, and purpose are immanent in nature – simple manifestations or characteristic of nature.

In psychology intrinsic teleology would be statements like:
- goal directed behavior or
- purposive behavior.

**Extrinsic teleology** makes the claim that any design in nature reflects the work of a designer.

This is one of philosophy’s oldest problem and one that is highly relevant to psychology.

The doctrine of free will is the philosophical position that human beings make choices that are to some degree, independent of antecedent conditions.

The personality can rise above genetic, chemical, physical, and social influences.

According to this position, people have the capacity to anticipate alternatives, and
to compensate for past influences that enter the decision-making processes.

To the extent that we can rise above the various influences in our lives,

we may be viewed as rational or responsible creature.

Most advocates of free will do not attribute this quality to animals.

The doctrine of **psychological determinism** states:
- that there are causes, both known and unknown, for every behavior or experience.
- Taylor (1967) defined determinism as the philosophical doctrine that:
  
  "states that for everything that ever happens there are conditions such that, given them, nothing else could happen."
The great physicist, Albert Einstein, argued that "God doesn't play dice with the universe." Einstein was a determinist and to his death believed that the laws of cause and effect operated at every level of reality.

Philosophers have not always been consistent in the way they have used the term ontology, but for the present, the term may be defined as the study of the nature and relations of being. The question what is real? is an ontological question. Other ontological questions are:<br>&lsaquo;Is the mind real?&rsaquo;<br>&lsaquo;What is the relationship between the mind and brain?&rsaquo;<br>&lsaquo;Is there one fundamental reality (monism), two (dualism), or perhaps many (pluralism)?&rsaquo;

Ontology (continued)

Monism is the philosophical position that reality, whatever it is, is all of a piece. Everything belongs in some intimate way to everything else. Wertheimer (1972) noted that monism "comes in two basic, and deeply opposed, forms. Genuine reality is conceived of either as physical (the view called materialism) or mental (the view called idealism)." These two forms have radically different implications for the science of psychology.

For the materialist, "mind" is reduced to brain activity. Psychology is the study of behavior and correlated brain activity. The idealist believes that the mental is the foundation of all science. Experience, awareness, and consciousness (mental processes) are prior to brain. It is experience or consciousness that permits the neurosurgeon to see the brain in the first place.

In contrast with monism, Dualism asserts that there are two fundamental orders of reality – mind and body. Each has ontic (i.e. real) status. If there are two orders of reality, how do they get along with each other? Can one influence the other? Or can each influence the other and if so, how? Most of the dualist mind-body positions address the issue of how mind and body get along with each other.

According to interactionism, mental events may influence physical events and physical events may influence mental events. The major difficulty with this position is specifying how an immaterial mental system can be causal with respect to a physical system. Parallelism assumes the independent existence of mind and body, but it avoids the difficult problems surrounding interactionism. According to psychophysical parallelism, mental events may influence other mental events and physical events may influence other physical events.
but the two orders of reality cannot influence each other.

The philosophical position called emergentism argues that conscious processes (mental activities) are produced by brain processes but are qualitatively different from brain processes.

An analogy helps clarify the position.
- Salt is a product of sodium and chloride, yet the compound salt has properties that are unique and that make salt different from any predictable summation of sodium and chloride.
- Sodium alone or chloride alone can be lethal to the living organism, yet their combination is vital to life.

One variant of emergentism is called epiphenomenalism.
- According to epiphenomenalism, mind is an overflow or by-product of brain activity, but mind has no causal efficacy.
- Mind is a mere appearance, an epiphenomenon, without independent status.
- Ontological pluralism embraces the reality of mind and body but also insists that these two orders do not exhaust the possibilities.
- The pluralist believes that there are many real things and different orders of reality.