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The Influence of External Factors on Perception: A Commentary on "The Psychological Process of Perceptual Development in the Human Brain"

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ABSTRACT

In this commentary, I expound on a research article that I previously wrote titled "The Psychological Process of Perceptual Development in the Human Brain," where some of the primary (personal) factors of perception were analysed based on optical illusions. This commentary article emphasizes how external factors associated with societal characteristics influence perceptual development by examining the bottom-up and top-down psychological processing methods. Several examples of this observation are incorporated into the research, including the correlation between the "B or 13?" visual exercise and sociolinguistics. The research also explores whether the employment of naturalist intelligence and perceptiveness has become scarce due to global industrialization. The statistics presented in this commentary are secondary data.

Keywords: Optical illusion; Naturalist intelligence; Social psychology

INTRODUCTION

Perception is a fundamental aspect relating to the study of cognitive psychology. As explained on page 269 of the chapter "Sensation and Perception" in Lumen Learning's "Introduction to Psychology" textbook, "perception refers to the way sensory information is organized, interpreted, and consciously experienced" [1]. In my research paper titled "The Psychological Process of Perceptual Development in the Human Brain," I analysed the primary factors that influence and construct perception using the example of optical illusions. Several of these influential factors include a person's age, experiences, emotions, memories, and cognitive levels. Perception is divided into 5 stages: Stimulation, organization, interpretation, memory, and recall. However, one crucial detail to consider is that these factors contributing to perceptual development are predominantly personal characteristics. It is essential to acknowledge that external factors also affect perceptual development, especially because humans constantly "organize and interpret the stimuli received (from the environment) into meaningful knowledge and to act in a coordinated manner" [2]. For purposes of this commentary, the term "external factors" refers to societal influences, developments, or external stimuli. Two perception processing methods include bottom-up processing and top-down processing. The psychological strategy underlying bottom-up processing demonstrates how external factors or stimuli influence perception. Bottom-up processing was 1st identified by American psychologist James J. Gibson in the 1960s [3]. The presence of an external stimulus is the catalyst of bottom-up processing, as it "refers to the fact that perceptions are built from sensory input" [1]. One relevant example of bottom-up processing is as follows: If you suddenly detect a sweet chocolaty smell wafting through the house, you might then determine that someone in your home is baking chocolate chip cookies. To determine this, you didn't need any other context or information-you simply used the sweet smell (the stimulus or raw data) to make your analysis. Your perception didn't require prior knowledge that anyone was baking cookies [3].

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LITERATURE REVIEW

In summary, external sensory input causes sensory receptors to transmit signals to the brain, thus producing a perception based on these signals. Hence, bottom-up processing "is considered one of the core ways we understand the world around us" [3]. Next, although top-down processing primarily encompasses sensorial interpretation developed *via* "our available knowledge, our experiences, and our thoughts," several external factors are nonetheless inherent. A quintessential example of this observation entails the classic "B or 13?" exercise. Consider the significance of the middle shape in the following 2 data sets provided on page 271 of Lumen Learning's "Introduction to Psychology" textbook. Despite the middle shapes being identical in each data set, their interpretations differ due to their surrounding contexts. Importantly, with top-down processing, "our brains form an idea of a big picture first from previous knowledge and then break it down into more specific knowledge" [4]. In this perceptual scenario, top-down processing incorporates the surrounding context and prior knowledge (understanding alphabetical and numerical systems) to define the shape. For instance, in the first data set, the presence of alphabetically organized letters is a contextual clue that reasonably leads a person to conclude that the middle shape is a capital letter B. The same logic applies to the second numerical data set. Notwithstanding, the emphasis on subjective or personal knowledge, experiences, and thought processes in top-down processing does not negate the influence of external factors in perceptual development. In the "B or 13?" case, particularly the alphabetical data set, one major external factor that precipitates the identification of the middle shape as a capital letter B concerns the usage of the Latin or Roman alphabet system, which "is used to write many modern European languages, including English" [5]. This observation correlates to sociolinguistics. According to the American Psychological Association, sociolinguistics is "the study of the relationship between language and society and of the social circumstances of the language usage. One aspect of this field is the study of linguistic codes, that is, the culturally determined rules and conventions that govern language usage" [6].

DISCUSSION

A person with prior knowledge of the Latin alphabet will immediately recognize the middle shape in the previous alphabetical data set as the second character in the Latin alphabet (B). Conversely, a person who adheres to a distinct linguistic code and/or has not been exposed to the Latin script may not be familiar with the letter B as an alphabetical character. The World Standards website explains that "about 2.6 billion people (36% of the world population) use the Latin alphabet, about 1.3 billion people (18%) use the Chinese script, about 1 billion people (14%) use the Devanagari script (India), about 1 billion people (14%) use the Arabic alphabet, about 0.3 billion people (4%) use the Cyrillic alphabet and about 0.25 billion people (3.5%) use the Dravidian script (South India)" [7]. Hence, sociolinguistics demonstrates how regional characteristics can affect certain perceptual abilities. Another illustration concerning the impact of external factors on perception, namely industrialization, involves our hunter-gatherer ancestors. Hunter-gatherers depended "primarily on wild foods for subsistence. Until about 12,000 years to 11,000 years ago, when agriculture and animal domestication emerged in southwest Asia and Mesoamerica, all peoples were hunter-gatherers" [8]. "Over the last 500 years, the population of hunger-gatherers has declined dramatically" [9]. One can reasonably deduce that hunter-gatherers possessed a high rate of naturalist intelligence, which American psychologist Dr. Howard E. Gardner defined as the "expertise in the recognition and classification of the numerous species of his or her environment" [10]. "Perception is the knowledge we have of objects or of their movements by direct and immediate contact, while intelligence is a form of knowledge obtaining." An intriguing theory to consider encompasses whether naturalist intelligence and perceptiveness have diminished in our contemporary world because of industrialization and the convenience of grocery stores. Dr. Gardner implies a similar consideration, explaining how evolution has caused the application of naturalist intelligence to shift from natural elements to inorganic or artificial materials: Even apparently remote capacities-such as recognizing automobiles from the sounds of the engines, or detecting novel patterns in a scientific laboratory, or discerning artistic styles-may exploit mechanisms that originally evolved because of their efficacy in distinguishing between, say, toxic and nontoxic ivies, snakes, or berries. Thus, it is possible that the pattern-recognizing talents of artists, porters, social scientists, and natural scientists are all built on the fundamental perceptual skills of naturalist intelligence.

CONCLUSION

In essence, although personal subjective factors such as prior knowledge and experience are crucial for perceptual development, external factors, particularly those associated with societal influences, also play an imperative role in formulating an individual's perceptions. Furthermore, the existence of social psychology substantiates this conclusion, as it entails "the study of how an individual's thoughts, feelings, and actions are affected by the actual, imagined, or symbolically represented presence of other people." Both bottom-up and top-down processing demonstrate, albeit in distinct ways, the influence of external factors on perceptual manifestations, as our sensory receptors are constantly collecting information from the environment." Hence, this occurrence "affects how we interact with the world."

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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