
Perception and Global Processing Bias

Introduction

The nature of perception has been a long-debated topic in psychology. Gregory (1966), as cited in Holt, (2002) argued that people's perceptions of an object is basically a hypothesis of its nature. The prominent question in this debate is whether perception is analytic or holistic? Gestalt theorists were of the first psychologists to study perception arguing that our instantaneous perception of an object is as a whole before we perceive its individual feature. Navon's (1977)'s global precedence hypothesis is often dubbed as the modern version of gestalt psychologists' views on perception. Navon (1977) In his paper `Forest Before Trees: The precedence of global features in visual perception` questions Gestalt's view. " Do we perceive a visual scene feature by feature or is the process instantaneous and simultaneous as some Gestalt psychologists believed ? or is it somewhere in between"(p.353). Navon wanted to find out if people perceived global features (large letters) faster than the local features (small letters) He developed a paradigm of compound stimuli, which is large letters made up of small letters in order to this. In his research, Navon (1977) concluded that features are perceived faster at the global level than the local level.

Many research studies have used Navon's paradigm and there are three main effects that are often found. A global precedence effect is faster reaction times at the global level compared to the local level. An interference effect is slower reaction times to different features (inconsistent) compared to the same features (consistent). Lastly, an interval interference effect is larger interference effect on the local level compared to the global level.

In this study an attempt is made to replicate Navon's original study in order to test reaction times to the global or local features. Based on Navon's study we should find that participants will show a global processing bias by correctly identifying global targets compared to correctly identifying local targets.

Method

The study was a laboratory experiment and used a repeated measures design with the same group of participants taking part in all of the conditions. The independent variable (IV) was the perception of global or local targets, and the dependent variable (DV) was the participant's reaction times.

The participants used in the study were 97 undergraduate psychology students at Kingston University in London. There was a mixed range of ages with participants being between 18-47 years old. It was an opportunity sample, all the students that came to the class were asked if they wanted to take part in the study.

Computers were used in the study and participants had to complete the Navon task, a computer program that measures reaction times to the letters H or O at the global or local level.

At the start of the experiment, participants were given instructions on how to carry out the task

on the computer. On each trial participants had to decide whether they could identify the letter 'H' or 'O' at the local or global level or not at all. Participants had to press a specific letter (B) or (N) on the key board to give their response. Participants were instructed to press (B) if they could identify letters 'H' or 'N' or letters formed of 'H' or 'N'. They were also instructed to press the letter(N) if they could not identify the letters 'H' or 'N'.

Results

The mean reaction times at the local target level was 974.0 and the standard deviation was 239.530837. Mean reaction times at the global target level was 962.5 and the standard deviation was 262.04158. A paired sample means test was used to test for statistical significance $t(96) = .91, p > .184$. This indicates that the results obtained were non-significant and may have occurred due to chance.

- Local target Global target No target
- Mean Reaction times 974.0 962.5 1074.1
- Median Reaction times 924.8 894.7 1016.8
- Mode Reaction times 624.5 645.2 441.0

Discussion

The main purpose of the study was to test and compare reaction times to features at the global and local level. Which would allow us to compare our findings to those of Navon (1977)'s study. However, the results obtained in this study show that on average participants' reactions at identifying features at the global or local level was not much different suggesting that results could be due to chance. Therefore the results obtained in this study are non-significant with the probability being greater than $p > 0.05$. This means the findings of this study do not support the hypothesis that participants will show a global processing bias by correctly identifying global targets compared to correctly identifying local targets. Therefore we accept the null hypothesis.

This set of results could be due to extraneous variable affecting the results. For example, participant proximity to the computer screen at the time of the study could be influencing results. The distance between the participants and the screen could lead to people being able to identify local features faster than global features as the proximity make it easier to detect the local features.

According to Navon's research participants should have been able to respond fastest to the features at the global level

One weakness of this study is the sample of participants being university students at one university is not representative of the general population and therefore the results lack generalisability. Another weakness of the study is the artificial laboratory settings in which the study was conducted suggesting that the study lacks mundane realism.

References

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