The Effect of Time on Visual Search Patterns

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Does time have a crucial effect on scanning patterns?

Introduction

- "The competition for attention theory tells us that the race for attention between the objects in our field of view affects how we screen the environment (exploratory search) and how we actively search for a piece of information (goal-directed search)." (Janiszewski, 1998)

- Previous studies have shown that scanning patterns change based on the content and the layout viewed. Based on the visual cues present in the visuals, the subject will most likely adapt to the image and alter their search patterns.

- It was hypothesized that subjects' scan patterns would improve in efficiency when presented with limited time to complete the visual search task. Exploratory search patterns were also predicted to occur for visually complex scenes with unlimited time.

Method

Subjects consisted of 10 college students, ranging in ages 18 to 26 (3 males and 7 females), with perfect or corrected vision. Each subject viewed 2 visual search tests (timed and untimed) comprised of 2 sections.

- First test (unlimited time): Subjects were instructed to identify a specific character (Waldo) in 5 different slides, followed by a second section with 5 different word searches, each containing one target word (eg. blazed, thrown). Subjects had unlimited time to complete their goals.

- Second test (limited time): Subjects were presented with 5 different *Where's Waldo* slides, followed by 5 different word searches. Each slide was allotted 15 seconds for viewing.
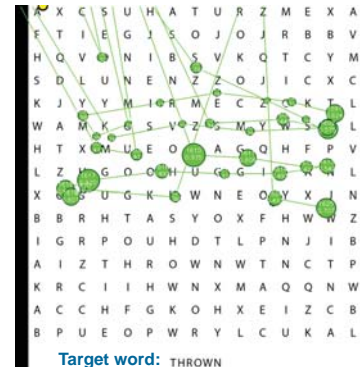
Unlimited Time Analysis: *Where's Waldo*

Unlimited Time Analysis: Word Search

Target word: BLAZED
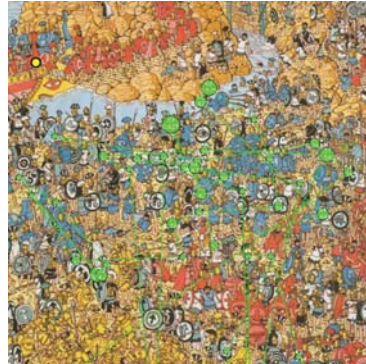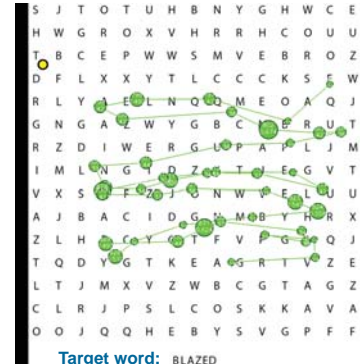
Limited Time Analysis: *Where's Waldo*

Limited Time Analysis: Word Search

Target word: THROWN

Results

The variable of time had a negligible effect on visual search patterns. Some subjects had more erratic scan patterns when there was a time limit, while others maintained a steady pace throughout their searches. However, the types of visuals (*Where's Waldo* and word search) did have a prominent effect on subjects' scanning patterns.

Where's Waldo:
Images were typically scanned in a spiral pattern, starting either from the center and working outward, or from the edges and working inward. It was also noted that large blocks of color and high points of saturation were key focal points.

Word Search:
Text was scanned along the grid, in left-to-right and up-to-down patterns. Subjects used letters from the target word as starting points for scanning.

Discussion

- All of the subjects for the study were college students, who may have individually adapted to the stress of timed environments in ways that older or younger participants have not.

- Because of the lack of apparent changes in scan patterns, it's possible that subjects used the same goal-oriented search methods throughout the experiment. If the first test had no suggested goal, there may have been a more prominent difference in scan patterns.

- A factor that could have influenced the experiment was the use of the same subjects for both visual searches with no grace period between the tests.

References

1. Bergstrom, Jennifer Romano, and Andrew Jonathan Schall. *Eye Tracking in User Experience Design*. N.p.: n.p., n.d. Print.Ref 2

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