

# The Influence of Symbol Orientation and Border Line Thickness on Subjects' Preferences for Icon Design

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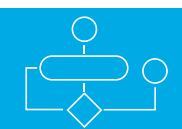
## Introduction



Pictorial information is known to be the quickest to notice and comprehend as a form of information presentation (Lidwell, Holden & Butler, 2003). In many research studies, graphical images were found to be superior to text in terms of recall and recognition accuracy (Shepard, 1967). Therefore, image-related icons are considered the most effective for fast and accurate recognition (Blankenberger & Hahn, 1991; Wiedenbeck, 1999). Icons are highly efficient at communicating ideas because they transcend language barriers and present meaning in a condensed form, unlike words (Yan, 2011). Communication with a digital interface is primarily done through a direct manipulation interaction style (Shneiderman, 1982, 1983), enabling users to interact directly with on-screen elements. In everyday point-and-click tasks, people interact with user interfaces and human-machine interfaces while searching for icons of interest (Galitz, 2007).

Visual search plays a key role in identifying icons. As icon complexity increases, so does search time, due to the additional processing needed to integrate all of the icon's features into a cohesive perception (McDougall, 2006). The impact of icon complexity on search time remains significant over the long term and does not diminish with experience (McDougall, 2006).

## Problem Description



Since the aesthetic appeal of an icon is an important factor in the likability of an interface and is crucial for ease of searching for icons, this preliminary study aims to investigate the most preferred icon design. This icon will be further examined in another experiment that utilizes colour harmonies.

## Methods



A total of 95 college students (a mix of men and women, ages ranging from 18 to 25 years) participated in this preliminary study. All participants had normal or corrected vision. Participants had not participated in similar studies before.

The first question in the questionnaire survey was about the symbol orientation, as shown in Figure 1. Participants were presented with 11 different orientations of the telephone symbol, each rotated in steps of 15 degrees in both clockwise and counterclockwise directions. Tasked with choosing the most legible symbol, the majority of participants chose the orientations of 45 degrees and 60 degrees. Therefore, the orientation of 60 degrees was used for the questions about border line thickness.

In the second question, which focused on border line thickness, participants were asked to choose a border line that was acceptable—not too thick, as shown in Figure 2. In the third question, also about border line

thickness, participants were asked to choose a border line that was acceptable—not too thin, as shown in Figure 2.

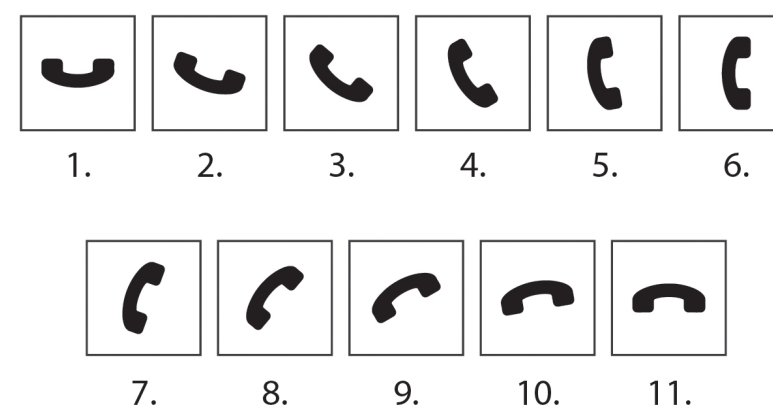


Figure 1

Stimuli for the first question in the questionnaire survey

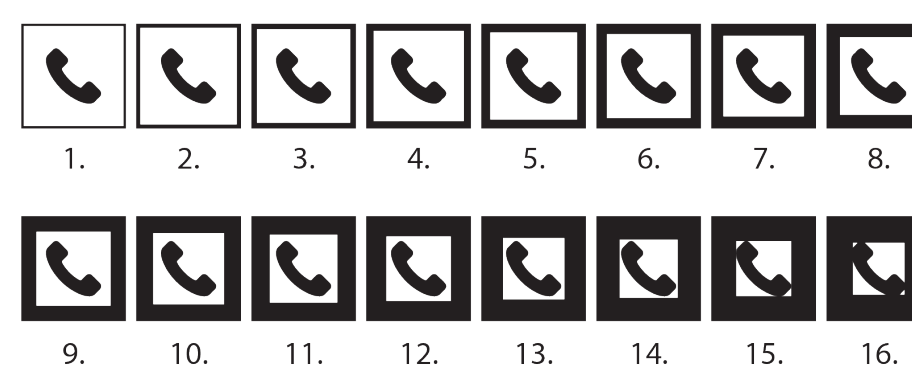
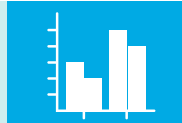


Figure 2

Stimuli for the second and third question in the questionnaire survey

## Results



The results obtained from the questionnaire survey showed that most participants chose two orientations that are the most representative of this symbol. The largest number of participants (37.9%) chose the telephone symbol with a 45-degree orientation, as shown in Figure 1, number 4. Additionally, a large number of participants (33.7%) chose the telephone symbol with a 60-degree orientation, as shown in Figure 1, number 3. This implies that these two orientations are the most commonly used orientations for this symbol.

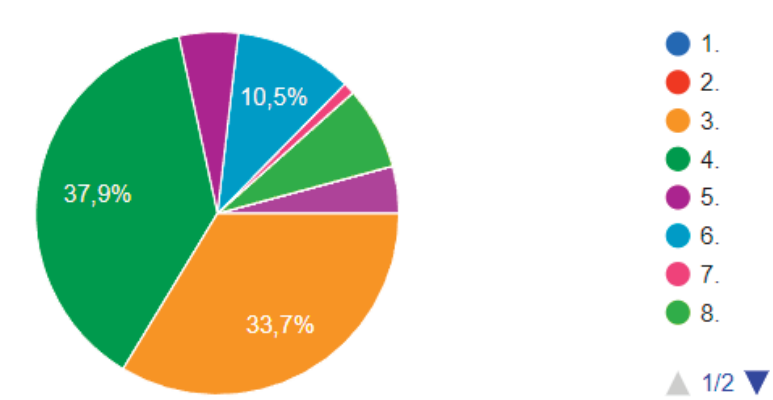


Figure 3

First question of the questionnaire survey and obtained results

In the second question, the obtained results showed that most participants chose two thicknesses that are not too thin but acceptable. Most participants (29.5%) chose the border line thickness labelled as number 3, as shown in Figure 2, number 3. Additionally, a large number of participants (24.2%) chose the border line thickness labelled as number 4, as shown in Figure 2, number 4.

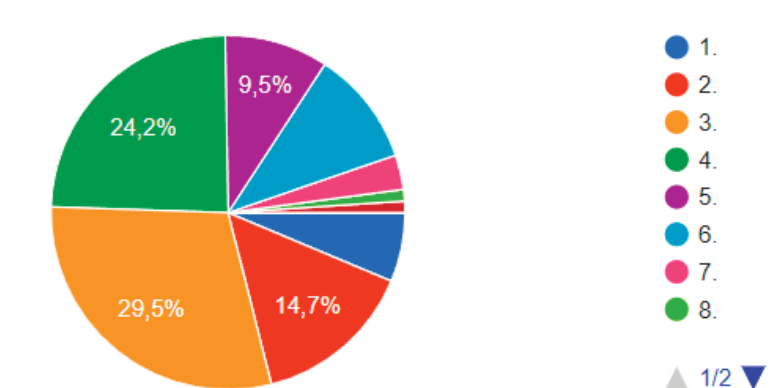


Figure 4

Second question of the questionnaire survey and obtained results

In the third question, the obtained results showed that most participants chose two thicknesses that are not too thick but acceptable. The largest number of participants (22.1%) chose the border line thickness labelled as number 6. Additionally, a large number of participants (18.9%) chose the border line thickness labelled as number 7. There is also a significant number of participants who chose the border line thickness labelled as number 2 (14.7%) and number 5 (12.6%).

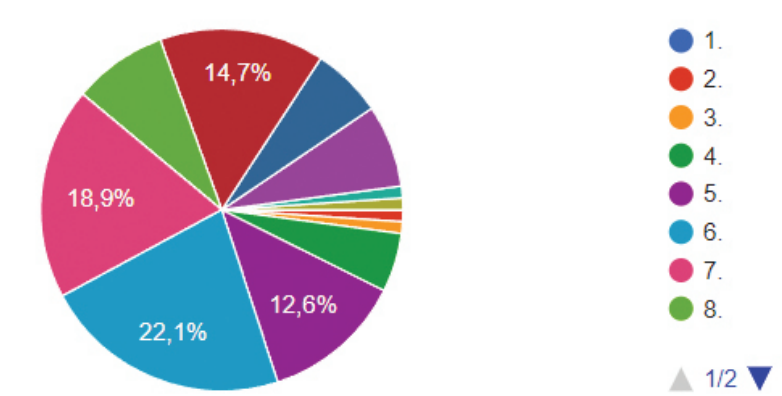


Figure 5

Third question of the questionnaire survey and obtained results

## Discussion / Conclusion



Preliminary research is conducted with the aim of assessing users' aesthetic appeal for icons concerning symbol orientation and border line thickness. The likability of the interface is an important factor, and it is crucial for the ease of searching for icons. This preliminary study aims to investigate the most preferred symbol orientation and border line thickness. This icon will be further examined in another experiment using colour harmonies. Results obtained from the questionnaire survey show the most preferred symbol orientation and the minimum and maximum border thicknesses. These findings have important implications for designers, suggesting that careful consideration of these variables can enhance user satisfaction and interface effectiveness.

## REFERENCES

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