

## Group D

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### Goals

The conducted experiment looks at the user's reaction time on processing pictures pre-attentively or attentively. The user is presented a random image of either a blue or red square (pre-attentive) or an even or odd number (attentive).

Additionally, half of the shown images are also presented with visual distractions in the form of changing the background color of the program.

### Setup

Attentive and pre-attentive tasks are represented by pictures ("1,3,5,7" as attentive odd, "2,4,6,8" as attentive even, red and blue square as pre-attentive). Each user has to label the presented picture accordingly, pressing either the „R“-button for red squares and odd numbers or the „U“-button for blue squares and even numbers. After the press the program is waiting one second in order to slow down the process and track reaction times after a new picture is shown.

An additional python script generates the sequences of stimuli shown to participants and creates the input configurations accordingly. Possible stimuli are "AD", "AN" (attentive with and without distraction) and "PD", "PN" (pre-attentive with and without distraction). Each one is shown 10 times though the used pictures vary randomly. Therefore each participant is shown 40 trials.

The distraction is a changing background. If the current stimulus is presented with distraction as defined by the configuration file, the background image gets changed to a random color every 200ms, resulting in a visual impairment for the participant. This gets disabled on changing to the next stimulus.

At the beginning of every recording session the examiner welcomes the participant and explains the conducted study. The following text is shown on the programs starting screen as well as being read out to the participant:

„Im folgenden Experiment siehst du einzelne Bilder. Diese können optisch unterschieden werden. Als unser Teilnehmer sollst du so schnell wie die Tasten „R“ oder „U“ abhängig vom gezeigten Bild drücken. Siehst du ein rotes Quadrat oder eine gerade Zahl, so drückst du „R“, siehst du ein blaues Quadrat oder eine ungerade Zahl, drücke die „U“ Taste. Die Bilder werden dann nacheinander angezeigt. Versuche deine Arme während des Experiments auf dem Tisch liegen zu lassen und nur mit den Fingern zu arbeiten. Wie bei jedem Experiment kannst du als Proband aber nichts falsch machen. Bitte nimm nun deine Position ein, der Versuchsleiter wird das Programm starten.“

After this the participant is asked if all instructions were clear. The examiner then starts the program.

At the end the examiner thanks the attendee for this participation and dismisses him or her.

## Variables

### Dependent variables:

- Reaction time since no picture has been shown until user presses a button
- Validity of key pressed by user

### Independent variables

- Stimulus category; attentive or pre-attentive
- Distraction by the screen; present or not

### Control variables:

- Keyboard, MacbookPro 13"- Modell 2016
- Place of experiment; VR4 Techbase Regensburg
- Time of day, Tuesday 14<sup>th</sup> of May, 17 o'clock, one take was done on Wednesday 15<sup>th</sup> of May at 16:30
- Hand positioning, underarms of participant are on the table
- Age of participants

### Random variables:

- Understanding of the task by the attendee
- Dominant hand of the attendee
- Focus of the attendee

### Confounding variables:

- Distractions beside the controlled screen distraction

## Participants

The study was conducted with 4 participants. All of them were media informatics students, while one was part of the examiner team. All participants were male and in their early 20s. The subjects were chosen as they were easily available. The academic backgrounds are expected to have no effect on the results.

## Preliminary Results

It is to be expected that pre-attentive labeling trials have shorter reaction times. The distraction could have greater effect on the pre-attentive task though, as it is color based. Most trials should be rightly labeled. The reaction times should lie close to each other across all subjects, although there might be a speeding up phase at the beginning as the user gets accustomed to the presented stimuli, as well as a slowdown phase at the end as exhaustion interferes with the participant.

On average a trial was completed within 1.4 seconds. Only 7 of 160 trials were falsely labeled.