

Eye Gaze as a Measure of Social Attention

Kaja Smole, Elisabeth Oberzaucher and Karl Grammer
Department of Anthropology, University of Vienna, Austria



Introduction

Social attention in real world settings consists of several behaviors one of them being directed eye gaze. Visual attention would be attracted by any stimulus with social meaning. We are conducting a behavioral observation in a natural environment and try to find out which factors elicit social attention on subliminal level. It is important to study this phenomenon, because previous work on social attention was limited to laboratory studies.

Body motion is the basis for human recognition and interpretation of social events. The question is what cues our brains use to interpret an actual social event. Those cues are found on basic levels, such as gender, speed, color, body motion of the people presented in the scene (Shiffrar, 2008). We are also interested in gender differences when studying social attention. If sex hormones have an influence on social attention, there should be a difference between males and females in what attracts social attention (Kimura, 2004).



Figure 1
Virtual operator set up



Figure 2
Low attention scene



Figure 3
High attention scene

Expected Results

Humans possess limited capacity when it comes to handling information about the world. The implication of limited capacity is that we must select specific items over others when processing visual information, which is called selective attention.

In the natural social situation experiment described by Birmingham and Kingstone (2009), people centered their attention on the eyes and face, while neglecting the rest of the scene.

Eyes are unique social stimuli that are prioritized by the human attention system. We expect biological cues carrying social meaning to trigger higher amounts of attention (i.e. visual focus) than biologically irrelevant cues. Participants should pay greater attention to evolutionary relevant cues such as attractiveness (search for a potential mate) or intentions of others (potential threat).

Methods

We are going to test 50 male and 50 female participants. Subjects will be selected randomly.

Four computer screens, arranged in a two by two square formation (Fig. 1) show simultaneously different views of surveillance cameras in an underground station. The participants are asked to put themselves in the shoes of an operator. Their task is to monitor the screens simultaneously and to look at the things that catch their attention. The gaze direction will be measured with the help of an electro-oculograph.

After a one minute test trial task to familiarize the subjects with the setting, we will start to measure the eye movements. The actual experiment consists of six trials, each consisting of two-minute chunks of videos. After completion, subjects fill out a questionnaire about the experiment.

We will annotate the behavior visible in the scenes that attract high amounts of visual attention with a behavior catalogue developed in the course of the VANAHEIM* project. We will test for differences in annotated behavior between low (Fig. 2) and high attention scenes (Fig. 3).

Discussion

We do not have results from this study yet. However, in a related study we found that attention seems not to be randomly distributed over surveillance movies.

*This research is part of the European VANAHEIM project (Video/Audio Networked surveillance system enhancement through Human-centered adaptive Monitoring).

References

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*VANAHEIM: <<http://www.vanaheim-project.eu/>>.

Contact
ksmole09@gmail.com

www.urbanethology.at