Official Title
The Effects of Stimulus Variability in Natural Visual Scenes

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Color Constancy, EY 10016
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Protocol Summary

Subjects

The subject population for these studies will be volunteers compensated either with cash or course credit. Subjects will be drawn primarily from the University community and obtained through word-of-mouth, online, or other informal advertisement, or recruited through the Psychology department's course subject pool. Online advertising may include a subject recruitment system managed through Penn's Center for Cognitive Neuroscience. Some of the experiments require that the subject have normal color vision and/or visual acuity, and for some experiments we will screen for native language or handedness. The principle investigator and other members of the lab may also participate as unpaid volunteers.

Procedures

The subject will view visual stimuli that consist of illuminant objects, are presented on a computer-controlled monitor, or are presented using a specialized optical system. Radiometric measurements will be used to ensure that none of the apparatus can stimulate the eye with unsafe levels of illumination. Where appropriate, filters will be inserted in the optical path to protect the eye from infrared and/or ultraviolet rays. In some experiments, the subject will be asked to clench a dental impression or place his/her head in a chin rest to minimize head movements. The subjects' task will be to make a response indicating some aspect of what he or she perceives. Often this will involve pressing keyboard keys or turning knobs to adjust the color of one of the stimulus objects until its appearance matches that of another object or of a learned memory color. Sometimes judgments of other aspects of the percept may be required and sometimes other response modes will be used (e.g. joystick, verbal response.) In some experiments, subjects' eye movements will be monitored and recorded while they perform the tasks. Experimental sessions will be one hour or less in duration. Individual subjects will typically participate in many sessions on an ongoing basis.

Subjects will typically be screened for normal vision using standard methods (e.g, Snellen eye chart, pseudo-ischromatic color plates) or short preliminary experiments using the methods described above.

In some cases, subjects will be asked to complete a series of brief questionnaires after the experiment is completed. Examples include the following four questionnaires: (1) a general survey about the experiment in which subject is asked to report about the strategies they used to complete experimental tasks, (2) Art Experience Questionnaire (AEQ), (3) Vividness of Visual Imagery Questionnaire 2 (VVIQ2) and (4) Verbalizer-Visualizer Questionnaire. Administration of all 4 questionnaires may take up to 60 minutes and may be done in a separate debriefing session. Other similar questionnaires may be administered should they be relevant for specific experiments.

Risks

There are no known risks involved with participation in these studies. Subjects may experience boredom during the experiment.

Confidentiality

Information identifying individual subjects will be kept only on a subject data sheet (copy enclosed). This sheet will connect each subject to a randomly chosen letter/digit code (aka code number) and will be kept in confidence by the PI and laboratory personnel, either on paper in a locked cabinet or in an encrypted computer file. All other research records will identify individual subjects only by the code. The code may also be used to identify individual subject data in published reports and professional presentations. Data from this study may be reported in scientific presentations open to the public and publications available to the public. Subjects will not be identified in such presentations or publications by name; single subject data may be presented but will be identified only by code number so people cannot tell who participated nor which data are from whom. Data collected in this study may also be released to the general public via a fully open database that may be accessed using the Internet. In the data that is shared with the general public, subjects will again only be identified by code number, so people who access the data cannot tell that who participated nor who the data are from. No identifying information will be shared with the general public or anyone who is not laboratory personnel. Additionally, the data and samples contained within research records from this study might be used for other, future research projects in addition to the current study. These future projects can focus on any topic, and might have goals unrelated to those of this study. If a subject withdraws from the study we will cease data collection. However**,** any data and research results already collected may be used in presentations/publications, shared with the general public, or with other investigators. Once data has been presented, published, shared with the general public or other investigators it cannot be destroyed, withdrawn or recalled. Subjects must be willing to have data shared in this way in order to participate in this study. If they are not willing to allow data from you to be shared in this way**,** they cannot participate in this study.

Consent

The experimental procedure and general purpose of the experiments will be explained to the subject before participation begins, as well as the expected duration of subject participation. The subject will be asked to read and sign the attached consent form. Subjects will be free to withdraw from the experiment at any time. Subjects recruited from SONA-systems or other for-credit subject pools will be informed that they may complete a research paper or participate in a different experiments to receive credit. After subjects have finished participating in experiments, they will be given an opportunity to ask questions about specific experimental hypotheses and results.

Benefits

The experiments are designed to improve our understanding of how we perceive object color, with particular emphasis on the role played by early visual mechanisms. Individual subjects may take an interest in the research and its findings.

Payment

Subjects will be paid for participation in this study at an hourly rate of $10/hour, or will receive course credit. They will be paid/receive credit for the time they actually participated, whether or not they complete the full experiment. In some paid experiments, there may be a bonus payment that depends the degree to which the subject's visual judgments are objectively correct. The experimenter will review any such bonus with the subject as part of the instructions for the particular experiment. The bonus will not exceed $10/hour.

Risk-Benefit Ratio

The risks are minimal or non-existent. Potential benefits are positive, and thus outweigh the risks.