

Final Report for Faculty Development Grant 2d
Amanda Jonas (Martin Dennis, faculty supervisor)
Summer, 2003

Note:

This final report includes information from, and supercedes, the interim report submitted in December, 2003.

In the summer of 2003, Amanda Jonas began an experiment on shape priming in inattentional blindness, which is the lack of awareness of stimuli that are presented but not attended to. She had written a review of some of the literature on inattentional blindness in the Spring, 2003, Cognitive Psychology course. Her summer research was an expansion on that literature, involving questions about the extent of partial processing of unattended items. The course of the project moved quickly, until it came time for data collection.

Summer activities:

At the beginning of June, Amanda worked to define a suitable research question in the general area of inattentional blindness. She searched for additional articles on the processing of features in unattended geometric shapes. Of key importance were two articles that showed contradictory priming effects with unattended or ignored shape stimuli. Amanda settled on a question of whether unattended but presented shapes might be processed to the extent that people would show biases in preferences for those shapes.

She then designed an experiment to answer this question, based on a paradigm developed by Arien Mack and Irving Rock. As part of this paradigm, subjects judge which arm of a briefly (200 ms) cross is longer. Following this judgment, subjects indicate their preference for one shape out of a pair. After several trials of alternating cross judgments and shape preference choices, subjects are presented with a trial in which a small shape is presented simultaneously with the cross. Prior research has found that many subjects are unaware of the presence of this additional shape. The key trial comes in the responses on the following shape preference choice, for those subjects who report themselves to have not seen the shape. Inattentional processing of the presented shape may increase preference for the shape over baseline preference. Amanda's experiment is fully counterbalanced in terms of shape pairings and location.

One key issue in designing this experiment is to use shapes with equal levels of preference as the target stimuli on the final trial. Amanda needed four different shapes for the full counterbalancing planned. To determine which shapes would be used on the key trial, she conducted a pilot study at the end of June. Subjects recruited from David Sorenson's Statistics class ranked a set of twenty different shapes; the shapes with mid-level mean rankings were selected as the target stimuli.

Once the target stimuli were chosen, Amanda began programming the experiment in E-Prime, an experiment presentation software package. Because of the complex counterbalancing of the shape pairs, a nontrivial program control issue developed.

Amanda devised a work-around and completed the experiment by mid-July. She started running subjects in mid-July, and ran into her first real obstacle to completing the project. Despite ongoing recruitment efforts, she was only able to run three research subjects by the beginning of August (data from one being discarded because of prior knowledge of experimental paradigm). With the dearth of subjects, the time at the end of July was spent doing additional library research, writing and revising the Introduction and Methods sections of the report, and preparing for the graduate school application process.

Fall, 2003 and Spring, 2004 activities:

Given the dearth of subjects during the summer of 2003, Amanda attempted to complete the experiment in the Fall semester of 2003. The Psychology Department usually provides some subject hours, in the form of extra course credit for research participation in its PSYC 115, General Psychology, course (taught by Martin Dennis) and those of its PSYC 125, Lifespan Human Development, courses taught by Martin Dennis and Jennifer Waddell. Despite the course incentives, student research participation was sluggish throughout the fall. Amanda ran another nine subjects through her experiment, many fewer than the available sign-up slots she had posted.

Amanda continued to run the experiment, even though Martin Dennis was on family leave for the spring term. Subject turnout was better than in the previous semester; Amanda recruited 23 more subjects in the spring, for an experimental total of 35 participants. As the Augustana College Symposium date was approaching, at which Amanda was giving a 15-minute oral presentation, it was decided to stop the experiment at this point to examine the data. Amanda's examination found (1) lower levels of inattention blindness than expected, and (2) little shape priming in inattention blindness (see Amanda's final research report, attached to this document). Although she had only null results to report, Amanda's presentation at the Augustana Symposium was well-received. On the presenter feedback forms returned to Martin Dennis, the average rating for presentation style (organization, clarity, etc.) was 5.5 (where 1 was "poor," 4 was "fair," and 7 was "excellent"). The average rating for presentation content was 6 on the same scale. Many audience members commented specifically on the short demonstration of the experimental trials that she included in her presentation; these trials seemed to emphasize to the audience that the processes under study occur more quickly than people can think.

During this time, Amanda engaged in reflection on her intention to attend graduate school. She continues to have plans for graduate study, but is no longer interested in study in psychology or in psychologically-oriented behavioral genetics. Instead, she expresses an interest in more basic, biologically-oriented genetics research. Because of this change in focus, she was referred to Michael Wanous, a geneticist in the Augustana Biology Department, for better advising on graduate study.

Thoughts relating to goals of the Faculty Development Grant (Martin Dennis):

This project relates to question 3 of the Faculty Development Grant: "In what ways have we explored and applied familiar and unfamiliar enhancements of the teacher-student relationship?" Independent student research is a staple in some departments at Augustana

College (notably in the Natural Sciences), and is a staple of some Psychology departments at other colleges. Such research is a rarity in Augustana's Psychology Department, though. I found that this summer research project was quite useful to me by providing an opportunity to guide a student through the research process. In particular, the discovery of a mid-summer scarcity of research subjects is a piece of important practical information. Future summer research in the department will have to be planned around this obstacle. Some options to address the problem of summer subject recruitment follow:

- Students may design experiments during one month of summer, but not begin collecting data until the following school year.
- Subject recruitment may be facilitated through more aggressive measures. One measure might be to "prerecruit" students in the spring. Students who are planning on staying in Sioux Falls over the summer will be asked if they would be willing to participate during the summer.
- Summer experiments could be designed during the prior spring, so that they could be implemented in June, with data collection starting towards the end of the month. Given enough subject "throughput" in June, data could be analyzed and reported in July. In other words, the timeline for the project could begin sooner in the academic year. After discussion with Amanda, however, I have decided that future summer research students should, as a general rule, begin designing experiments during the summer (as Amanda did), instead of beginning experimental design in the prior spring term. Given the current Psychology Department curriculum, students would likely have just become acquainted with specific research areas by the end of their junior year. If the department continues to work under a model of student research in which *students* define their own topical research areas and then generate research ideas within that area, almost all students will not be prepared to do so until the summer before their senior year. A change in timeline may be possible if faculty defined the research areas (and quite likely the research questions), and if psychology students could be familiarized with the research topics early enough in their careers.