# CALIFORNIA STATE SCIENCE FAIR
# 2005 PROJECT SUMMARY

**Name(s)**
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**Project Number**
**J0311**

**Project Title**
## Out of Synch: Perceiving Delay between Visual and Auditory Input

**Abstract**

**Objectives/Goals**
My project aims to determine how individuals differ in their ability to detect delays between visual and auditory input, and whether this ability can improve with practice. This is an important issue for the design of multimedia playback systems.

**Methods/Materials**
An automated test of individual sensitivity to delay was developed on a PC, using JavaScript to control Windows Media Player. 51 Junior High school students with parental permission were tested over four weeks, with video presented on a CRT monitor, sound played through headphones, and a two-alternative forced-choice presentation. Subjects were divided into two groups. All subjects took a pre-test in the first week and a post-test in the final week. Subjects in the second group also took the test twice in the intervening weeks, with feedback on each trial as to whether their answer was correct.

**Results**
Three original results were obtained: (a) control group sensitivity varied randomly from pre-test to post-test with no change on average, (b) training group sensitivity improved an average of 34 msec between pre-test and post-test (statistically significant at the 0.10 level), and (c) the training group averaged an additional 32 msec improvement when they received real-time feedback on their accuracy (statistically significant at the 0.005 level).

**Conclusions/Discussion**
My hypothesis that asynchrony detection thresholds could be lowered with training is supported. Additionally, I found that people could detect smaller delays when given immediate feedback on their response. This suggests that current estimates of individual sensitivity to delay may be misleadingly high.

**Summary Statement**
My project studies individual sensitivity to asynchrony between visual and auditory stimuli.

**Help Received**
My Dad suggested the problem to me and helped me with planning my experiment, programming my PC, and analyzing my data.