



**CALIFORNIA STATE SCIENCE FAIR  
2010 PROJECT SUMMARY**

<b>Name(s)</b> <b>Martina Axner; Erika Serrato; Hilarie Sit</b>	<b>Project Number</b> <b>J0304</b>
<b>Project Title</b> <b>To Lie or Not to Lie: That Is the Question</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> Our intention is to analyze the accuracy and reliability of facial/speech indications and response latency versus a polygraph machine when a subject is forced to lie under jeopardy. We hope this project will revolutionize law enforcement, by evolving the way suspected criminals are interrogated. We believe that the polygraph machine will be most accurate in determining the deceptive subject. This is because according to research and studies, the polygraph machine can measure the Cardio (heart rate), Galvo (sweating), and Pneumo (breathing rate) which is more reliable than facial/speech indications.</p> <p><b>Methods/Materials</b> At a scheduled preliminary meeting, one of our four subjects was told to steal a hundred dollars and to lie about it. Then, they each took a polygraph test which asked them questions involving the money. During the test, they were filmed by a camera which allowed us to watch the videos of the polygraph sessions, look for facial indications, and calculate the response latency of each subject. We graded them based on our facial/response criteria and decided which subject stole the money. Then we discussed results with the polygraph examiner and handed out the surveys that were to be answered truthfully.</p> <p><b>Results</b> On the polygraph results, it showed which person stole the 100 dollars and that there were three truthful subjects. The facial indications, however, showed that there was one deceptive, one truthful, and two inconclusive subjects. Response latency showed slight evidence of deception but not enough to prove anyone guilty.</p> <p><b>Conclusions/Discussion</b> Our conclusion based on observations is that the polygraph machine is more accurate because it identified the deceptive subject. Even though our observations did the same, it did not prove that two other subjects were truthful. The response latency showed trivial results. Our hypothesis was accurate regarding the polygraph's precision of 86%-100%, by scoring a 100% in our experiment.</p>	
<b>Summary Statement</b> Finding the best technique for lie detection when under jeopardy using facial/speech indications, response latency, and a polygraph machine.	
<b>Help Received</b> Mitch Ballard: subject and teacher assistant; Cassandra deWood: helped guide us and correct report; Lila Levinsen: subject; Teresa Sit: subject; Tami Serrato: subject; Paul Mills: put videos on DVD; Rochella Axner: recorded polygraph test; Bill Naron: polygraph examiner; and all those interviewed.	