METHODS

**GSR-recording device.**

In electrical terms, the skin can be modeled as a series of parallel resistors whose conductivity (or inverse resistance) increases with secretion of sweat. Because resistances are hard to measure using a microcontroller, the measuring device is based on a voltage divider, where R2 is a fixed resistor and R1 represents the skin. Custom-built electrodes were fabricated from 5-Rappen coins, which were selected because of their high ratio of highly conductive copper (92 %). An Arduino Uno \cite{} microcontroller was connected to the voltage divider, supplying 5 Volts to R1 and the node between R1 and R2 was connected to a 10-bit analog-to-digital converter (ADC). Thus, the measured values range from 1023 (short circuit) to 0 (open circuit). To balance the tradeoff between sensitivity and dynamic range, we selected R2 for each individual subject such that the baseline input value was in the vicinity of 600. Typically, resistors between 100 kOhm and 1 MOhm were used.

The Arduino Uno was programmed to interface with MATLAB, providing samples at a rate of about 65 Hz.

\begin{figure}

\includegraphics{GSR\_device.png}

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\caption{Arduino-based GSR recording device.}

\end{figure}

**GSR-processing and analysis (Jannis)**

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Experimental procedure

*Initialization*. First, subjects were handed an individual sheet containing instructions (see Appendix) and a brief questionnaire. To ensure their anonymity, subjects were first asked to pick an ID from an envelope and write it on their sheet. Next, any remaining questions as to the experimental procedure were answered, ensuring that no participant was told how or when the predictive strengths of the cues would change.

*Stimulus amplitude calibration*. Before starting the experiment, the amplitude of the aversive stimulus was calibrated for each participant individually. To this end, subjects were presented with a randomized sequence of the aversive white noise stimulus of 100 ms duration at different amplitudes and were asked to rate each one on a painfulness scale from 0 to 100. Subsequently, the stimulus amplitude corresponding to 90 % of their individual pain threshold was extrapolated, presented to the participant for approval, and adjusted if necessary.

*Experiment*. Subjects sat in front of two screens with their left hand laying on the table and being recorded from and their right middle and index fingers on a keyboard to provide behavioral output. The experiment was composed of two blocks of 150 trials each. Each trial consisted of